



CALIFORNIA HUB FOR
ENERGY EFFICIENCY
FINANCING

Commercial Project Eligibility Parameters

Oct 28, 2016

Workshop Goals

- **To propose a structure**, prior to issuing regulations, for a commercial energy efficiency financing program that is broadly reflective of CAEATFA's thinking based on research and informal conversations with stakeholders to-date.
- **To provide stakeholders and interested parties an opportunity for input** to CAEATFA on the proposed structure for the Commercial EE finance pilots.
 - CAEATFA requests that any party provide input on any or all parameters described below; **please don't feel constrained to the specific questions posed.**
 - CAEATFA will take any comments, either provided during this workshop or in writing provided by December 2, 2016 into account in its regulatory development.

CHEEF Pilots

2016 Workshop Schedule

Commercial Financing Program Parameters

July 20, 2016 9:30-11:30am PST

- Credit enhancement structure (for small business pilots)
- Financial product eligibility
- Finance provider eligibility
- Borrower/Customer underwriting guidelines

Commercial Project Program Parameters

October 28, 2016:

- Project Eligibility
- Measure Eligibility
- Contractor requirements
- QA/QC requirements
- Documentation and data reporting
- Rebate pathway and Finance Only pathway

This workshop covers project parameters for the credit-enhanced small business pilots and the non-residential, non credit-enhanced pilot

On-Bill Repayment Program Parameters

November, 2016: Date TBD

- On-bill customer and property eligibility guidelines
- On-bill infrastructure and communication with the Master Servicer
- Details and timing of cash flows and payments
- Special situations: Late payments, disconnections, and removal from the bill

This workshop will cover the on-bill repayment parameters for the following pilot programs:

- Commercial on-bill (small business loan, small business lease and Energy Service Agreement (ESA), non-residential non credit-enhanced pilots)
- Single Family on-bill residential (PG&E Territory only)
- Affordable Multi-Family residential

CHEEF Commercial Pilot Development Schedule

June-December, 2016:

- On-bill Infrastructure Testing

Q4 2016/ Q1 2017:

- Regulation development and workshops

Q1 2017:

- Regulations approved

Q1/Q2 2017:

- Participating Financial Institution (PFI) and Participating Finance Lender (PFL) enrollment
- PFI/PFL System integration with CAEATFA's Master Servicer
- Potential off-bill pilot launch

Q2/Q3 2017:

- On-bill launch



Agenda

1. Introduction: CAEATFA, the CHEEF and the Finance Pilots
2. General Eligibility
3. Rebate and Incentive Pathway
4. Finance Only Pathway
5. Project Process and Timeline
6. Specific Questions for Stakeholders
7. Next Steps

INTRODUCTION



Meet CAEATFA



- Housed within the State Treasurer's Office
- Uniquely positioned at the intersection of state energy and finance policy since the 1980s.
- Develops market-driven financial assistance programs to support the State's energy and environmental policy goals.



What is the CHEEF?



- A **public-private partnership** among state agencies, utilities, lenders, contractors, and borrowers.
- A **streamlined, statewide platform** for lenders and contractors to participate in the uptake of energy efficiency projects through increased access to financing.
 - \$10 million for marketing, education, outreach and training for contractors and lenders.
 - Uniform program requirements throughout the state to leverage existing infrastructure and allow flexibility for development of new and innovative financial products.
 - A centralized network of participating contractors; project quality assurance and quality control requirements; minimum underwriting criteria for financial product development; credit enhancement structures.
- A **data repository** for energy use, project, and financial data to inform future investment in energy efficiency projects.



CAEATFA serves as administrator of the CHEEF

Financing Pilots are authorized by the California Public Utilities Commission (CPUC) in Decision 13-09-044

Overseeing the CHEEF, CAEATFA will:

- Develop program regulations including lender requirements, project eligibility criteria, and credit enhancement design
- Coordinate with stakeholders, including the California Public Utility Commission (CPUC), Investor Owned Utilities (IOUs), financial institutions, lease providers, contractors, and end-users
- Establish and manage contracts with:
 - trustee bank
 - master servicer
 - contractor manager
 - data manager



CALIFORNIA HUB FOR
ENERGY EFFICIENCY
FINANCING



CHEEF Commercial Pilots

Small Business

Non Residential

Meets SBA size restrictions, for-profits and non-profits

Any size, gov ok, non-profit ok

On Bill

Off Bill

On Bill

Full amount of financing is credit enhanced

Part or all of financing is credit-enhanced

No credit enhancement

EE and DR only

EE, DR **and DG**

EE, DR **and DG**

Loan

Lease & ESA

Lease & ESA

Loan, Lease, & ESA

Introduction

General Eligibility

Rebate Path

Finance Only Path

Project Process

Questions for Stakeholders

Next Steps



CHEEF Pilot Program Goals:

- Enable **more attractive financing** reaching a **broader customer base** enabling **more EE projects** with **deeper energy savings**
- Bring **private capital** into energy efficiency space
- Establish a **statewide database** of **EE project and financing data** to spur future investments



Why should financial entities and contractors participate in the small business pilots?

- **Contractors - Close more deals and increase project scope:** Attractive financing options for customers facilitates more projects and deeper energy retrofits
- **Financial Entities - Mitigate Risk:** Access \$14 million in credit enhancements for small business financing
 - Leases, loans and energy service agreements
- **Offer convenience to customers:** On-bill repayment options means 1 monthly payment for customers: energy and financing charges
- **Take advantage of lead generation:** \$10 million budget for marketing, training and outreach to contractors and end users, shared among the various pilots
 - Publicity for participating contractors and financial entities
 - Cooperative marketing and co-branded collateral available



