3/22/16 CAEATFA Webinar Transcript

>> Good morning. Welcome to the second in a series of educational public workshops to develop criteria for a comparative assessment of energy efficiency financing programs. My name is Deana Carrillo I am the executive director of CAEATFA. We have the webinar and folks in the room but before we have some housekeeping items. For those of you in person please sign in or leave a business card in the back and in case of emergency we will be taking the stairs and walking [inaudible] when we have a question in the room we will ask you to come up to them I can speak into the mic so the folks on the computer can hear us or the webinar and for those in the webinar just raise your hand and Ashley Bonnett will be tracking everybody. Also these slides are available on their website and is one reminder the webinar is being recorded and will be part of the public record.

We have an agenda today I will provide the welcome and introductions now so you know where we are. In the first section we are going to hear about the evaluation efforts for leaders of the California Hub for Energy Efficiency Pilot Program Jennifer Caron is here from the Public Utilities Commission Megan Campbell and Jeevika Galhotra. With Opinion Dynamics will be presenting as well as Alex Hill.

The second presentation [inaudible] the presentation will be an observation or overview on both financing programs.

For those of you who are near to our process and last year, just a quick history, and last year's budget the legislature was spearheading a working group to identify criteria to eventually contracted a comparative assessment of energy efficiency programs in California. [Inaudible] that is the process we've been going through. We have followed with a series of workshops. This is a second with a presentation on the [inaudible] financing and a presentation next week for case providers. That will culminate in proposed criteria for the assessment that will go out to public comment. And we will bring the working group together to review that to propose material for the legislature.

So there's a little background in the timeline in and of itself it again we are open to questions on the process. As well as the [inaudible] and we do have a public comment period. If there are specific issues you want to hear about or they want to provide public comment you're welcome to do that. And encourage two.

With that I'm going to pass it over to Megan [inaudible]

>> Hi everyone I Megan Campbell with Opinion Dynamic and together with Alex Hill here [inaudible]

>> Hi everybody this is Alex Hill.

>> And eventually you will hear [inaudible] pretty big accident on the freeway coming in so she's trying to get here and she will join us in this presentation but we wanted to do today [inaudible] contributions to today's workshop thinking about comparative criteria for various areas and financing approaches we wanted to talk a little bit about how we plan to approach the evaluation specifically for the statewide pilots [inaudible] leading the charge on and we will talk about from what the plans are from the impact perspective there's also a process evaluation team [inaudible] on that will also talk a little bit about what the process evaluation has.

A little bit of an overview of what we are goi What we really want to communicate is how we plan to evaluate [inaudible] to get a good understanding of the techniques that will be applied to get an understanding of what the ultimate outcomes or criteria are going to be

[noise on microphone]

>> consider that against what might be coming out with the [inaudible] evaluations in case of valuations in the future. Some of the topics we will be discussing today I wanted to [inaudible] task of evaluation and also talks about different types of evaluation. Impact evaluation and how close we expect to come to that and [inaudible] evaluation as well plan to look at [inaudible] and what we can expect from each one of them. And then we will go into what our current impact evaluation approaches. And we are taking kind of to kind of paths for evaluating. One is the market-based approach. And one is a program centric approach. Anyone who is a part of the [inaudible] that we did last month when we were talking about [inaudible] evaluation and what would be a market-based transformation approach to looking [inaudible] overtime and a closer look at specific a program [inaudible] performance and outcomes the program has versus kind of broader affects and changes we are seeing in the market on one specific program. So we will talk about those two different types of approaches and where we stand with [inaudible] achieve pilots for both the market approach and the program centric approach.

Okay so let's talk a little bit about what these [inaudible] are and who we are as the evaluators. So CPUC hired firms or competitive bid process to conduct evaluations of these [inaudible] pilots and the firms that were selected were Opinion Dynamics and Dunsky Energy Consulting. A little bit of background [inaudible] have not met [inaudible] we actually have been evaluating energy efficiency programs within the [inaudible] from opinion polling's and lead to more broader based market research and specifically program evaluation and efficiency planning all the way back in the 1990s which is when we made the transition with our firm.

And we have evaluated multiple programs for the CPUC starting all the way back in [inaudible] and now it is, we evaluate both kind of standard energy efficiency programs and renewable type programs [inaudible] financing and how it relates to energy efficiency programs and renewable programs and we've evaluated a number of different programs financially across the country in [inaudible] did a couple and also actively involved in the funding approach for California financing programs.

[Inaudible]

>> sure, thanks Megan [inaudible] consulting from the team with ODC with opinion dynamics carrying out the impact evaluation. We are a specialized consulting house out of Montréal in Canada. And we have done both the design and the evaluation side of financing for number of years now. And we've been developing strategies and programs for a number of clients across the US and in Canada as well and have also been part of a number of evaluation efforts prior to this often in cooperation with opinion So these team has work together quite a bit before.

Our consulting company is really based on our founder Philip Dunsky's 25 years experience in the field along with a number of other seniors who are [inaudible] as well and we are playing a unique role I think around the California [inaudible] pilots in that we are both in the impact and on process evaluation side. So I will talk a little bit about the process I. We will hear more talk about the impact of evaluation today but it offered an interesting opportunity to create some coordination and some flow of information between the two different processes for evaluation, something that's very important for [inaudible] how the pilot would be addressed and get the information shared with everybody.

>> Okay I want to turn it over to Jen Caron here with the CPUC to talk a little bit about the [inaudible] and their evaluation.

>> Good morning I'm Jennifer with analytics at CPUC [inaudible] g and kind of their background going to provide   a little bit more context for how a little bit of context for how a little bit of context for so basically inaudible we wanted to expand [inaudible] divide the private capital market brought in access to financing have on build repayment options so [inaudible] could pay their utility bill and create a centralized human process really for the lenders. In terms of the role in terms of [inaudible] for the CPE go hand in hand with the program grams we authorize want to get early feedback on how the programs are performing. We will evaluate [inaudible] look at the evaluation [inaudible] implementation actually working and what are we getting out of the programs are we seeing energy-savings or cost-effectiveness. And we also want to use the information that we get to provide input into our future programs like [inaudible]

in terms of how this evaluation cycle works with the CPUC we have stakeholders. Some of you are in the room here or on the phone that helped develop the evaluation plan that is available online. [Inaudible] energy deficient role specifically at CPUC is a contract with the evaluation companies to manage specifically the impact related studies. [Inaudible] and the last thing that I wanted to share before I hand it over is how this process is going to go after these workshops are completed and the proposal is drawn out but [inaudible] processes here draft will be headed back to the CPUC and we will head back to the [inaudible] to identify limitation to actually [inaudible] once it is finalized it will also be available publicly [inaudible]. That's it for me I will hand it over [inaudible]

>> okay we've been talking a lot about these pilots we are assuming that all of you know what they are. And just in case some of you are not, are kind of new to it today, the pilots [inaudible] is actively trying to get off the ground and as Jen mentioned there are seven, two in the residential sector, when we caught the real pilot or the real program [inaudible] will be the first one hopefully to launch any day and there's also another program specifically in PG&E territory called EFLIC exploring [inaudible] approach four folks who especially [inaudible] payment mechanism.

Then there are five nonresidential plans [inaudible] and then one that is generally sort of larger [inaudible] residential ongoing [inaudible] family focus pilot. I will say that in terms of timing, these are all sort of [inaudible] jurisdiction we are actively trying to get all of these off the ground. None of them is officially launched yet. Can officially launch when we've got the first participant [inaudible] certainly they've been able to get involved in the committee products and [inaudible] getting launch but until we see a first participant [inaudible] project we can look at because it the evaluation team we are kind of waiting for that [inaudible].

As far as I understand it you can correct [inaudible] residential launch first and then we will be looking at some of the small business pilots to come on soon thereafter.

>> Yes agreed as we are launching the [inaudible] products we will be able to build the infrastructure for that repayment on the utility bill and how the [inaudible]

>> Can you repeat that for the folks on the webinar

>>[Inaudible] launching first and that will be followed by the on Bill. okay [inaudible] about different types of evaluation generally. And one type of evaluation we often refer to impact evaluation we have been doing already and I kind of like to look at this [inaudible] kind of evaluation and these types of evaluation tend to be very focused on energy outcomes. Specifically what are maybe the total kilowatt hours, or [inaudible] participants in a given program. So [inaudible] we typically refer to that as [inaudible]. How this program really is for the participants to deal with projects to take on financing how much does it really influence their behavior purchase decisions on the project [inaudible] financing initiative. With a have possibly done it on their own [inaudible] how much influences the program really having on what customers are doing as opposed to maybe what are things that might naturally occur in the market place on its own without any intervention.

We typically talk about that type of influence that a program is having [inaudible] we talk about it in terms of investor [inaudible] ratio sort of the ratio between [inaudible] and we also talk about it [inaudible] attribution so [inaudible] growth are all kind of talking about [inaudible] and another thing we talk about [inaudible] evaluation is looking at cost-effectiveness. [Inaudible] finance programs in particular as we talked about in the last workshop need to have a couple other, I guess constructs to be taken into consideration when they think about how they are going to approach calculated cost-effectiveness for freelance program versus what we've done traditionally in the past and looked at cost-effectiveness for energy efficiency programs. [Inaudible] a little bit later as the topic of what are some other concepts that we have to pull into our approach to cost-effectiveness and what does that mean for evaluating a program.

Those are typically core parts of an impact evaluation. [Inaudible] often the impact evaluation go above and beyond those kinds of core outcomes and they may also look at kind of non-imaging outcomes and benefits. May explore benefits such as [inaudible] health and safety issues in the home, or comfort in the home. Or maybe a benefit could be that a customer through the project is now able to [inaudible] the benefits that folks get from energy efficiency programs [inaudible] may not entirely be just energy savings. And so often impact evaluation is trying to look at and quantify some of those other benefits that are coming to the marketplace through the program intervention.