Program attempts to address some of the barriers to EE financing demand

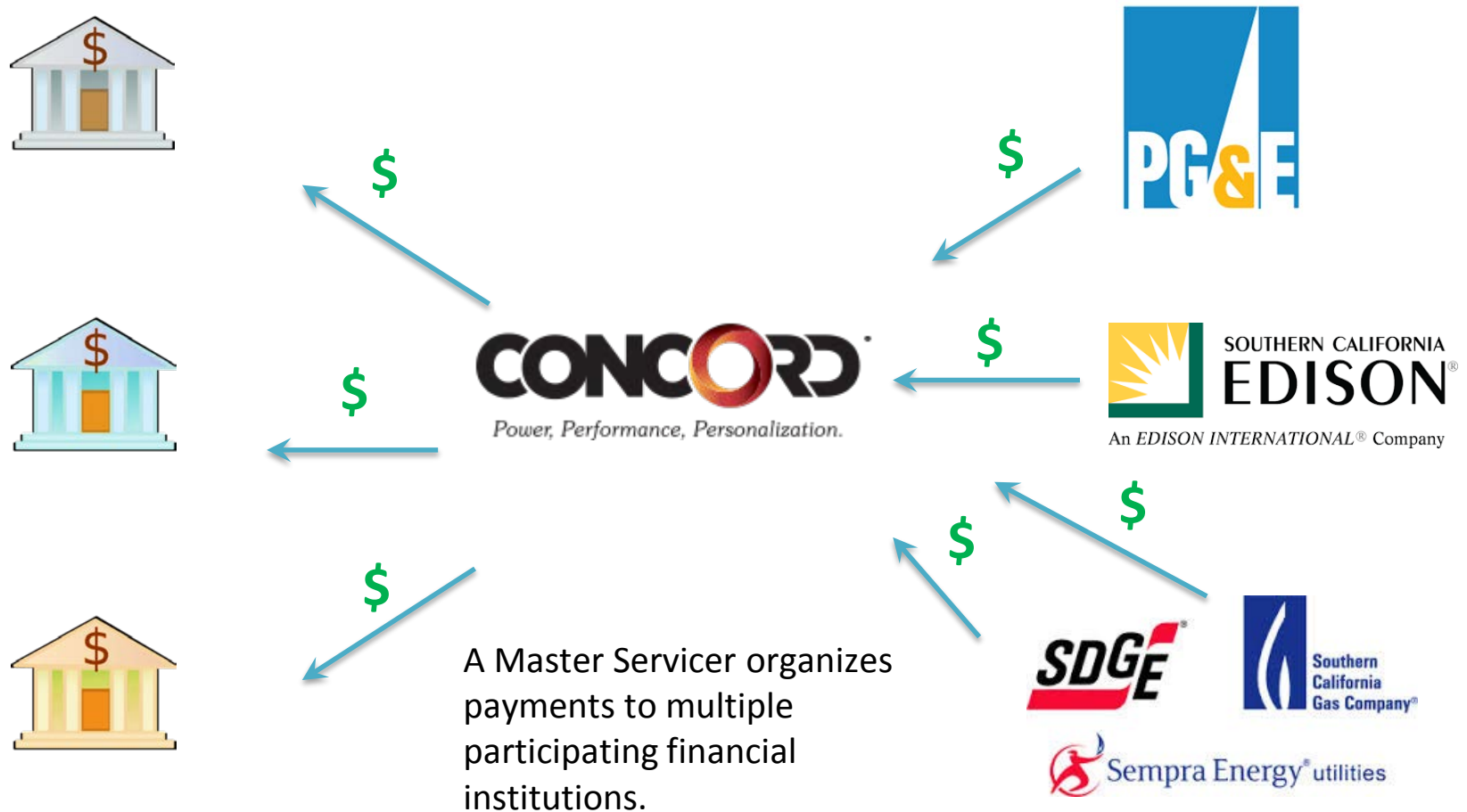


- Statewide marketing campaign
- Borrowers not required to be property owner
- Financing is secured by equipment, not the property
- No industry restrictions
- No upfront investment required of borrowers
- Project Flexibility: 70% of financed proceeds must be for EE measures; 30% may be for other improvements

Names and service areas of participating Financial entities and contractors to be publicized



Open Market OBR platform provides a single point of contact for Capital Providers



CHEEF Pilots offering private financing secured by equipment complements OBF and C-PACE

We think private financing can complement **OBF** for:

- Projects greater than \$100,000 or less than \$5,000
- Where the customer uses OBF for the first \$100,000 of cost, but needs private capital to cover remaining costs.
- Customers wanting an equipment lease or Energy Service Agreement (ESA)
- Larger measures requiring payback longer than 5 years
- Projects that may never be “bill neutral”
- Projects with non energy efficiency measures which can’t be financed through OBF
- Where single end use lighting > 20% of project cost
- Lighting measures not on the Qualified List of Products (QLP)
- Customers needing to replace equipment urgently who can’t wait for OBF approval
- Customers wanting energy savings now who can’t wait for utility’s custom incentive approval

We think private financing can complement **Commercial PACE** for:

- Tenant occupants (most small business owners rent space)
- Customers not wanting a lien on their property
- Smaller projects for which a PACE transaction is too costly



General Eligibility Guidelines

General eligibility guidelines per CPUC Decision 13-09-044 and other guidance:

Utility Service Area Requirement:

Available to customers of the 4 Investor-Owned Utilities (IOUs): Pacific Gas & Electric, Southern California Edison, San Diego Gas & Electric, Southern California Gas Company.

Project Requirements:

- 70% of claim-eligible financed amount* must fund energy efficiency measures, Demand Response and related, necessary improvements (e.g. permitting, wall repair or any legally required measures).
- Up to 30% of claim-eligible financed amount* may fund non energy efficiency measures, but not Distributed Generation (including battery storage)*.
- Small business leases and ESAs repaid off-bill may include DG, but no Credit Enhancement is available to the lender for the DG portion of the project.
- On-Bill, large commercial, non-residential projects that do not qualify for a Credit Enhancement can also include DG.

* Claim Eligible amount refers to the portion of the financing covered by the Loan Loss Reserve. See next slide

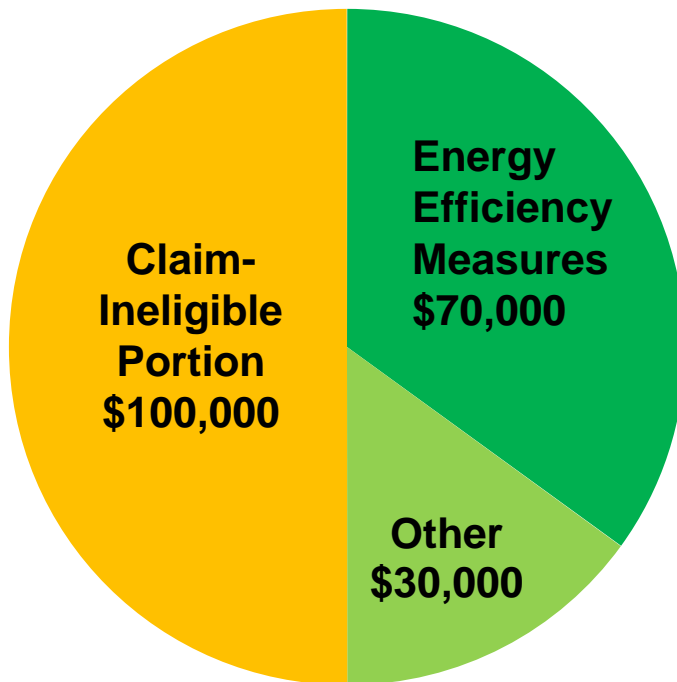


Example of an eligible off-bill small business lease or ESA including solar

\$200,000 Project

Claim-Ineligible Portion

- ✓ Distributed Generation Measures
- ✓ Other non EE in excess of 30% of claim-eligible portion



Claim-Eligible Portion

- ✓ 70% Energy Efficiency and necessary alterations
- ✓ 30% other measures – non DG or EE measures related to municipal or co-op utility provider

Claim-Eligible refers to the portion of the financing which is covered by the Loan Loss Reserve (Credit Enhancement). The lender can finance solar, or additional non EE measures, but that portion of the financing does not receive any Credit Enhancement and is not “claimable” in the event of a default.

Projects either follow a Rebate Pathway or a Finance Only Pathway

Rebate & Incentive Pathway

- Customer or contractor applies for a utility or REN rebate or incentive
- Deemed projects: Contractor completes installation and then applies for the rebate
- Custom projects: Contractor must receive pre-approval from utility before installation
- Project must meet the utility's rebate and incentive requirements for climate zone, building type, measure specifications, etc.
- Utility does inspections on some portion of deemed projects and does Measurement and Verification on some custom projects
- Projects may undergo CPUC EM&V

Finance Only Pathway

- Neither a rebate nor incentive is sought; customer only applies for financing from a CHEEF participating financial institution
- No distinction between “deemed” and “custom” measures
- Project must meet industry standards
- QA/QC may be provided entirely by third parties, outside of the utility process
- Projects may still undergo utility Measurement & Verification, after installation
- Projects may undergo CPUC EM&V

Introduction

General Eligibility

Rebate Path

Finance Only Path

Project Process

Questions for Stakeholders

Next Steps

Rebate and Incentive Pathway

Rebate pathway: contractor and measure requirements

Contractor requirements:

- Enrollment in the CHEEF program
 - Will be simple and can be done at the time of transaction, i.e. when a financial institution is enrolling a project with the CHEEF
- Possess proper licenses for the job, worker's compensation and liability insurance
- Meet any requirements the utilities have for participation in their rebate/incentive programs

Eligible Energy Efficiency Measures:

- Any measure that qualifies for an IOU or REN rebate or incentive
- Measures and project must meet the requirements of the rebate/incentive program
- Count toward the 70% of financing cost that must be for Energy Efficiency and related measures



Rebate pathway: QA/QC and post project M&V

QA/QC Pre-Installation Savings Review

- Deemed measures: No pre-installation review
- Custom measures: follows existing IOU custom approval process; contractor must receive project approval prior to installation

QA/QC Post-Installation Review

- Follows existing IOU project inspection processes
- CAEATFA will not inspect projects for which the borrower or contractor applies for an IOU rebate/incentive

Post project M&V access

- Follows existing IOU procedures. IOU engineers and CPUC EM&V review team may need to do site visits or talk to borrowers.



Documentation and data for loan/lease/ESA enrollment in CHEEF program*

Contractor provides

- ✓ Certification of project completion
 - Project complies with program rules
 - Measures are eligible per IOU rebate requirements
- ✓ Application to the program (if first project)
- ✓ CHEEF Invoice/Project summary that includes
 - Project site address(es)
 - Name, high level description and cost of each EE measure, by site
 - Brief description and cost of non-EE measures
 - Whether project saves gas, electricity or both
 - Rebate IDs, if known
 - Utility and commodity service account numbers

Lender provides

- ✓ Financial product terms
- ✓ Borrower underwriting characteristics
- ✓ Certifications of compliance with financing guidelines (see July 20th workshop slides)

Customer provides

- ✓ Customer Energy Data Release
- ✓ CHEEF Privacy Disclosure

*Additional information such as monthly payment amount and a customer authorization to put charges on their bill will be needed for enrollment in on-bill repayment

Finance Only Pathway

Goal in creating a Finance Only pathway is to facilitate deal flow and uptake of high efficiency measures

Background:

- Current utility custom incentive approval process can take 4-6 months; Contractors/customers hesitate to order equipment ahead of approval, further lengthening time before installation
- Customers decide to forego the incentive so they don't have to wait, but they choose a less costly upgrade that is less efficient
- The CPUC Customer Measure and Project Archive (CMPA) review adds time and uncertainty to the custom approval process which presents difficulty for private financial institutions
- Current process is expensive for the utility as it may be subject to a third-party technical review

Objectives in creating a Finance Only pathway:

- Facilitate faster pre-installation approval so that projects can proceed with the highest efficiency measures
- Remove uncertainty of both approval timeline and whether or not projects will be approved
- Create one state-wide methodology and standard for the CHEEF pilots
- Allow projects with deemed and custom measures to utilize a single process

The Finance Only path may be the right option when:

- Customer wants to realize energy savings as soon as possible, rather than wait for custom incentive approval
- Rebate/Incentive value is low compared to overall project cost

Finance Only path relies on Investor Confidence Project protocols



<http://www.eepformance.org/>



- Certification for building retrofit projects
- ICP establishes a series of protocols for energy efficiency projects, relying on existing standards and practices
- Shift to market based approach: Instead of relying on a utility engineering team to sign off on a project, QA/QC can be done by private companies credentialed as ICP QA Providers*
- Allows shift away from distinct rules and requirements for each utility program and toward one industry standard of predicting energy savings
- Customers (business owners) and investors (capital providers) have confidence in predicted energy savings
- Projects can be registered and certified as “Investor Ready”
 - CHEEF requires use of ICP protocols; encourages but does not require project certification

*CAEATFA proposing that IOU engineering teams be available as ICP Credentialed QA Providers for the pilot programs to help with transition to ICP



Finance Only pathway: contractor requirements

- Enrollment in the CHEEF program (*Same as rebate pathway*)
 - Enrollment will be simple and can be done at the time of transaction, i.e. when a financial institution is enrolling a project with the CHEEF
- Possess proper licenses for the job, worker's compensation and liability insurance (*same as rebate pathway*)
- **Obtain ICP Credentialing as a Developer** – not difficult for companies already working in the EE industry.
 - Attend a no-cost, 2 hour training webinar
 - CAEATFA to arrange CHEEF webinar opportunities with ICP
 - Show experience and provide references
 - Carry E&O insurance
 - Retain, either on staff or under contract, a licensed Professional Engineer or AEE Certified Energy Manager (CEM)
- No additional utility requirements for contractors



Finance Only path eligible energy efficiency measures include:

Pending CPUC Approval

- Any measure that meets the definition in the CPUC's EE Policy Manual version 5.0:
 - An energy using appliance, equipment, control system, or practice whose installation or implementation results in reduced energy use (purchased from the distribution utility) while maintaining a comparable or higher level of energy service as perceived by the customer. In all cases energy efficiency measures decrease the amount of energy used to provide a specific service or to accomplish a specific amount of work
- Any DesignLights Consortium (DLC) lighting is eligible, regardless of whether it is on the California Qualified List of Products (QPL).
- Replace on burnout measures



Finance Only projects utilize ICP protocols for QA/QC

QA/QC Pre-Installation Savings Review

- Contractor identifies an ICP credentialed QA Provider (*see slide 33*)
- Contractor provides project information to the QA Provider per the **QA/QC checklist**. (*CHEEF pilots to utilize the same checklist developed by PG&E for OBF Alternative Pathway program though CHEEF definition of Tiers differs from PG&E*)
- QA Provider signs off that the checklist is complete. Installation can begin.
- *Note: Like the PG&E OBF Alternative Pathway HOPP, utilities do NOT submit projects to the CPUC CMPA database prior to installation because the customer is not seeking an incentive. Unlike the custom incentive process, utilities will not necessarily know about the project at this stage.*