[inaudible] In impact evaluation if there were goals that specific goals that cater to [inaudible] specific goals for that savings of those were established for a program [inaudible] against those goals and then some assessment on how well [inaudible] the program. I say that it happens sometimes. There are very often programs

[white noise on Mic]

>> [inaudible] Try a new approach see how it went, and maybe never said any specific goal [inaudible] so often doing that kind of comparison can come from that foundational [inaudible] goals that were set for the program initially.

And then, so that is the way we assess the impact evaluation [inaudible] statewide pilot. There's also a process evaluation team. That is looking at other aspects of the program [inaudible] impact can talk a little bit about that.

>> Sure, thanks Megan this is where we are fortunate enough to be involved in both sides I will quickly introduce the work that's been done in the process evaluation side. It's been led by Evergreen

Economics as well as a team of consultants supporting that and I think the most important thing to understand the process evaluation is that it's not looking it's really looking at how the programs are being implemented and it's also an opportunity to get involved throughout the process to look at is the implementation fitting with the intention and are there opportunities for adjustment and trying out different approaches and perhaps even improvements along the way that can lead to some of those greater impacts without necessarily having to quantify them through the process evaluation.

So for the process evaluation has engaged in what we call early evaluation monitoring and verification pieces of work and those are represented by the two arrows on the slide. You see on the side. One is a logic model review where we looked at the logic models in the design programs, and take some time to assess how well the implementation of the plan is fit to the logic models and how well the logic models represent the intention of the programs themselves and get feedback and comment to the parties involved CAEAFTA so they can say the utilities as well.

The other work we've been involved with is related to speaking to some of the different partner groups that will be involved with the pilots. Such as HVAC contractors and PV contractors, setting up panels, getting to understand the challenges that contractors face currently and how the pilot is made and ability to sell the services and what they like to see from the pilots coming out by setting up panels and discussing this throughout the duration of the pilots and an opportunity to understand their thoughts going into the pilots themselves or thoughts during the pilots and reflection on how that [inaudible] them and at the end to get the feedback on what the end result was for them.

As well as we are also looking at the lender enrollment process and what are the most effective techniques that can be used for getting lenders on board and for contracting them in on boarding them onto the process. So all of this is ongoing. If moving in parallel to the impact evaluation but also in parallel to CAEATFA rolling out the program so falling into place and we have an opportunity to cooperate with them and get those two.

>> Okay okay so a little bit now coming back to the impact evaluation [inaudible] outcomes of what we are looking at there to the comparative criteria. A little bit on where we stand with evaluation for impact. Little different from the impact evaluation program that is in place [inaudible] a lot of what we've been doing for the last year or year and a half is foundational planning work in anticipation of the pilot launching. There were a lot of things that we need to take into consideration kind of looking [inaudible] efficiency programs and what might lead to [inaudible] evaluating finance programs and in particular to big topics we kind of worked out [inaudible] evaluate the prospects how we tease out the different [inaudible] financing such as rebates on one particular customer that might be other things to kind of work out and a lot of it has been from a foundational planning work and participation that when the pilots do launch [inaudible] and how are we going to explore attribution. So we are going to present today on kind of the outcome of those [inaudible] approach of attribution and cost-effectiveness for these pilots.

Again this is planning work. [Inaudible] we will solidify the true plans [inaudible] launch in case they have characteristics different from what we additionally set out right now and really timing of when we do impact evaluation is little uncertain and hard to fix at this point. Once we, likely the timing [inaudible] impact evaluation will likely be influenced by one or two things. One, that timeframe, if we have got from the first participants [inaudible] maybe 12 months after that or it may be specific to a specific cycle that the CPUC wants to look at [inaudible] take one snapshot in time [inaudible] looking at so far. Or it could be based on a participation threshold. It may be that it doesn't have [inaudible] impact and sort of wait until 100 participants come through and may be more until we have enough kind of critical mass to really start looking at impact. It's really uncertain at this point. It's hard to say. But you know, all I can say is [inaudible] set up monitoring [inaudible] so we could put our planning together. But we certainly at least right now have planned, have kind of set ourselves up for two different types of impact evaluation per one is a market-based approach and what is a program centric approach. In a market-based approach it's a really great thing to do a market-based study before before the program [inaudible] market-based approaches kind of giving a baseline of market conditions, what the customers are doing, what kind of financing are they already taking, how much energy efficiency are they doing, how much are they investing in it. This is a snapshot in time of what everybody is doing in terms of energy efficiency and how they are funding it. As a baseline, and overtime kind of looking at how those market conditions might change and whether those changes are influenced by these pilots coming on board. So [inaudible] done a lot of planning work and participation for future attribution and cost-effectiveness analysis in the impact pilot we've also done some large-scale residential market-based study [inaudible] like I said baseline for the forthcoming [inaudible] and residential pilots.

Okay so I want to start kind of going a little bit deeper into what we mean by that market-based approach. And also kind of relay a few of the kind of [inaudible] interesting from the market-based study and what's happening in the residential market. It is certainly not as thorough [inaudible] eight hours covering the entire study but we will give you a few teasers here and anybody who is interested in the full study can follow up with us [inaudible] public report which will be online by the end of this week.

So again, that market-based approach is really trying to get a baseline of conditions that you think might change because of the program intervention in the future. And so these market studies really aim to identify again, changes in the broad-based market outside just what is happening in a given program and trying to see if there are [inaudible] it is possible that say for example [inaudible] couple of energy efficiency programs on the market right now [inaudible] happening right now it's possible that [inaudible] pilots coming on board that lending institutions come on board [inaudible] they do really well and all the sudden we start [inaudible] other lenders maybe we want to get into this game on our own without any [inaudible] support that would be potentially a market change. And through kind of different data collection methods we would find a way to see did the pilots have influence on what the nonparticipating lenders are doing. That is a way to kind of see let's look at the market and see what's happening, let's see if anything transformed in such a way that maybe we don't necessarily need [inaudible] kind of started its own energy efficiency financing market that can kind of operate on its own without [inaudible] intervention.

That is the idea for the Mac-based approach. Baseline and residential now we are looking into a nonresidential baseline for the nonresidential [inaudible] that will come soon.

But to talk a little bit out what we need by market-based [inaudible] Mark will talk a little bit about that.

>> Sure thanks. I'm going to walk you through our approach to the market study that we just carried out. We actually carried out to market studies one for the residential market and one for nonresidential market for energy efficiency financing in California. I think, you know, Megan gave a good introduction to see what we are trying to achieve and one of the challenges in looking in markets is that they are not necessarily clearly defined. They are a bit nebulous. There are many factors in play. There are changes that we are not aware of their invisible hand so we cannot see of course that are at work with in

markets so trying to capture a snapshot in itself is quite a challenge. And our approach was to look at both the supply-side which is the people putting financing out into the market and just get an understanding as to who the players were and what kind of volume would be generated there but also to look at it from the demand side which was to talk to customers, residential and nonresidential customers to get a feeling as to how many of them are using financing, how many are using different types of financing. The idea then is to put those two perspectives together and to try to triangulation to of the people we are working with, but to try to compare the results from the two sites and see what conclusions we can draw of the overall size of the market, the contours, the factors that would play, the trajectory of different trends that are being witnessed. And all of that within a specific time as Megan set a snapshot of specific time in our case looked at the year 2014 as a baseline before we knew the pilots were not going to be in the market having [inaudible]. So [inaudible]

one thing I didn't list the specific activities that we engaged in, but I can do it from the past slide. From the supply-side we look at lender interviews as well as something called a mystery [inaudible] where we actually called up lenders and SMO kind of financing offer they could give based on customers of different profiles. They have different income profiles, different FICA score profiles, different kind or size of projects they wanted to engage in and understand what kind of interest rate and tender and what was available if anything.

On the demand side it was more straightforward customer surveys That were carried out, and so we are going to present the results of those two.

Oh sorry, you can go back.

[Laughter]

>> In doing the residential, just for people on the phone, at some point there may be slides that are different than what was distributed. We made a couple of last-minute changes to improve what we wanted to say today, so if if you are on the go to meeting you will see those but if you are following the slides that were distributed I will point out a slide that's been inserted so that you are aware and you do not get off track. So we are on slide number 22 and so far everything is the same that was sent out.

So essentially we are looking at is different indicators that can give us a picture as to markets. And these metrics you know we can develop the metrics that we thought were the financing pilots, the CHEEF pilots could exert some sort of influence or it may or may not, but we wanted to make sure that we were capturing that. So that includes what kind of products are available in the market. What kind of interest rates and terms are available what is the total volume of the market and included different players involved just to get a snapshot of what is there.

[Inaudible] time we may be aware of some other market influence that the pilots have and then we have data going back to our initial work that is within those file so we could pull out and try to add more metrics or there is may be some metrics that just not really appropriate and there really isn't going to be able to see so this is initial more than a guess, it is an expert opinion on what [inaudible] but of course that could change over time.

So what did we find when we looked at the market itself. Essentially we identified we are going to talk about these things called EE FPs. These are financing product specifically tied to energy-efficient products. Meaning that in order to get one you need to prove that you've got an energy efficiency component to whatever the work you are doing that is being supported by that financing. This is different than say a standard mortgage where you are just buying a house and maybe doing some energy efficiency upgrades but nobody asks you about it, that kind of thing just to make that clear we are going to keep referring to those as the EE FPs which is short for energy efficiency financing products.

We identify that there are essentially three kinds of products currently available in the market. Those are home-equity loans, term loans and PACE loans. And they are really defined by who is offering them, by the security that they require as well as by the underwriting that is carried out in order to approve who gets those loans and that really defines each of the different ones for instance in the case of the home-equity loans you have 60 of the standard mortgage banks offering them and they are backed by Federal Housing Authority guarantee. To the power saver register program which allows people to take out a slightly larger mortgage to include some energy efficiency upgrades with in the home purchase or even to remortgage.

The security that is offered is of course the standard mortgage lien along with the guarantee that comes from FHA. And the underwriting they do is the standard mortgage underwriting. So they look at the fico store, the property value, the debt to income/, I think homeowners have all been through this process and we know the questions that they are asking.