QA/QC Post-Installation Savings Review

- Contractor provides project information to the QA Provider per the QA/QC Checklist
- QA Provider signs off on checklist



QA/QC requirements correspond to project tier

Pending CPUC Approval

Tier	CHEEF Project scope
Tier 1	Any lighting measures + up to \$250k of non-lighting costs
Tier 2	Non-lighting costs \$250-\$500k
Tier 3	Non-lighting costs >\$500k or projects with complex interactive systems

- QA/QC requirements of each tier are the same as for the PG&E On Bill Finance Alternative Pathway Pilot
- CHEEF pilots allow larger projects into Tier 1 as projects are financed with private capital. Financing entities, customers or contractors can always opt for a higher level of QA/QC.
- QA Provider has discretion to require additional QA beyond the Tier requirements, based on project scope
- All projects require an Operations & Maintenance plan
- All projects require the contractor to provide the customer with an M&V plan
- O&M and M&V can be very simple for small projects



QA Checklist Pre-Installation

Example: Building Asset Data Section

Check	Item	Tier 1	Tier 2	Tier 3	Description
	Equipment List	Y	Y	Y	Has a list of existing equipment been provided for those measures included in the project loan application , ⁺ with major characteristics?
	Photos	Y	Y	Y	Have equipment photos or images been provided to verify existing conditions?
	Equipment Data	N	Y	Y	Have equipment nameplate information, cut sheets, plans, or other supplementary technical asset documentation been provided to verify existing conditions?
	Trend Data	N	Y	Y	Has existing equipment trend data or list of trended points, where used for energy savings estimates, been provided?
	Audit	N	Y	Y	Has a building audit or site visit been conducted?
	Audit Report	N	Y	Y	Has a building audit or site visit report been provided which describes existing conditions and measure opportunities?
	Site Walk	N	N	Y *	Has a site visit been conducted by QA provider to verify existing conditions? (* Only if deemed necessary by QA provider.)

⁺ Denotes differences between the checklist for PG&E's OBF Alternative Pathway and the CHEEF Commercial pilots. PG&E OBF AP refers to the "loan application" to the utility. CHEEF financing providers will have their own application procedures.

Full checklist can be found in the Appendix of this slide deck or, as pdf at <http://www.treasurer.ca.gov/caeatfa/cheef/sblp>

QA Checklist Pre-Installation

Example: Energy Data

Check	Item	Tier 1	Tier 2	Tier 3	Description
	12 mos. Data	Y	Y	Y	Has 12-months recent and continuous building energy data been provided for all energy use at the building? Through Share My Data.
	15-min Data	N	N	Y	Have 2 weeks of 15-minute whole-building and/or end-use energy been provided?
	End-use Data	N	N	Y	Has end-use energy data been provided for major building end-uses, either as directly submetered or estimated?
	Savings Amount	Y	Y	Y	Are energy savings reasonable when compared with total existing facility energy consumption, e.g. no more than 75% of a given end-use or 40% of total facility use?
	Demand Data	N	Y	Y	If demand reduction or demand shifting measures are included in project loan application [†] , does energy data include current building peaks by total and end-use?

[†] Denotes differences between the checklist for PG&E's OBF Alternative Pathway and the CHEEF Commercial pilots. PG&E OBF AP refers to the "loan application" to the utility. CHEEF financing providers will have their own application procedures.

Full checklist can be found in the Appendix of this slide deck or, as pdf at <http://www.treasurer.ca.gov/caeatfa/cheef/sblp>

Finding a QA Provider for the project

- An objective of ICP is to, over time, reduce the cost of QA/QC by enabling a competitive marketplace
- QA/QC cost is folded into the overall project cost and paid for by customer



CAEATFA is proposing a hybrid approach:

1. Support market-based QA/QC

- 15 private firms have been [credentialed as ICP QA Providers](#) in California
- Contractors can hire one of these private companies to do QA/QC and include the cost to the customer in the total amount financed
- QA can be done remotely. Most projects do not require a site visit by the QA Provider. Only Tier 3 projects require a site visit, and only if the QA Provider determines it is necessary

AND

2. Transition to customer responsibility for QA/QC cost gradually, with utilities absorbing some costs as we support adoption of ICP protocols

- CAEATFA asking utility engineering teams to become credentialed as QA Providers
- For projects under \$500,000, contractors can have the utility serve as QA Provider, using the ICP-based QA/QC Checklist, instead of the current custom incentive process. **[pending utility feasibility]**
- CAEATFA is still researching costs of QA/QC for smaller projects.

List of ICP Credentialed QA Providers operating in California can be found in appendix

Documentation and data for loan/lease/ESA enrollment in CHEEF program

Contractor and Lender provide the same documents to the CHEEF as for the rebate path with the addition of the QA/QC Checklist:

1. Contractor provides the data and information referenced on the QA/QC Checklist to the QA Provider.
 - CHEEF pilots may require slightly different cover-sheet data than the PG&E OBF Alternative Pathway checklist version
2. QA Provider signs off on the checklist. Lender submits the checklist to the CHEEF with loan enrollment.
3. QA Provider sends the underlying data and the checklist to the utilities so that the utilities can estimate savings.

Detailed measure and project information does not pass through CAEATFA, avoiding the need for CAEATFA and CAEATFA's Master Servicer to build infrastructure to store complex custom program data.

CAEATFA will still ask for high level project and measure descriptions; please see slide 24.



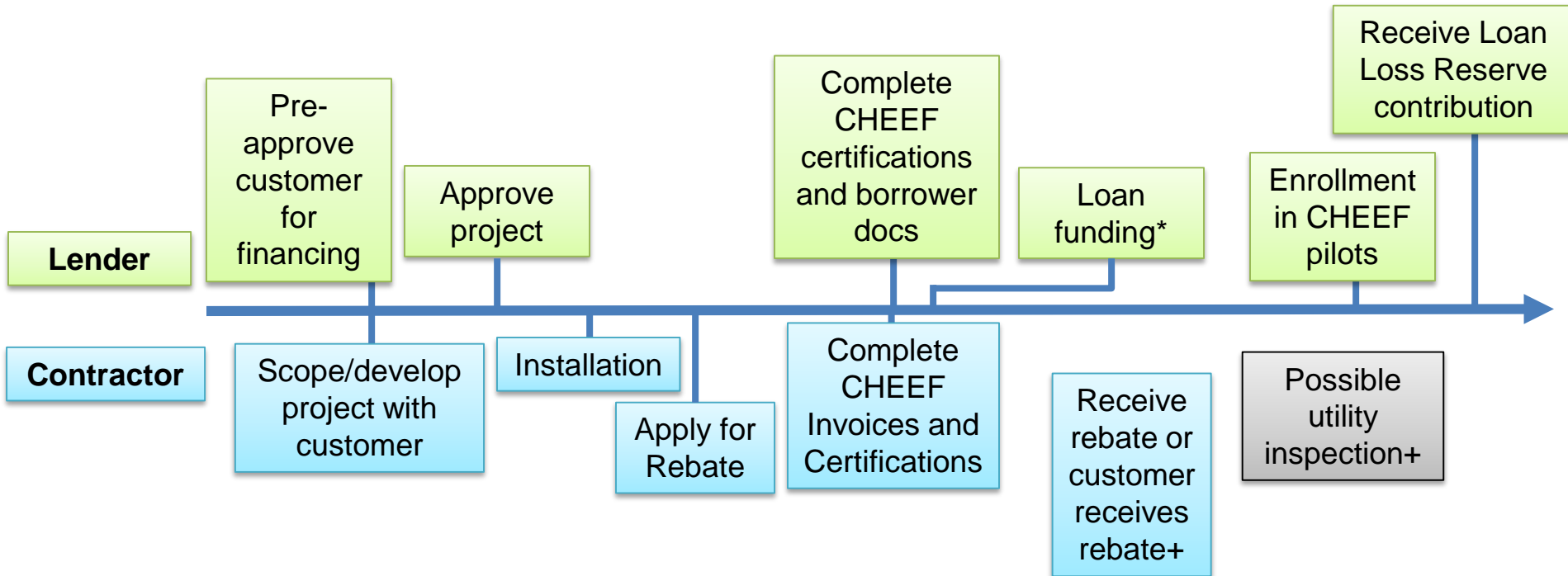
Project processes and timeline

CHEEF Commercial Project Eligibility Pathway Comparison

	Rebate/Incentive Path	Finance Only Path
Contractor Requirements	Proper licenses and insurance	
	Utility Requirements for participation in programs	ICP Developer Credential
Eligible Measures	Any measures eligible for IOU/REN rebate or incentive program. Must meet all rebate and incentive requirements	Any energy saving measure (per CPUC EE Policy Handbook 5.0) Lighting must be on DLC.
QA/QC Pre-Installation	Deemed measures: None Custom: Follows utility custom process; utility approval required	Utilizes Investor Confidence Protocols 3 rd party QA Provider signs off on Pre-Installation checklist
QA/QC Post-Installation	Follows utility inspection processes	Utilizes Investor Confidence Protocols 3 rd party QA Provider signs off on Post-Installation checklist
Data needed	Contractor/Customer send rebate or incentive application and information to utility	Finance Entity sends completed QA/QC checklist to CHEEF QA Provider sends underlying data to utility
	Financing terms, customer energy data release, borrower privacy disclosure CHEEF invoice (high level measure and project info) and certifications	
M&V and EM&V	Utility and/or CPUC may choose to do M&V on the project.	

Project Process: Rebate and Incentive Path

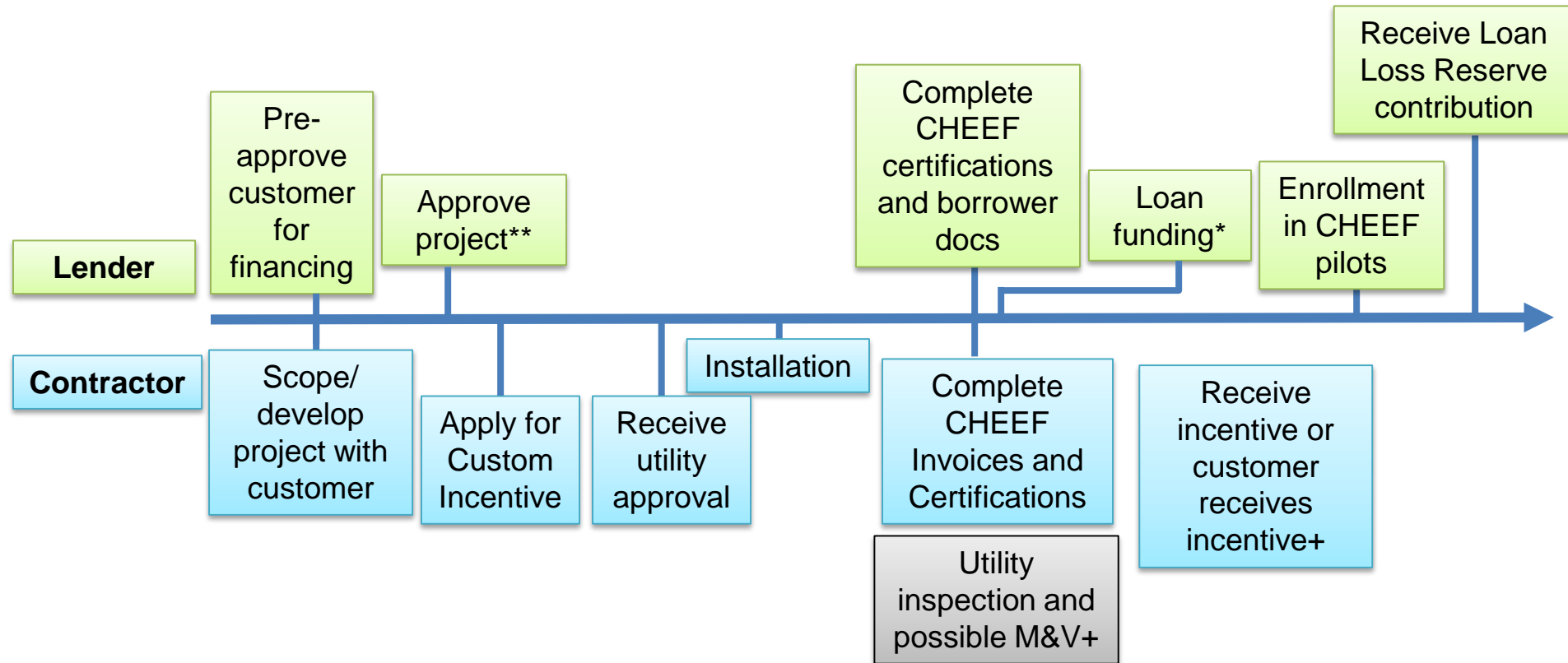
Deemed/Prescriptive Projects



*Some lenders may be able to pre-fund contractors for part of the project
+ Utility rebate and inspections are not linked to CHEEF enrollment