On the other hand with the energy efficiency term loan they tend to be asked more about credit unions, we have a mission driven lending objective. They are secured through the equipment itself or in some cases it is even unsecured, and they tend to look at your ability to pay in the case of a smaller credit union so they have more relationship based clientele. Or they look at your fico scores or what is your creditworthiness.

And as a result of being unsecured they can come with a slightly higher interest rate and tend to have shorter tenders as you said. And the culmination of interest rate and tender then of course leads to an impact on what is the monthly pai for which is ultimate where the products go [inaudible] and have a big impact on customer [inaudible].

The final category is the PACE on we identified 10lenders currently active in California or up until 2014 they were. The hero program of course being the largest I think many people are quite aware of that program. It is growing every year. What they are looking at as far as security is the packed impact of the property lien where there's been a lot of controversy about that falling ahead of the mortgage even being the primary lien collected to your property tax. So it is incredibly secure.

What they are really looking at when they are underwriting those loans is how much additional or excess equity you have in your home. You have enough excess equity that if a default everybody is going to be made whole through a resale of the property.

You can see these products are delivered, have very different criteria delivered by different players and as a result they have different interest rates and quite different loan tenders, and lead to a different experience for the borrower.

So from the demand-side, when we asked customers what kind of energy efficiency financing they were doing or essentially just about the efficiency improvement, we surveyed close to 1300 respondents. Anne's the vast majority were not using financing for the energy efficiency or energy-related upgrades because in some cases it's hard to self-report to identify what actually is energy efficiency versus energy-related upgrade. So 75% were doing it with their own plants, or did not think of what they were using, perhaps using a credit card but didn't think of it that way because they paid it off quickly but they didn't feel they were using financing in the conventional sense.

25% did feel they were using conventional financing but the vast majority of those, 80% were using what we call conventional financing. Not EFC's, not energy efficiency specific product but they were using retailer financing maybe through their contractor, a secured loan, may be standard consumer loan through the bank, putting it onto the standard mortgage without going through the power saver program. Perhaps even help from family and friends was also an area that people reported.

So at least a very small portion of the overall market is using these energy efficiency specific financing products or loan products in the market. And again on the demand-side it felt to PACE being the dominant player there. Term loans carrying a fairly large volume, quite a few people responded relative to the overall size. And we actually had nobody respond that they were using the home-equity loans. Despite the fact that they give quite good rates and they are attached to the existing mortgage and the property.

So back to the supply side to understand the volume that we saw by essentially the lenders who would report values to us. Not everybody is willing to divulge all their information. In some cases it is proprietary information. It is their business. But many of them were very forthcoming and actually [inaudible] the PACE program provided [inaudible] PACE program is a very useful source of information to get volumes on PACE. As well as other sources.

So in 2014 this is essentially the breakdown in volume from the supply side of the three major types of energy efficiency financing products with you know, PACE representing around 90% of the total market volume. The term loans and the credit unions about 8%, and a very small sliver coming from the energy efficiency mortgages and home-equity loans. To a total market value of on the order of 220 million. Plus or minus a large percentage because of those reporting questions around who would report or not [inaudible] around that.

Using that as a basis we can also get a ballpark on the conventional financing.Before we said there's about 75 or 80% of customers are reported using financing for energy-related upgrades versus conventional however we also found that the amount of money for per project was smaller for conventional financing. So it ends up being about a 4 to 1 ratio to the mat of conventional financing used for energy related upgrades versus what we are seeing from the specialized energy efficiency.

>> And I also want to mention we looked at loan volume [inaudible] 2014 and also for PACE a little bit of a [inaudible] residential customers based on how much the loans [inaudible] energy efficiency versus renewable and other areas. [inaudible] Shows up as a smaller number than maybe you've heard about residential [inaudible]

>> that's a good point. We actually stripped out the peer solar component, when we say renewables we mean solar largely from all the different loans I don't believe solar is a big component of home-equity. There's quite a few credit union term loans related to solar.

>> Can you repeat, you mentioned a minute ago about a 4 to 1 ratio of conventional financing to the energy efficiency specific and I did not catch what you are saying.

>> Sure I can back up on that. So if we go back one slide I think it will help a little bit. So if we look at the second tier here what we see is that of the customers who reported using financing to support and energy-related upgrade, that is the second tier, 81% use the conventional financing project product that didn't have specific energy efficiency criteria attached to it whereas 14% use one of those EFP, one of the energy efficiency loans, however in part of the research we also asked how much they were using, how much, what is the size of the, the cost of the project and the cost is actually much g much greater for the energy efficiency financing loans compared to conventional loans so it ended up being here it is a 7 to 1 ratio it ended up being more of a 4 to 1 ratio on a dollar value.

[Several voices]

>> Volume what is being financed with conventional methods versus specific

>> We are trying to figure out how much lending volume is happening for energy efficiency specifically versus what is happening with conventional lending.

[Inaudible]

>> The...um... The share of the market is larger,, the share of the customer base is larger, but the share of the measure financed is small

>> The share of the customer base is smaller but the share of the dollar value loan is larger.

>> From the conventional perspective

[several voices]

>> and actually what he was saying about we will see in a couple slides what he was talking about in the different project size is what we are seeing coming through with NEB FPS versus funded through conventional

>> So I'm going to call out one that pieced of the research that we did

>> This one is not on the slides if you are trying to follow along this is a new magic

>> This is the new slide number 26. So from this point forward we are going to be one number greater than whatever numbers are on your slide if you are using the paper version. [Inaudible] so the mystery bore was very revealing because it was an opportunity to find out what banks and credit unions and other lending institutions are currently offering and how that's going to compare to what is going to be available to the real programs and just in this case we are looking at the residential cases. The redline and this graph represents at the time what would be the target interest rate for the program. It says the real program offers or offers that the lenders cap maximum interest rates that they offer.

[Inaudible]

>> They are not allowed to go higher than that. They can go lower of course in order to attract customers. The idea is that the loan reduces the risk so therefore a lower risk should have lower return, so therefore they can put a more competitive product in the market.

When we looked at how that compared to what would be offered in the market for essentially four kinds of customers, you have people who have slightly above average credit worthiness through the fico score or low fico score looking for secured loan, or people who have again, above average credit worthiness versus low credit worthiness going through unsecured loan products. In the case of the real program it is actually an unsecured loan product. It's actually more competitive on the right-hand side of the graph than it is on the left-hand side. To give you an idea the secured might be home-equity loan or the PACE loan where is the unsecured is more equivalent to term loan, your consumer loan that you might take out for like a new television.

What we found is that it would be hard on a purely interest-rate basis [inaudible] ceiling actually falls higher than the secured loans for the high credit worthy, or high individual because that's a low risk proposition for a bank, they can come in and offer you a good rate. It is tied to some form of equity so they know they are going to get paid back one way or another and you are not a significant credit risk. However for the low fico score, the people that are challenge for the credit worthiness, the range that was offered actually falls quite a bit above, the blue boxes represent what one standard deviation within the range of what responses we got. So you can see it falls within the blue box, the line in the middle represents the actual meaning of the responses they had. So the ceiling is about competitive with the mean rate you get for the low fico score individual who would be approaching a bank for a secured loan.

When you move to unsecured you see both the average or above average fico score individuals as well as a low fico score individuals, the mean rates are offered by the bank are significantly higher than what [inaudible] would offer which suggest there is sufficient, significant room in the market place either for the loans to be more competitive through the real program, or actually even though there were interest rates reported for the low fico score unsecured loan in fact they were not really offered. And our understanding from this study was that this was offered in theory but it would be very hard for somebody with a fico score of 586 to close on an unsecured loan and again, it might be an area of the market place that has not been...

So, this comes back to what we were saying before. These are some numbers representing what is the average project size. So I think the two blue numbers are really what is worth calling out here. The energy efficiency financing products were supporting projects on average with the size about $25,000. With conventional financing around 17,000. That may be related to the cost of interest or it may be related to requirements of the loans that push people toward doing larger projects.

Also if you look at the breakdown of what was being supportedr EFP's are supporting more of the renewables such as weatherization, more of the whole home approach that, the heating systems windows and types of cooling systems as well which conventionally are much more leaning toward your [inaudible] one shot replacement, end-of-life replacement, emergency replacement. And that is the end of the market.

>> Thanks, Alex. Again, we just want to give you a couple things [inaudible] having seen the slides as we [inaudible] we wanted to kind of communicate before we go to the program centric approach that if you have a very large comprehensive face value market study in support of residential [inaudible] and it also really supports other residential financing as well. [Inaudible] and we are not sure again when we might do [inaudible] trying to look at the market [inaudible] able to see how much activity [inaudible] in the pilots before we decide to invest in another study with the idea that [inaudible] effects are happening we have enough volume out there and kind of enough hearsay of other products entering the market that it makes sense to do another snapshot.

So mainly about kind of market-based approaches really helpful not just in the pilots but also any other efficiency finance projects in the market in California. When we now kind of are moving to look at the more program centric approach which I think will probably be a little bit more relevant to the idea of a working group and [inaudible] criteria to kind of compare the different programs, the market-based approach is great but as a long-term strategy probably not kind of a huge [inaudible] place to look for comparative criteria. Probably more of a program centric approach looking at the impact evaluations [inaudible] focus [inaudible] comparative criteria.

Here again coming back [inaudible] impact evaluation gross savings, how much [inaudible] project estimations, how much financing [inaudible] specifically and cost effectiveness what are the benefits we are seeing versus the costs.

Start with gross savings. Methods that we actually employee, again were [inaudible] on how the pilots are rolled out. What kind of things we are going to be able to track in our data buses. What they will be able to get from participants from different lending institutions. There's a lot of customer confidentiality involved in a lot of [inaudible] give anything, so there will be an interesting [inaudible] process to see how that rolls out and what we are truly able to achieve in terms of information from the customers themselves participating in the pilots. And also remains to see how much overlap we will have with the finance pilots especially energy efficiency resource programs and local governments [inaudible] are putting out there. And as a prediction I would guess [inaudible] overlap to what we are seeing in some of these regional programs that are out there [inaudible] see 100% overlap with the energy upgrades [inaudible] where maybe just one or two will have [inaudible] as well. So our guess is that pilots are going to roll out [inaudible] financing certainly makes a lot of sense when you're doing a whole house upgrade, when you're project costs are getting up over 20 grand for the whole house approach and that is where you might be thinking about financing to support it. So I imagine those programs would likely be [inaudible] quite a bit but it remains to be seen. Those factors once available from the lenders and participants and what's available from the rebate programs if they are participating in those as well will really determine what growth [inaudible] methods are possible and feasible.

So I'm going to give you some options that we will likely go through. And one is the kind of base level of looking at deer values. These are the energy efficiency kind of estimate for energy savings. This is average energy savings. Some people could save more. Some people could save left [inaudible] population or [inaudible] up to 16 there are a number of comprehensive database accrued from the best estimates on engineering today and what the average energy savings are for a given product. So [inaudible] for energy efficiency.

So those values are there and as long as the programs on the pilots or rebate programs people are able to see exactly what measures they did, were able to align those with some of the measures that we [inaudible] database we can at least get some initial estimate of what we think the gross energy savings are for the participants. That is I would say probably the least [inaudible] method that we could employ but also likely the easiest [inaudible].

Another method option is some kind of telephone verification method. Typically this is done with a [inaudible] and at this point we are trying to kind of [inaudible] do the measurements that we have for you as a customer of the program, did you really install those and are those really install. Do you find sometimes things do not operate. Things worked install properly, return to somebody after the fact and this is kind of a check to extrapolate those findings to the whole population. Sometimes, it is rare, but sometimes the records [inaudible] those kinds of things that we are trying to [inaudible] and corrected to get the true estimate [inaudible] all the projects and what they actually are [inaudible].

Then we can actually go further to the on-site visit to customer homes [inaudible] and go to a sample of them. And also do verifications for records to [inaudible] do different tools to kind of really actually measure what the energy savings is for different projects and kind of extrapolate those findings to the other customers [inaudible].

And finally probably the most rigorous approach and the one that we would ideally like to do is the information that is available [inaudible] so that could be done in a number of different ways [inaudible] it would be a look at the energy efficiency of the home before we do the project after we did the project adjusting for weather conditions and maybe also get a baseline [inaudible] anyway and just something to [inaudible] and that gives us some kind of a [inaudible] of the gross energy savings that are coming about with the program. So all the different options that we have again what we ultimately select will depend on a number of factors and likely what is available on program tracking. And really how much overlap is happening in specific programs.

The rebate programs have separate evaluations. They have separate evaluators for those programs. The reason there why the overlap matters is you have a team that's finance and another team that's just looking at [inaudible] California [inaudible] impact we don't want to double count [inaudible] efforts here so depending on where the overlap is there also may be some [inaudible] repeat whatever methods they were planning for the program and maybe also our team comes in and looking attach a vision cost effectiveness and we keep the gross savings [inaudible] have to see how those things roll out.

>> Use the term billing analysis for the final one that you talked about. Is that looking at the post consumption data that we are getting, or... Is it actually is billing actually look at what the utility bill.. Is, or just the

>> it is consumption data we just call it billing analysis because it comes from [inaudible] but you are right it is not the best

>> And that would be the post project... Kind of taking the post project data back to combining it to what you cleaned from the customer interviews?

>> Right. Exactly. Okay, so I'm going to do a , very oversimplistic approach for how this might [inaudible] for someone who participates in the [inaudible] pilot just to help kind of bring everyone up to speed who is maybe not in the evaluation community. And anyone who's in the evaluation community forgive me this is a very focused approach. So let's say a PG&E electric only residential customer installs [inaudible] wwhile installation HVAC system and new roofs. Let's say they received a great financing deal through the [inaudible] pilot and also retrieved an attractive rebate from the PGE [inaudible] for the whole house [inaudible] here's kind of an illustrated example for what we might use for the particular customer-- in gross savings. A first step may be to see [inaudible] an estimate for all the different measures for installation of HVAC [inaudible] able to look at that and they were able to [inaudible] just for the purposes again of illustration of that [inaudible] probably should save around 1500 [inaudible] then we did an evaluation of the customers [inaudible] then we get an on-site verification and we also see yeah, everything is in there, everything [inaudible] all the home characteristics were correct. All the updates are correct and again the insulation rates [inaudible] then we come and we do analysis

[inaudible] your control for a number of factors [inaudible] then we call them and we get that participant and we call [inaudible] rate of 90% and then we adjust the gross savings form 1500 down to 1350. When we come in [inaudible] evaluation we hear a lot about verification [inaudible] realization rate is to talk about an over simple fight approach kind of step-by-step this is what we would do for one particular customer kind of chewing it out [inaudible] billing it out to all customers and [inaudible] telephone and on-site verifications usually just a sample [inaudible] those are kind of extrapolate it out.

So that is an over simplified approach of how we may [inaudible] the pilot. Take that example in your mind because it's going to be important when we talk what attributions and how then we would take that customer now what we estimate 1350 [inaudible] total hours of savings now how do we figure out how much the program really is [inaudible]

>> Thanks Megan, hi everyone. So I'm going to talk a little bit about net savings or what we have been calling attribution [inaudible] interchangeable

[noise on microphone]

>> So similar to [inaudible] either customers or nonparticipants, or a number of different stakeholders that [inaudible] to find out what was the actual influence of the program on these customers to install these particular measures. So we looked at I think about 17 different methods and decided that the three methods that would be ideal for these finance pilots would be self-report would be that you are going up to the customer and asking them the latent class discrete choice modeling method where you are not just asking participants but also nonparticipants and the nested logit modeling. So essentially all three of these methods have a data collection [inaudible] where you are going to talk to customers and collecting data which means its primary data collection through surveys. And I mentioned a three methods here. We don't exactly know which of these three will apply to each of the pilots. It really depends on the design, the final design and the number that ultimately end up participating in the pilot.

But if we do use more than one method we will come up with a way on how to sort of combine the results to get one result.

So just a little bit more detail on the types of methods... It looks like so the first when I was talking about, self-report, this is directly going to those customers who participated in the pilots in asking them what they would have done without the program. You know, we ask them about whether they would have installed the same type of measure, the same efficiency level at the same time period that they did. Or just anything else that might have influenced their decision to participate and at this point we are anticipating that we will use this method for all pilots residential and nonresidential.

The second method that I talked about, the latent class discrete choice is essentially a very good method for estimating attribution early on, before the pilot has sort of finished its term. It is ideal for pilots because you can get a pretty early on estimate of what customers are thinking about. They don't have to be program participants. They can be nonparticipants and essentially we get what is called a stated preference. So we give them several options and we see how they sort of pick based on what the program design is, what's offered in the market, and then based on how they are picking their options we sort of [inaudible] what they would've done outside of the program.

And essentially we would, we could use this method for both residential or nonresidential programs.I think it just depends on whether we want the early results are not and whether evaluation budgets are going to support this or not. So what the interest level is.

And then finally the nested logit modeling is similar to self-report where you're asking customers on what they have done, but we don't directly ask them what else would you have done. We sort of like give them choices of what they did and what influenced it. Was it one thing or another, how would they rate one thing over another. So this is what we called sort of the real preferences. If they've already gone through the program they've done the measures and installed whatever they were going to install it now we are trying to parse out what influence factors at each point of the discussion. So we collect the data through surveys and essentially model the results.

The one caveat using this method is you really have to havea large enough sample size or large enough population to do this on. So if you have about 100 participants, this is not the method to use. You would need at least I would say 3 to 400 customers to get a decent result.

So again, we would anticipate using this with our residential programs but only if they have enough participants for us to use this method.

So the next slide please. So carrying forward Megan's example of someone who has gone through the program with a PG&E customer, what did we choose we were going to do the self-report method we go out and talk to the customer and really asked what influence them what they have done without the program, would they have done similar methods, similar timing etc. And so we really figure out that this customer is a 20% free rider which means there's a 20% chance they would've done the exact same thing they would've done outside the program which means 80% of the decision was influenced through the program. And so, if you take 80% of the 1350 K WH that we had in the earlier slide it essentially comes down to 1080 K WH which is now a realization rate of 72%.

So, this is howI guess attribution will affect ultimately what we [inaudible] to the program for a customer. So I think that is all I had. It is a little bit of a complex idea, but simplified here, but again if there are questions... Or things that you... Want clarity on please feel free to reach out to us... Or you

>> Thanks [inaudible] now that we've gone from net savings we are going to talk about the cost effectiveness approach. For the pilots as well, where it stands now.

>> Sure, this is, I think this becomes where [inaudible] in terms of complexity for each of these. But we will see if we can get through this and leave everybody with somewhat of an understanding of this question because we find it to be a pretty fascinating subject. With ramifications when we are looking at how the pilots will be viewed and how financing programs in general are viewed.

So cost effectiveness is essentially a test of how the costs and the benefits relate to each other, the size of the total cost versus the size of the total benefit. Obviously in any investment that society makes or an individual makes you always want the benefit to some degree to exceed the cost. And the question is how do you define what those benefits are and how do you define what the costs are.

So in the case of California's current approach to energy efficiency incentive programs there is a framework which defines very clearly how cost effectiveness is assessed for resource programs. And the CHEEF pilots has been determined as a research program so they are actually subject to the same framework currently. And that means that the programs that are designed to obtain net savings, those kilowatt hours that Megan [inaudible] were just talking about the programs the CHEEF programs are designed specifically to go up there and make new savings of kilowatt hours happen. And therefore they are subject to some sort of cost-effectiveness analysis.

Under the current framework there are two tests that are used most recently.I'm going to talk about cost-effectiveness with an assumption that most of our audience today has some understanding about how this [inaudible] energy efficiency incentive programs and then adding to it our understandings that are new for financing. So for people who don't maybe have much of a background in cost-effectiveness itself I refer you to the CPUC website where I believe the framework is available for review that is already in place. And that framework applies primarily the program administrator cost test, which is a test of the utilities cost and savings benefits only, as well as a total resource cost test, which brings together the utilities costs and benefits as well as the participant cost and benefits. Taking a global approach to what is the overall you know, cost-benefit ratio of this intervention.