Project Process: Rebate and Incentive Path

Custom Projects



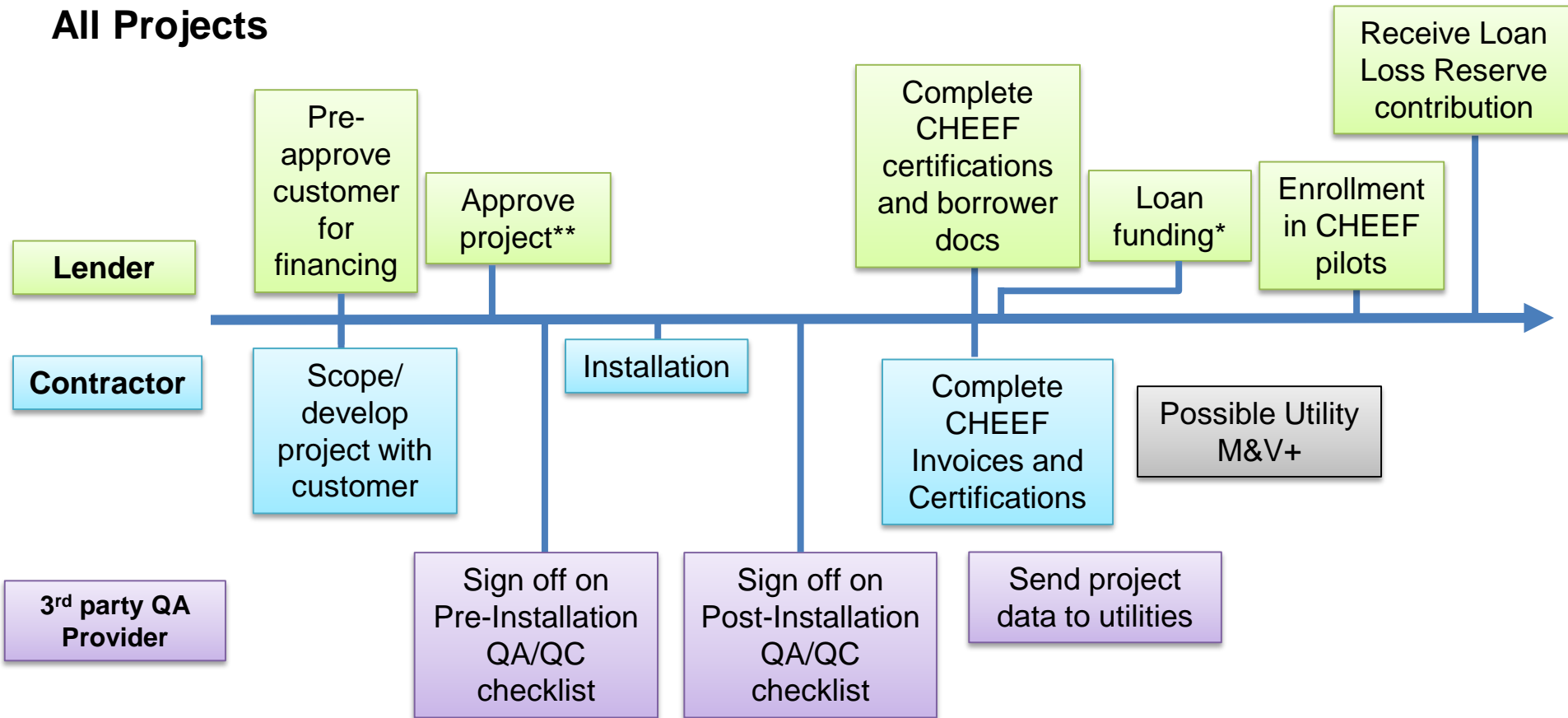
*Some lenders may be able to pre-fund contractors for part of the project

** Lender may not approve project until utility incentive is confirmed

+Utility incentive and M&V are not linked to CHEEF enrollment

Project Process: Finance Only Path

All Projects



*Some lenders may be able to pre-fund contractors for part of the project

** Lender may give approval conditional upon successful signing of QA/QC checklists

+Utility M&V is not linked to CHEEF enrollment

Specific Questions for Stakeholders

Questions for Contractors*

Demand for financing and rebates/incentives

- 1) *What are the financing needs of your customers?*
- 2) *Where do you see the need for non real-estate secured, private financing? Are we correct in our assumptions of what types of upgrades contractors will be able to sell with private financing? If not, what types of projects do you foresee being able to complete?*
- 3) *How should this financing be structured to enable you to get more energy efficiency projects completed?*
- 4) *Do you currently participate in IOU rebate/incentive programs?*
- 5) *How important is the rebate/incentive to your customers?*

*Any stakeholders are welcome to comment



Questions for contractors continued

Finance only path and ICP QA/QC Requirements

- 6) *What value do you see in the finance only path? For what types of projects would you use it?*
- 7) *How does the proposed finance only path compare to the current utility custom-approval process? Will the finance only path enable more projects? Why or why not?*
- 8) *How feasible is it for you to become an ICP credentialed developer? Are you open to becoming credentialed?*
- 9) *Is it beneficial to allow any lighting measures on the DLC? Are there lighting measures on the DLC that are not on the California Qualified List of Products? Are there reasons we should restrict lighting to the QLP?*
- 10) *Is a “replacement on burnout” project viable for the finance only path? Or would the QA/QC process take too long?*
- 11) *Do our tiers make sense for projects funded with private capital?*
- 12) *Are the checklist requirements reasonable for the type of projects to which they apply?*
- 13) *How should we better define, “Complex Interactive Systems,” or the types of projects that would require Tier 3 QA/QC?*
- 14) *Would you make use of the Utilities as QA/QC Providers to keep project costs down for the customer?*

Questions for financial institutions*

- 1) *Are you able to provide CAEATFA with the name of the utility customer, service address and borrower underwriting characteristics? What restrictions, if any, do you have on sharing customer data? (note that CAEATFA has strict data aggregation and anonymization standards for data released to the public)*
- 2) *For ESA Providers: Do you currently use ICP protocols or rely on third party QA/QC for your projects? How feasible would it be for your existing QA Provider to become ICP credentialed?*

*Any stakeholders are welcome to comment

Questions for all stakeholders

- 1) *Should all finance only projects under \$500,000 be able to utilize a utility QA/QC review, rather than absorbing the cost of third party QA/QC?*
 - *Or, should we focus this support on targeted projects or businesses? Or enable it for contractors submitting their first few projects?*
- 2) *How much discretion should the QA Provider have in determining which Tier a project falls under, or when a project might require additional or fewer QA/QC elements than the checklist calls for? Or, to put the question another way: Should the Tiers and checklist elements be seen as program minimum standards, or guidelines for the Contractor and QA Provider?*

NEXT STEPS

Next Steps

- Please provide feedback to CAEATFA now, in this workshop, or afterwards. Comments are due by Friday, December 2, 2016.
- CAEATFA will consider all comments and incorporate them as it deems appropriate.
- CAEATFA extending timeline for comments from the July 20th Financing Parameters workshop until Friday, December 2, 2016.
- Comments can be submitted to cheef@treasurer.ca.gov

Or to

Miriam Joffe-Block
Program Manager, CHEEF
mjblock@treasurer.ca.gov
916.653.3032

CHEEF Pilots

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APPENDIX

ICP Credentialed QA Providers in California



ARUP



QA Checklist Pre-Installation Loan and Measure Criteria

Check	Item	Tier 1	Tier 2	Tier 3	Description
	SPP < 5yrs	Y	Y	Y	Do measures included in loan package meet a 5 year simple payback period (10 years for municipal clients)?
	Loan Limits	Y	Y	Y	Do total measure costs included in loan package meet the loan limits?
	Basic Lighting	Y	Y	Y	Do measures <u>not include</u> any "basic lighting" measures, as defined by PG&E?
	LED DLC	Y	Y	Y	If lighting is included, are products on the Design Lights Consortium Qualified Products ⁺ List?
	No ROB	Y	Y	Y	Is all equipment replacement "early retirement", e.g. all equipment to be replaced is still functional?