And these tests are used to dual purposes. In the one case they are used before program launch in order to screen programs to say which ones appear to have merit going out into the field. It looks as though they are going to deliver... I'm sorry deliver benefits in excess to the cost. And then ex post after the program has been run to then going back to look at what the actual costs and benefits were to the program and also to put some scoring value on that so that programs can be compared and contrasted.

Again to the online participants there are a couple of new slides and changes that have been made so if you are able to follow through GoToMeeting please do and I will tell you when I changed.

So when we look at financing programs in general compared to incentive programs we have

[noise on microphone]

>> Essentially one of the biggest differences when we are trying to assess the costs and benefits of a financing program compared to an incentive program is the biggest one is time. Essentially in ace incentive program you deliver the incentive program and the measures are implement it and the savings can be compared quite soon so these can be tied up in a pretty short timeframe that you want to see how the benefits relate to each other of course you have [inaudible] measures to how long they will have an effect within the lifetime but the intervention can be assessed on a pretty short term and the costs are known up front and the amount of incentives delivered is known up front.

Financing is quite different you are looking at added benefit that is providing say [inaudible] reserve or some type of long-term financing up to 20 or 25 years in some cases longer. And you don't know exactly when the money is going to be paid back, how much do I need to get paid back what is going to happen to interest rates within the next 20 years. Maybe there is going to be another economic crisis. Maybe there will be huge default rates, 20 years is a long time when you are looking to something like financing. And the effects can be felt throughout the entire 20 years on the cost and to some degree on the benefits as well. So that is the first challenge we have within the financing program to determine the cost effectiveness.

The second is the question of scope and I will dig into that a little bit more in the next slide but what exactly are you going to look at. We have talked about you got participant perspective versus societal respect about what will give you the ingredients to that analysis. [Inaudible] and the last one is the attribution which Jenna could just talked about.How exactly are you going to interview the cost particular when a financing program is being delivered in parallel to and incentive program. How are you going to attribute the benefits and how are you going to attribute the costs, where they may have some overlap. And all of these are going to affect the number you get back from your cost-effectiveness test and how you interpret them.

So to look at the time, and I think it was pretty well explained on the first graph, this is a bit of a quick overview of what we mean by scope. If you look at let's say the whole home energy efficiency project it's really made up of three cost components. You've got your incremental cost on top, which are specifically what are you paying in order to do an energy efficiency version of the home upgrade versus just doing the standard. Here the baseline costs for the energy equipment so let's say for instance an air conditioner as part of that project and the normal air conditioners 3000 but the energy-efficient one is 4000. 3000 is the baseline costs and the additional 1000 is the incremental. But then you also have the non-energy efficiency equivalent so in order to put in the air conditioner you also have to build a new deck to put it on or there are other interventions you have to do in your home in order to insert better equipment or at the same time you also put in better windows or do other elements of the project which are related at the same time and in some cases they may be eligible for financing.

So in the case of a financing program the amount of money that is used in the program itself is a tiny portion of it. Whereas compared to an incentive program [inaudible] all at once sorry about that the incentive program actually covers a large portion of the energy [inaudible] specific cost to the involvement so there's a different advantage to the scope and the main thing to take away is even though the financing program is kind of [inaudible extends down into the nonenergy efficiency program and actually the CHEEF pilots include up to 30% of the financing can go towards related of course aspects of the product which may not be specifically the energy efficiency eligible energy efficiency measure itself in order to allow you to do a comprehensive project [inaudible].

So that is what I mean by one of the scope questions, how are you going to account for how you are covering the different pieces that are being impacted.

So, the next slide here, I will go through a few of the areas where we see differences to how different financing programs may need to be viewed [inaudible] when you are assessing the cost and benefit in looking at the scope. Everything in gray is what we feel are pretty much analogous between incentive and financing programs such as the administrative marketing costs, the participant costs to carry out the project, the incentive cost of course, the short-term, actual savings achieved I think of course and utilities, the average cost, a lot of these are impacted particular by financing. There can be questions to whether pilot program should have set up costs included or not. [Inaudible] in particular when you look at the CHEEF pilot is a very different kind of mechanism then and incentive. It is not really a direct cost. You're not handing money to participants the way you would. Then instead what you are doing is putting aside a parcel of money that is going to [inaudible] secure a portion of the loans given out by third parties so there are really two costs associated with that. One is how much you actually going to pay out of the loan-loss reserve to those lenders when there are defaults or delinquencies, which is an unknown factor you can forecast that you will not actually know until it actually comes about but that has to be q quantified within the cost.

The second piece is what is the lost opportunity or the opportunity cost of putting aside $20 million or $15 million or $10 million and receiving in the interim and a low-interest you can use that money for the normal options whether it's ratepayer money or utility money or whatever money there's always an option cost into putting it to a specific activity particularly a low interest return.

And then there's related cost to collection and incentive you hand the money out and do not go back and ask people for it and don't have mechanisms really for that.

Then there are the long-term market transformations, sorry [inaudible] losing my voice. Those long-term savings, that market transformation relates to the market study we carried out. What are going to be the ripple effects of the pilot and how can you account for them. As a resource program you are not necessarily obligated to look at that. But given the instructions that we have had from looking at the market it is an area of interest and we look at financing in general. It sort of straddles the line. It definitely has market impacts. For instance if other lenders have an interesting recipe that comes out of the pilot and they want to emulate it from their own lending and there is certainly a ripple effect, market transformation effect.

Then there's the question of nonenergy benefits. Currently they are not considered within California's framework. However, economic theory would say that... You know, participant would never spend the 30% in order to achieve something that has zero value. So they are clearly spending the money in order to get some value back and that's a benefit that comes back to them. So ignoring that within the financing program would actually be putting the financing program at a huge disadvantage when assessing the cost effectiveness because you have all of the participant costs which return no value because currently there is no room to account for non [inaudible]-.

So this is another challenge.What do you put the ratio of the benefit to the actual cost on that and how do you assess those?

and another one of the big challenges is the reduced borrowing costs. If you remember we showed the mystery borrower results before and showed the ceiling rates for the real program for instance is what, is lower than what people expect to pay in the market for term loan or some sort of loan product in order to start the project and this has of course you can get a lower interest loan it's going to have a significant benefit back to the participants in the lower cost of capital, lower overall cost of the project when they choose to finance it is going to be a benefit attached to that.

The benefit is also going to expend not just on the energy- equipment but also on the 30% of nonenergy efficiency, eligible L energy efficiency measures as well so it's a challenging piece to cover.

[Inaudible] utilities weighted average cost of capital and we also have the loan rates as well as the loan-loss deserved interest rates that are going to come back and may adjust with time, over 20 years. It's very hard to measure.

[Inaudible]

>> It's okay if we run a little over.

>> So, in developing our approach to this we did a test run using the best assumption that we could on the real programs that I'm not going to present any numbers. Going to show you what the overall trends are, how this[inaudible]. So essentially cost-effectiveness test is a balancing we said of the benefits on one side and the cost on the other side. So these are two pie graphs representing what is constituent cost for TRC that would be performed on the real program.

On the left we have the benefits and on the right we have a pie graph.The relative size of those pie graphs is not, I've tried to make them [inaudible] in size I think there's maybe a bit of a difference but the point is really what the constituent elements are and what it would do to the relative size of the pie depending on which would be did included within this benefit scope and which ones would not.

If we look at the cost side beginning with, I think this is more clearly understood.You have the participant cost being the biggest piece of the cost. All the money people have to spend themselves in order to carry out the project. You've got of course administration and marketing you've got the loan losses or management, you've got a small slice for loan losses themselves, the money going to be paid to the lenders for default assuming we have low default rates. Which is [inaudible] by the actual opportunity cost of putting the money up front.

Within the benefit side, this is where we see [inaudible] so you have your energy savings benefit which are the blue, the dark blue slice of the pie. And then you've got energy market transformation you know, light blue, which is that ripple effect and those two are colored because they are currently conserved within the framework but when we look at almost 80% of the pie it is made up of a reduced interest rate impact and your nonenergy benefits. Which currently would not be viewed if you are looking at [inaudible].

You can understand if we put these two pies on the scale and we were trying to assess the relative size of them and in the one case we would consider including all of the potential benefits [inaudible] nonenergy benefits and we way that I guess the con side maybe they will have a nice balance. If we take 80% out of the gray area out of the benefits pie it's going to be a lot harder under the total resource cost test for those two pies to balance each other. We will talk a little bit about the sensitivities around that but essentially the message is that the reduced rate on impact and nonenergy impact are significant and may outweigh the actual energy savings impact as well.

>> I have a comment that I'm going to hold but just clarification question and we are using the reduced APR is this a shortcut catchall to capture the expanded access, or are you specifically talking about a reduction in APR?because in our conversations with lenders about what the loan-loss reserve is able to help them what do we get what are the benefits we get to the cost tickly around the commercial underwriting is much more complex and different [inaudible] providers have very different models including some fixed The benefit to the customer... I think in an eventual... The benefit to the customer is not only captured in the rate, there are things like different terms, there is access to borrowers who may not have qualified because their time in business is too short. So if we eventually went back and compared their rate through this program to what they might pay for a totally different type of financing we might be able to get there but it is a lot harder than kind of an apples to apples comparison in the residential market. So I'm just wondering if the APR sort of is capturing this general access to finance benefit or whether we might need to kind of flesh that out a little bit more deeply later in the conversation.

>> I have a quick answer for you. I think there is a much longer answer as well. The answer is this is only looking at the residential market. Some of the complexities on the commercial side that are not captured here whatsoever and we are aware of them but we have not run through this process on the commercial side. So it is easier as you point out side and also because we are also trying to keep up with [inaudible] we are further advanced on the residential side.

>> The comment is so relevant that it is not just a reduction of interest rates but also [inaudible] access to finance.

>> Exactly so this would be a catchall for that but of course in itself there are complexities and wrinkles to how that gets Assessed as well. Once you start to peel back the layers on during the analysis you can get granular and very much into the details and this will be an ongoing discussion. I'm not trying to present something that this is the way, it's kind of we've done more of an exploratory initial, what would this be, how would you go about trying to capture some of these, and what is the relative size of those impacts potentially depending on what the program may look like. And a lot of this is based on an assumption of what we know now, to the degree of certainty we know that now. Because the program has not rolled out yet and it is still in the design phase. So, it is the best understanding we have at this point but it's all going to evolve as the programs rollout and as better knowledge is available. Yes that's a complex issue. It is measurable to the degree that you have good information and in our assessment what it appears is when you take all of those APR impacts is that those could be, those could have quite a significant perhaps even half of the overall impact of what the CHEEF pilots deliver as far as a benefit goes. You know over and above the energy savings themselves. Similarly then nonenergy impacts as well when you account for the 30%, up to 30% that people may put in place as well is of course the standard nonenergy benefits.

[Inaudible]

>> so we will keep it moving

>> That was me [inaudible]

>> So, the key take away here is depending on what you allow to be in the pie will determine how utility the pie essentially and that is the question. When we get to actually doing the cost effect in analysis there will be using to framework which will be sort of a more strict interpretation of what you can include and what you cannot as well as alongside that looking at all of the benefits and see how they result and compare at the time when the real information from the program is actually available and we can have this discussion.

If we look at it from purely the program administrators perspective it is actually quite a bit simpler we see on the cost side the pie has changed and it looks like quite a different pie. It's actually almost exactly the same pie minus the participant cost. [Inaudible] participant cost there, and on the PAC benefit its direct energy savings and the market transformation savings. So here, there are not any, well there is a gray one on the LLR... I mean the benefit size, we don't have any that are not currently being captured within the framework so the PAC test is actually more straightforward and it should be quite a clear path forward in order to be able to do a PAC test using the [inaudible].

The other thing we did was we actually did a sensitivity taking the expected values as well as a low and high range. I'm going to quickly walk through this. [Inaudible] on time just to point out the key factors we see in this one. We looked at the setup cost the covered losses the discount rate, APR impact, loan duration, savings attribution, the non-energy efficiency measure NEBs impact as well as the market effects. How do these all, how sensitive are your TRC and PAC results. And what we see essentially the savings attribution on the PAC side is huge. How you attribute the savings is really going to determine how well you do on the PAC test. Less so on the TRC side because of the great i [inaudible] and the nonenergy benefits. Discount rate has impact on both sides. Although it is much more, the PAC again because on the cost side the PAC test is much more related to the lost opportunity test related to keeping the loan-loss reserves in escrow.

And finally the market effects are again much bigger on your PAC test side than on the TRC side.

With interesting to see is that your TRC really becomes most sensitive as you saw, the loan duration we talked about has a big impact as well and then of course the nonenergy impacts related to the [inaudible].

So to wrap this up... What does this all mean as we move forward is that essentially the cost effectiveness tests are particularly the PAC is extremely sensitive to attribution of savings incentive and financing programs. So it's very important that these are assessed [inaudible] as possibly and they are also [inaudible] on the incentive programs that run alongside. In the financing programs are subject to a range of benefits that may not be captured [inaudible] and the approach will be to look at how this would [inaudible] benefits versus how would it be done under the existing. The PAC test seems to fit quite easily into the [inaudible] model whereas the TRC test is a bit harder to maneuver to get an active result and I think time will tell whether this is an actually appropriate test for financing.

>> Okay. So just one more slide to wrap up and some key takeaways from this and what does all this that we have presented mean, this topic of [inaudible] criteria for comparing finance designs. Again I think we have said it a few times but certainly timing, when we go in for impact evaluation and the methods that are employed will be finalized in a very program centric evaluation plan. That is going to be developed after each pilot launches and gain some participants. Once we see participants and the pilots will see the data we have available to us and we will write some individual specific evaluation plans with timelines, approaches etc. for each pilot.

But again, the impact evaluation efforts we know will at minimum be able to produce an estimate of gross savings for the program, net savings accounting for the attribution influence of the program and also cost effectiveness. Looking at TRC and the PAC and at least our plans right now are to try to employ methods that allow us, impact evaluation to tell what the cost effectiveness would be for these programs including [inaudible] some energy benefits and where you don't.

And also just a few [inaudible] considerations as we think about comparative criteria. Not all databases are going to necessarily give us the information that we want to be able to estimate savings through looking at the energy efficiency resources database for estimates on energy savings. We know that some of the programs PACE for example may not necessarily be tracking the individual specifications on measures that participants or customers are adopting as part of their projects, making it completely impossible to really look up some sort of estimate for energy savings and what they are getting.

If that is the case, if databases do not allowfor that kind of matchup to be able to do estimates on kind of a per project or per measure level we will very likely have to mainly resort to consumption analysis, billing analysis which also may have some challenges there as well if we look at some of the programs that are operating outside of the pilots. And where did they really set themselves up for identifying folks based on the account number we can track back to utility records and also getting the permission to be able to access that customers consumption data. All that may be taken into account but it's likely that maybe the consumption office may be the only method that we could potentially employ across all different types of programs.

And in terms of attribution, we know that our approach is going to be a participant survey method. We are not sure what PACE plans are, or other kinds of finance designs that are kind of outside of our evaluation jurisdiction but very likely we will require some kind of participant survey and other programs as well. Hopefully employing similar methods to what we are doing. And in fact we have been in coordination with a firm that is doing a hero PACE evaluation and been in coordination on methods. So where we can kind of get in front of other evaluation firms that are looking at programs we are trying to align our method so that the outputs [inaudible] comparison that we can get.

Okay, so that is it from us. What would you like [inaudible] encroached on our time today and we have got Frank needing to present as well.

>>[Inaudible] LBS so I think some of the questions will be similar [inaudible] the approaches are similar so I will look at people in the room [inaudible] OBF

[noise on microphone]

>> I've been doing on bill financing since it first became a phrase back in 2004. ODC covered most of the technical stuff. [inaudible] I know a lot about OBF, but I do not know that much about [inaudible] that language but I don't know what it means. So regression analysis [inaudible] I will not even try to go into any of that stuff. The importance of this particular slide is just to note that on bill financing is available from all four utilities in California. Here is our service territory so it is widely available in the state.

A little bit of context of the landscape for energy efficiency finance programs. You heard again a bit about this from ODC. We have been offering OBF since 2006 in the market place. And we are looking forward to working with all of these different programs as we move forward. I'm going to try to go fast.

So this is a little bit of background about what OBFis, some key takeaways here interest zero permits and interest is a pretty good deal. Unsecured nontransferable. It's only available to businesses to me that means the regular businesses that you would go out there and see, so the gas station would qualify, but it is also available to governance and we have slightly different criteria. Where we cap out at $100,000 for example and what I call a regular business will go up to 250 from local governments and actually up to 1 million for some state agency work as well and we have actually given those loans.

One other thing is we can shut you off if you do default on these. So that is the one stick that I have in the program.

A little bit of background data, I apologize this is only through 2014. The 2015 activity is fairly consistent with what we are at here. We have loaned over $125 million. You can see where the breakdown is between industrial and institutional. Institutional is the government side. I did not really know how to call the group so we call it institutional. But technically what we are looking at is anybody that is taxpayer-funded. [inaudible] Can go anywhere so it's a different risk analysis than it would be if it were a business like restaurants that tend to turn over every couple years kind of thinking. But you know the bottom line here is we have offered a lot of loans. We have issued a lot of money and our defaults are less than 1%. So we are very proud of this result. I think when you package all of that together it is a lot of reasons why we are looking at OBF in the pilots actually.

Okay, my one EMV slide. I will speak to this one a little bit. Again ODC covered a lot of this stuff. Is there actually a CPUC written plan, the OBF stuff is on roughly page 199 in there. There are really only only to what I will call new studies for OBF most of the focus being on the pilots for obvious reasons. We have one process evaluation which you heard about. And we have an impact evaluation that we are only really kicking off so there is not really anything to report on that. At the moment we are just doing some of the initial work on some of the I don't even know what they call the studies... But the question there is getting in and talking to the customers about OBF so we have done some studies in the past with the two process evaluations and I would say for the most part what they tell us is some things you have already heard. Contractors are important. How contractors operate is important to how people feel about the program and how well it operates. So we've actually translated a lot of that experience again into the development of the pilots.

I should actually take a step back here and just note something. So ODC said that the pilots are resource programs which they are. But OBF originally when we started the program back officially funding in 2006 we were a non-resource program. We were not a resource program. The theory, and I was very much behind us, was that financing is a tool to all of our other programs. So, what we did at the time was we just attached OBF to each of the nonresidential PD programs that we had, so it was just another thing in there like offering audits or doing marketing or whatever it was to try to get savings because that is what we were trying to get is savings. I didn't care necessarily how I got it, I just wanted savings. So it was a tool. It's been a bit of a challenge to try to make this transition from a non-resource program to a resource program. I don't think we are there yet. It's not really clear how one takes the various pieces from 15 different nonresidential programs and parses them out into one standalone on bill financing program. Very difficult to do. And we are still working on it.

ODC by the way is the one doing the impact evaluation, so I'm sure you will be hearing more from them on that particular point. Let's see was there anything else I wanted to say about this? I will go through my notes here. I don't want to repeat some of the things you've already heard.

Some of the path process evaluation review we got were, customers were highly satisfied with the program. There were challenges with the contractors, as I said trying to create more statewide consistency across the four IAU was originally it was kind of consistent but I'm actually legally a lender in Southern California PGE is a lender [SES] San Diego gas and electric, so... From that perspective we have some risks, so as we consider those risks within within the program design we saw the original differentiation and again it was not required to be statewide when we first build the program. This was something that this was [inaudible] the program but we are in the high 90 percentile of being consistent but they are going to be differences with each lenders and we have our own issues with trying to manage risk and being a lender. So...