* Denotes differences between the checklist for PG&E's OBF Alternative Pathway and the CHEEF Commercial pilots. PG&E OBF AP refers to the "loan application" to the utility. CHEEF financing providers will have their own application procedures.

Full checklist can be found at <http://www.treasurer.ca.gov/caeatfa/cheef/sblp>

QA Checklist Pre-Installation Costs

Check	Item	Tier 1	Tier 2	Tier 3	Description
	Cost Totals	Y	Y	Y	Have cost estimates been provided for all measures and activities included in the project loan application ⁺ ?
	Cost by Measure	Y	Y	Y	Are costs broken out by measure?
	Cost Buildups	N	N	Y	Are costs broken out by trade and/or by time vs. materials?
	Ancillary Costs	N	Y	Y	Do cost estimates include costs of all ancillary services required by OBF program ⁺ ; including QA provider, M&V provider if any, etc.?
	Utility Rates	Y	Y	Y	Have consistent utility cost rates and/or utility rate structure been provided, as used to calculate energy cost savings?
	TOU Rates	N	Y	Y	If demand reduction or demand shifting measures are included in project loan application ⁺ , are TOU rates or rate structure provided?

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QA Checklist Pre-Installation Building Asset Data

Check	Item	Tier 1	Tier 2	Tier 3	Description
	Equipment List	Y	Y	Y	Has a list of existing equipment been provided for those measures included in the project loan application , ⁺ with major characteristics?
	Photos	Y	Y	Y	Have equipment photos or images been provided to verify existing conditions?
	Equipment Data	N	Y	Y	Have equipment nameplate information, cut sheets, plans, or other supplementary technical asset documentation been provided to verify existing conditions?
	Trend Data	N	Y	Y	Has existing equipment trend data or list of trended points, where used for energy savings estimates, been provided?
	Audit	N	Y	Y	Has a building audit or site visit been conducted?
	Audit Report	N	Y	Y	Has a building audit or site visit report been provided which describes existing conditions and measure opportunities?
	Site Walk	N	N	Y *	Has a site visit been conducted by QA provider to verify existing conditions? (* Only if deemed necessary by QA provider.)

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QA Checklist Pre-Installation Building Energy Data

Check	Item	Tier 1	Tier 2	Tier 3	Description
	12 mos. Data	Y	Y	Y	Has 12-months recent and continuous building energy data been provided for all energy use at the building? Through Share My Data.
	15-min Data	N	N	Y	Have 2 weeks of 15-minute whole-building and/or end-use energy been provided?
	End-use Data	N	N	Y	Has end-use energy data been provided for major building end-uses, either as directly submetered or estimated?
	Savings Amount	Y	Y	Y	Are energy savings reasonable when compared with total existing facility energy consumption, e.g. no more than 75% of a given end-use or 40% of total facility use?
	Demand Data	N	Y	Y	If demand reduction or demand shifting measures are included in project loan application [†] , does energy data include current building peaks by total and end-use?

[†] Denotes differences between the checklist for PG&E's OBF Alternative Pathway and the CHEEF Commercial pilots. PG&E OBF AP refers to the "loan application" to the utility. CHEEF financing providers will have their own application procedures.

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QA Checklist Pre-Installation

Energy Savings

Check	Item	Tier 1	Tier 2	Tier 3	Description
	Complete Calcs	Y	Y	Y	Are energy calculations provided for all measures for which energy savings are being claimed in the loan application ⁺ ?
	Inputs	Y	Y	Y	Are energy calculations inputs and variables clearly described?
	Assumptions	Y	Y	Y	Are all assumptions stated clearly, and reasonable per typical engineering practice e.g. per ASHRAE Handbook of Fundamentals?
	Detail	Y	Y	Y	Are calculations provided in sufficient detail to verify their accuracy and completeness?
	Judgment	Y	Y	Y	Are calculations reflective of typical engineering practice and physical laws, e.g. per ASHRAE Handbook of Fundamentals?
	Weather	N	Y	Y	Is a weather file or sample weather file provided for calculations for non-lighting measures?
	Energy Model	N	Y	Y	Are calculations provided in spreadsheet 8760 or weather bin format, or as a calibrated energy model using publicly available energy software e.g. DOE-2?

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Full checklist can be found at <http://www.treasurer.ca.gov/caeatfa/cheef/sblp>

QA Checklist Pre-Installation Installation Verification

Check	Item	Tier 1	Tier 2	Tier 3	Description
	Install Verif Plan	Y	Y	Y	Is a plan or description provided for the process that will be conducted to verify installation is in accordance with initial scope?
	Collected Data	N	Y	Y	Does the installation plan clearly state equipment and data points to be verified and checked post-installation?
	Update Savings	N	Y	Y	Does the installation plan clearly describe the method to update estimated energy savings if needed, e.g. if the installation varies from the initial plan?
	Testing / Cx	N	N	Y	Does the installation plan include planned functional performance testing or commissioning (Cx) for relevant systems, such as a Cx plan with a designated Cx Authority (CxA)?

QA Checklist Pre-Installation Measurement & Verification Plan

Check	Item	Tier 1	Tier 2	Tier 3	Description
	M&V Plan	Y	Y	Y	Is a Measurement & Verification (M&V) plan provided which describes process to verify savings post-installation over an extended period of time?
	Collected Data	Y	Y	Y	Does the M&V plan clearly state data to be collected to verify savings, including whole-building energy data?
	Trend Data	N	Y	Y	Does the M&V plan clearly list all trend data to be collected, point-by-point?
	Calibration	N	Y	Y	Is the plan to update calculations reflective of typical engineering practice and physical laws, e.g. per ASHRAE Handbook of Fundamentals?
	Regression	N	N	Y	Does the M&V plan include a description of regression method to establish baseline and final savings, if a regression is to be used? Does the regression adjust for both weather and occupancy e.g. per ASHRAE 100?
	ASHRAE 14	N	N	Y	Is the M&V plan generally compliant with ASHRAE Guideline 14?