I do think that it is important to note here in terms of a comparative study piece, that, this is my soapbox point I guess I will say, is we have got apples and oranges and tangerines all over the place here. But when I go to the grocery store I like getting all kinds of options on fruit. It is not clear what the future is in on bill financing. Quite honestly is the pilots unroll. And I do think that in the regular business side of things if OB are does have a lot of success we would probably see a ramp down in that particular part of OBF. But the pilots do not really offer much to governments. They were not intended for the government sector. So I fell think that OBF is going to have a huge role for government and if we have any kind of an uptick in the kind of activity we are seeing in OBF it is within the governments. I think really good because again it means that we are getting a lot of savings out of government entities so that is a really good answer there.

I think without I'm going to... Say thank you very much and I guess we will transition to question and answer

>> I have a question

>> sure

>> [inaudible] OBF [inaudible] processes that managed [inaudible] as opposed to [inaudible]

>> We all modified our IT, or our billing systems to allow that to happen, yeah so it is all one bill. Works fairly well so far. OB are is requiring some additional IT changes for billing so they will be different when we are working with private lenders.

>> Frank the participants [inaudible] did they ever ask participants what they have done the project [inaudible]

>> Yeah I would say that the process evaluation that we did were in that sense a bit of a hybrid because there were some of those kinds of questions that were asked. And in a lot of cases the financing was more important than the rebate for example. We got that... I don't know that it would be the same level of rigor in the analysis and that part of the attribution questions that you would get in and impact evaluation.

>> And as Frank mentioned-- dynamics is just for the [inaudible] evaluation for OBF we are just about to start serving customers who participated in the 1314 cycle we are just about to talk to them over the next couple months

[inaudible]

>> Attribution answer to get that kind of question what they really have done this about OBF

>> I have a question about [inaudible] loan project to get to the larger project size have they had the opportunity left

>> There is nothing that precludes the ability to do that for sure. Typically what people do when they are leveraging other loans is the 0% loan typically comes first and other things on top of it would happen. But I cannot think of any specific examples where we have done that yet.

>> And then I have I wanted to clarify the question because we use a lot of acronyms today and I normally have the mastery of that. But today... Today... I thought I understood a few slides and walked away from them going wait I think I know what that means so when you talk about a resource only versus non-resource program are you talking about saving resources and actually getting energy efficiency or what is the resource only label mean... From an administrator evaluator

>> I will take a first shot at it. So I'm sure there's an official definition. But for me the simplistic perspective is resource programs tend to be the ones who are actually, who have measures involved. And people replacing things with hardware. So there is a more direct connection to the savings. The non-resource things tend to be like training and education. And marketing and some of those things that you can ultimately may be translate through AMN B type activities how it might help support getting to

a resource. And I think the relevance of that term here is what we are trying to do is actually avoid spending money on powerplant type resources and things. So I think that is kind of probably a bit around the history of it but it's really the difference between measure specific type programs and things that are kind of more soft.

>> Behavior versus

>> Behavior absolutely is an interesting one because we are trying to [inaudible] them more directly through behavior type programs. That does remind me that there was something you had on your slide that I wanted to maybe call a friendly amendment to I think under the pilots, you know the pilots have to be cost effective when you are talking about the TRC technically that is not accurate. It is our portfolio that needs to be cost effective at the end of the day. It certainly we strive to make the programs cost-effective on a standalone basis but it's not a requirement yet. We would have a lot of the programs [inaudible]

>> that is a really good important clarification that it [inaudible] level and I think that's generally considered to be best practice when you are looking at those, so

>> Calculated on a program specific level but just overall in terms of expectations, the whole portfolio has to be cost effective not necessarily every individual program.

[Inaudible]

[several voices]

[ambient noise]

>> I always have an opinion.

>> Is the market centric piece done

>> it is done. It is just close to being public. I think maybe in the next week we will have a public [inaudible] of that report it is complete.

>> So we will be able to get a copy. Because the piece that was really interesting for me is when you look at the financing of the residential market that when you have [inaudible] you actually have a higher loan volume and so that's fascinating for me because we want to move that market so is there any extrapolation in the report that kind of teases that out a bit because that's not how we always think and it's a nice piece of information that makes us think what are we creating and the CHEEF programs

>> When you say the loan volume mean mean the size of the loan

>> The size of the loan because if we are going toward the whole house and we get more increase loan pricing on the house it cause you to actually do the work we are moving the market and we are moving it through those financing products, not doing it through conventional and I don't think I've ever seen that information before. So how we'd actually continue to support that and how do we tease that out [inaudible] level information so we understand how to [inaudible] contractors we know effect the contractors if they are moving some of the market they are selling the product, how do we continue to support that. I wanted to see that

>> Yeah, the report certainly [inaudible] can get a copy when it comes out. We have a number of people that are looking for that to be public pretty soon. [Inaudible] just a few more dotting I's. And I think you certainly will see some in-depth analysis in there on the cost and types of measures and things like that between conventional versus no financing at all versus the energy efficiency for financing, and I think there's probably a lot more that could be done in kind of taking that information and doing more with it and extrapolating it for different purposes. I don't know that we have necessarily within the report extrapolated it in the way that you might want to use it but I certainly think the data is there for you to play with numbers and see how you might be able to do that.

>> Really quickly. If you were going to look at it from that perspective, look at total cost per loan and then the list where it says specifically what portion of people did the different kinds of measurements I think that would give you a good starting point for your look at that. Probably what you want to focus on

>> That's interesting when we look at the different programs and when we looked at... The hero, when and where it started and when he looked at measures over time [inaudible] one of the high numbers, soul was one of the high numbers and I think it's changed over time as it has moved into different [inaudible] looking at how the loan program actually shifts over time [inaudible] and helps us,, helps contractors and when you support your contractor and how do we, understand and move help them understand and move into the business.

>> Are there any other questions or comments on the web?

[Inaudible]

>> this is more of a comment than a question. I think going back to the issue of looking and cost-effectiveness and looking at those APR savings versus the cost of... The loan-loss reserve utilities and how to account for if it is not a direct cost [inaudible] you know I think all of that kind of, I think there are several of those cost and benefits which is really like a leverage question of how much of the loan-loss reserve do we spend in order to get what kind of reduced rate for borrowers, really kind of brings us back to the question of what is the right level of risk sharing between the state and the lenders. [inaudible] Providers and what is the right amount of results that we want to have in our loan portfolio. And so that is a question that I have explored when thinking about for REEL we have already set it, we've already said here is the underwriting criteria and we will give you a 10% loss or verve and a minimum FICA 580 and a debt to income ratio 55%. We think that might now get a sale default rate of X percent in the portfolio [inaudible] could have said and we also could have said debt to income ratio... Of 65% and minimum FICA 500 and we will give you a 20% loss reserve. And we would probably have a lot more default and a lot more savings for borrowers. So I think as we think about commercial it becomes even more complex because the commercial programs are more complex. But the program design itself and whether or not it is important that we, that those loss reserve funds be sort of recycled and returned to the PUC or utilities intact versus extended to some degree in order to get that market adaptation that we are talking about and have other lenders come into this... You know to come into this sPACE I think we control one of those big levers with our program design that there are a lot of applications for that cost savings model... For the cost-effectiveness model.

>> Yeah I think that is a really interesting point. And you know... I think your discussion with your lender you have a lot, you are developing a great understanding of exactly where the tipping point is as to

when the FICA score translates into people who just will not pay you back at all so that's really important to understand where you are dealing with acceptable risk if you look from a cost-effectiveness perspective when you look at the slides if you look at the D Fort portion of the pie is really small and the opportunity cost portion of the pie is much bigger and if you think about that in taking step back into realistic terms the default rates of one or 2% is sort of [inaudible] part of what you are doing is backstopping loans that probably are not going to fail. The general idea is you prove to the market that this actually is a low-risk kind of investment to make b at the end of the day it should not be a high-risk loan. In the real cost you may be losing one or 2% of default but you are using seven or 8% in the way it's being discounted to the way that the average cost of capital for your utilities.

>> Earning 7 to 8% of your money?

[Laughter]

>> yeah or 6%..

[Laughter]

[inaudible]

>> Whatever that

[several voices]

>> just the money sitting in the account every year you are losing six or 7% of the value just by its sitting there. So getting that balance right of course is important but from a cost perspective putting the money away and not using it for anything else is a very expensive... Quote unquote. But it's interesting, it will be very interesting as these programs unfold to me to see how this unfolds and [iinaudible] that was a bit of an eye-opener. [Inaudible]

>> about the [inaudible] are those funds the utilities to spend if they were not there? Are they funds that would be [inaudible] repairs

>> No, if I had those funds that would likely mean I would do something and I would be earning back something along those lines t rates I don't know how you would come up with the numbers but there's weighted average and all that kind of stuff we wouldn't be collecting to have that opportunity just to collect the money

>> So it is the ratepayers lost opportunity?

>>[Inaudible] digging into the finer points of cost evaluation. And it is a good [inaudible] discussion going on around cost-effectiveness because the societal cost about doing nothing about energy efficiency is much greater. Waiting costs much more than doing it now so there are many ways of doing that. I don't have it at my fingertips right now exactly how the way the average cost of capital that we use was derived. I think it was the one we received from, I believe it is public... PUC I'm not sure

>> I'm not asking what the interest, you know what the rain is but more in the past you have no opportunity cost, right? That is what the pie shows?

>> One of the reasons why I updated slides from the version you have is actually a correction on that. So that is good you pointed that out. Hopefully we can send around the corrected version. You will see it now [inaudible] that pie in particular is what made me change the slide.

>> So the opportunity cost, the lost opportunity cost is the same with the TRC test... More or less... And the PAC

>> The size of it is the same size. It just looks smaller on the pie because when you go to the TRC now you're bringing back all the participant costs, all the participants are spending their own money to [inaudible] projects

>> That would indicate that it's the utility lost opportunity [inaudible]

>> Program administrator in this case is caeafta.