QA Checklist Pre-Installation Operations and Maintenance

Check	Item	Tier 1	Tier 2	Tier 3	Description
	O&M Service	Y	Y	Y	Is Operations & Maintenance (O&M) activity or service included with post-installation services?
	O&M Description	Y	Y	Y	Is planned O&M described or O&M plan provided, e.g. in a typical scope of work or scope of service?
	O&M Activities	N	N	Y	Does O&M service include, at a minimum, on-site training, equipment manuals, and an annual site visit?
	O&M Cost	N	Y	Y	If O&M or retrocommissioning (RCx) is provided and included in loan project+ costs, is cost of service clearly stated and cost buildup provided?

QA Checklist Post-Installation

Loan and Measure Criteria

Check	Item	Tier 1	Tier 2	Tier 3	Description
	SPP < 5yrs	Y	Y	Y	Do measures included in loan package meet a 5 year simple payback period (10 years for municipal clients)?
	Loan Limits	Y	Y	Y	Do total measure costs included in loan package meet the loan limits?
	Basic Lighting	Y	Y	Y	Do measures <u>not include</u> any "basic lighting" measures, as defined by PG&E?
	LED DLC	Y	Y	Y	If lighting is included, are products on the Design Lights Consortium Qualified Products ⁺ -List?
	No ROB	Y	Y	Y	Is all equipment replacement "early retirement", e.g. all equipment to be replaced is still functional?

* Denotes differences between the checklist for PG&E's OBF Alternative Pathway and the CHEEF Commercial pilots. PG&E OBF AP refers to the "loan application" to the utility. CHEEF financing providers will have their own application procedures.

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QA Checklist Post-Installation Costs

Check	Item	Tier 1	Tier 2	Tier 3	Description
	Cost Totals	Y	Y	Y	Have final cost totals been provided for all measures and activities included in the project loan application ⁺ ? Have full invoices, bills, or work orders provided to justify final costs?
	Cost by Measure	Y	Y	Y	Are final costs broken out by measure?
	Cost Buildups	N	N	Y	Are final costs broken out by trade and/or by time vs. materials? Do final invoices, bills, or work orders provided align with this?
	Ancillary Costs	N	Y	Y	Do costs invoices include costs of all ancillary services required by OBF program , including QA provider, M&V provider if any, etc.?
	Utility Rates	Y	Y	Y	(If changed) Have consistent utility cost rates and/or utility rate structure provided, as used to calculate energy cost savings?
	TOU Rates	N	Y	Y	(If changed) If demand reduction or demand shifting measures are included in project loan application ⁺ , are TOU rates or rate structure provided?

* Denotes differences between the checklist for PG&E's OBF Alternative Pathway and the CHEEF Commercial pilots. PG&E OBF AP refers to the "loan application" to the utility. CHEEF financing providers will have their own application procedures.

Full checklist can be found at <http://www.treasurer.ca.gov/caeatfa/cheef/sblp>

QA Checklist Post-Installation Building Asset Data

Check	Item	Tier 1	Tier 2	Tier 3	Description
	Equipment List	Y	Y	Y	Has a list of newly installed equipment been provided for those measures included in the project loan application ⁺ , with major characteristics?
	Photos	Y	Y	Y	Have equipment photos or images been provided to verify post-installation condition?
	Equipment Data	N	Y	Y	Have equipment nameplate information, cut sheets, plans, or other supplementary technical asset documentation been provided to verify post-installation conditions?
	Testing	N	N	Y	Has evidence of equipment testing for functionality been provided, e.g. functional testing or commissioning (Cx)?
	Trend Data	N	Y	Y	Has installed equipment trend data been provided, where used for energy savings estimates, per initial application and M&V plan?
	Site Walk	N	N	Y *	Has a site visit been conducted by QA provider to verify post installation conditions? (* Only if deemed necessary by QA provider.)

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QA Checklist Post-Installation Building Energy Data

Check	Item	Tier 1	Tier 2	Tier 3	Description
	15-min Data	N	N	Y	Have 2 weeks of post-installation 15-minute whole-building and/or end-use energy been provided?
	End-use Data	N	N	Y	Has post-installation end-use energy data been provided for major building end-uses, either as directly submetered or estimated?
	Demand Data	N	Y	Y	If demand reduction or demand shifting measures are included in project loan application ⁺ , does energy data include post-installation building peaks by total and end-use?

⁺ Denotes differences between the checklist for PG&E's OBF Alternative Pathway and the CHEEF Commercial pilots. PG&E OBF AP refers to the "loan application" to the utility. CHEEF financing providers will have their own application procedures.

Full checklist can be found at <http://www.treasurer.ca.gov/caeatfa/cheef/sblp>

QA Checklist Post-Installation

Energy Savings

Check	Item	Tier 1	Tier 2	Tier 3	Description
	Complete Calcs	Y	Y	Y	Are energy calculations provided for all measures for which energy savings are being claimed in the loan application ⁺ ?
	Inputs	Y	Y	Y	Are energy calculations inputs and variables consistent with initial application?
	Assumptions	Y	Y	Y	Are all assumptions consistent with initial application?
	Detail	Y	Y	Y	Are calculations provided in sufficient detail to verify their accuracy and completeness?
	Judgment	Y	Y	Y	Are calculations consistent with initial application?
	Weather	N	Y	Y	(If changed) Is a weather file or sample weather file provided for calculations for non-lighting measures?
	Energy Model	N	Y	Y	Are updated calculations provided in spreadsheet 8760 or weather bin format, or as a calibrated energy model using publicly available energy software e.g. DOE-2?

⁺ Denotes differences between the checklist for PG&E's OBF Alternative Pathway and the CHEEF Commercial pilots. PG&E OBF AP refers to the "loan application" to the utility. CHEEF financing providers will have their own application procedures.

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QA Checklist Post-Installation Installation Verification

Check	Item	Tier 1	Tier 2	Tier 3	Description
	Install				
	Verif Plan	Y	Y	Y	Has installation verification been conducted per the initial plan?
	Update Savings	Y	Y	Y	Have updated energy savings and calculations been provided, if needed?
	Functional Tests	N	Y	Y	Does installation verification include equipment functional testing reports, punch lists, and/or spot measurements as appropriate?
	As-Built	N	N	Y	Are as-built drawings provided if appropriate?
	Cx	N	N	Y	Is a functional testing or commissioning (Cx) report included that documents testing performed, as appropriate?

QA Checklist Post-Installation Measurement & Verification Plan

Check	Item	Tier 1	Tier 2	Tier 3	Description
<input type="checkbox"/>	M&V Plan	Y	Y	Y	Has an updated M&V plan been provided, if project scope has changed?

QA Checklist Post-Installation Operations and Maintenance

Check	Item	Tier 1	Tier 2	Tier 3	Description
<input type="checkbox"/>	O&M Service	Y	Y	Y	Has O&M activity or service, e.g. training, been conducted post-installation per initial O&M service description in initial application?