[Inaudible]

[several voices]

>> If the utilities wouldn't be spending it elsewhere then the appropriate opportunity to compare it to would be if we just gave away the money for folks to do direct incentives or direct pay for the installations. Or the idea that the utilities couldn't be doing something else or maybe there is... But I think if it is the individual customers direct opportunities to self finance or take some other measure than there are huge [inaudible] problem actually with the

>> The individual customers cost of capital and all that is counter [inaudible] between the person cost and APR benefit as far as, that is just quite simply the cost to program administrator of putting this ideal [inaudible] fund how it's discounted we use the standard framework way of doing it which is to apply the weighted average rate of capital. This is highlights what is there is a question, what is the appropriate discounting of that and we're not trying to make a call on that at this point.

>> What do you mean the appropriate discount

>> So is it the appropriate discount, exactly as you pointed out the utility cost of capital because it is not really utility money that they can invest whatever they want to do it is ratepayer money going toward specific angle which is energy efficiency. However standard practice in the past is they can use the weighted average cost of capital and apply it there. We totally agree there is a discussion to be had that maybe it should be discounted at the zero nominal rate which would be essentially just a deflation rate. There are many ways to approach it, and these are... This is a high-level version. Without getting into the second or third tier of the discussion around this. I completely hear your point. We are not trying to say that that is the way to do it. You should apply the weighted average cost of capital we are saying that is the current way it is being [inaudible] does that answer your question

>> It probably created 10 more. Right, and other than that... Critique I think you get to one layer and you're like I have these 10 other questions. I thought that the participant costs [inaudible] it is a challenging thing to talk about right now because the work that we have done for the CPA site so far is essentially laying out the issues of the current cost-effectiveness framework why it doesn't really apply to finance and are kind of proposed ideas, for how it could be altered. The CPUC is kind of having is having their own kind of internal discussions debates trying to make a decision about how they want to

if and how they want to specifically change the approach [inaudible] finance we are kind of in this gray area right now so a perfect time for input. A perfect time to hear and it's great and Jen is here so we can hear some additional, to add to the ongoing debate about how they should be treated for finance programs. And we were not really get to a point of actually applying a method until the pilots roll out and hopefully we have worked out a few things with the CPUC and try to employ a method at that time so at this time we just kind of wanted to show some concepts around it. Why a kind of current framework doesn't work, where the sensitivities are. And to kind of say that eventually yes when the pilots roll that we will have a cost-effectiveness approach that hopefully accounts for some of the issues we are seeing now in the current framework.

>> There were two other issues... Or is there any more discussion? There are two other issues I thought would be interesting for discussion at least from my perspective. One was this discussion on what some of the benefits were and the discussion of nonenergy benefits and I saw in the slides here you are attributing this to 30% of the loan value which made me make the assumption that this is based on the 78 30 split in the pilot. I would just make my observation be nonenergy benefits I think are not just related to the 30%. We are talking about a customer's comfort, the health of their home satisfaction, do they hear a train when it goes by and other things that might bring customer satisfaction, not just necessarily the associated 30%

>> That's a really good point and the reason that is not on the list there is because that would also apply to incentives. Because currently incentives [inaudible] installation or Windows would also bring the nonenergy benefits but the framework just decided that they are not going to be counted for incentives. So we were just looking at their logical problem introduced by financing where if you do not include any noninjury benefits you've got people spending up to 30% of the loan volume on something that is going to have an only nonenergy benefits and by including only nonenergy benefits you are asking them to sort of contravene economic theory which is telling people to spend money in order to get value back and this is sort of zero [inaudible] for the 30% and there is a whole discussion about whether those comfort and performance benefits that are not energy performance should be a discussion for all cost-effectiveness assessments

>> And I think probably just acknowledgment by the program design, this is part of the PUC decision that adding the 30% would help with consumer uptake to do a project.

>> I would like to note that when the 70%... There are other costs that are allowed like installation costs. You know, so I don't know how those are getting treated because this is again where financing is a little bit different in other programs. Just the last element, about 30% [inaudible] counted in the cost so if we do not allow it to be counted as a benefit then we are essentially hamstringing the programs right from the get-go.

>> So there is one other slide that I felt compelled, sorry guys... For you on the computer, so, this one... You are very kind to go to the slide and talk about the survey to the customers and in after survey you notice they are at 20% free rider. Can you flesh through some of that process or those questions that are posed? I thought it was interesting and maybe not maybe it is something we don't have time for but to go from a borrow to borrower approach and from my perspective [inaudible] not many of us go to sleep thinking about financing. Those are just the financing only. But it takes contractors, it takes the collaboration. So this is a big question for me that I didn't think I would be an expert on at the end of the CHEEF implementation but maybe we will. I'm going to oversimplify it for a few minutes. And it gets

really complicated. And it would take a little while to kind of really walk through it. But oversimplified, customers are asked a series of questions. how they answer the questions are ultimately analyzed, put onto an index scale of anywhere between 0 to 1. So a number of questions are asked in a self-report approach that [inaudible] talked about questions in terms of overall program influence. How much did the financing offer influence you to do the project. How much did the incentive offer you. And you are asked these questions on a 0 to 10 to do the project. And then additional questions on okay we take that kind of overall program influence and other factors can come in as well to the influence and we will be asked about marketing, the contractor, everything that was possibly part of the experience all rolled into a program influence score.

Then we look at other things like did it have any impact on the quantity, timing or efficiency of what they did.So it is very possible that someone could say overall program influence it was really low. I really would have done this anyway. And then no, let's think about quantity, looks like you did five windows. Would you have done five or four... So then we really dig into it and then we dig into efficiency level... Did it push you a little bit less or little bit more on your energy efficiency than you did before and we will think of timing too. [inaudible] Would have taken you a couple of years to maybe get the money and stuff on your own. And we take all of those questions together and we come up with this index for a 0 to 1 how much of a free rider is this person. From 0 to 1.

When it comes to [inaudible] choice it's a little bit of a different method correct me if I'm wrong but that one is more coming down to giving customers choices, real world choices in the surveys to say hey what if we were given the other choice at this interest rate and this interest level would you have done it then it so it really relates them to the different options in the marketplace because of course everyone has tons of options when it comes to financing you didn't necessarily have to get it through the pilot they could've gone through another financing method if they didn't do that one. [inaudible] Choice allows you to bring in the other options and have them kind of choose which one they would have rather done. And those questions are all rolled it down then into an index of 0212 estimate how much of a free rider is this person.

Each individual gets a score on that, and based on the project savings on each one of the gets they all get waiting based on the savings of the overall ratio of 0 to 1 of how much free riders [[inaudible] very simplified answer does that help

>> I have two more questions.

>> We just want to throw one other thing at the program level II there are other concepts that's called spillover. That I think could also, that will also [inaudible] this is like the tip of the iceberg.

>> Good point the overall metric grocer attribution takes into [inaudible] account different methods for assessing free ridership. The other side of the coin is raking get some additional savings that are not accounted for that you could influence [inaudible] so that can actually get you, well you kind of lost a little bit for the free ridership but gained some savings in spillover so both of those are kind of taken into account when you come up with the overall metric ratio or attribution score.

>> So one more question in the room?

>> This is may be a hard question. Does the survey... I know you have not... But will the survey include [inaudible] questions non-benefits [naudible] I know we are

>> yes it will particularly because we want to capture nonenergy benefits for the purpose of trying to see if we can calculate them and bring them into cost-effectiveness. So there are certainly plans to explore those other benefits as well maybe benefits and also what you are getting out motivations for why they would have done the project as well.

>> So for those on the web

>> sorry, yeah.not here in person.

>> The question was... Will the questions for the customers include nonenergy related other public benefits

>> Any other questions from the web

>> Looks like we got one

[inaudible]

>> Christopher Kramer [inaudible]

>> hi how are you all? A quick question, or other sort of question/comment on the questions just now on the net savings and I don't know, it just occurred to me as you guys are talking about all of this by the way I worked on a report that was talked about in the first workshop called making it count. We talked about some of these attribution issues. And one of the things that just struck me that we mentioned in the airport although we don't go into a lot of detail is how you can actually potentially look at the experience of actual comparison groups. And whether that can be a useful data point in thinking about attribution. I The most sort of kind of gold standard way of doing that would be to do setting up a random, randomized contrast but there's lots of challenges in doing those things we are who doesn't get the offer and who does and how do you [inaudible] the program but one thing that financing has going for it in that realm when other programs may not is that some people for whatever reason apply for financing and do not use it and other people apply for financing and are denied. And those are two groups that end up either going ahead and doing a project or not doing it for one reason or another. It may be the same efficiency level or slightly different but there may be information there [inaudible] and the reason that I bring up is specifically there was an evaluation we looked at in Illinois, financing evaluation where based on self-report, the sort of free ridership read that they came up with was around 13% and that was just based on questions like Megan was just talking about that they asked about of the customers who went through the program. But then they actually did track customers who were either, who either withdrew or were denied, and it turned out that almost 3 times as many as that, so I think it's in the high 30s percentagewise had gone and done the same project with the same efficiency level. And that was kind of an interesting comparison group to look at and came up with a very different result. We didn't end up using that because it is not a randomized group, but I wonder if there is any way of thinking about, and I am just kind of throwing this out there because it struck me as you guys were talking, but is there some way of using the type of comparison group even if it is not randomized as sort of a control, or a calibration factor almost because otherwise you may end up with self-report [inaudible] an issue then you may end up with self-report number that looks very different from what people actually end up are going to do.

>> Yeah and I think that might be one of the ideas behind one of our proposed methods of looking at nonparticipants in comparison to participants in the LCDC method Jennifer you want to talk about

>>[inaudible] so at least part of what the LCDC is designed to do is you are looking at what nonparticipants are thinking about when given an option of taking financing through the program or taking financing through any other conventional type of offering that you have or another program or whatever it is, but you are looking at actual program participants within the pilot and then calibrating your results through the nonparticipants to see how it affected, almost like a sensitivity analysis if you call it. And you have to figure out exactly how to do that and what the program designs that go in which will allow you to do that but that goes to a little bit of Chris's point of well how do you sort of understand what people have done without the program given that they have all these other options. And you cannot quite do that through a self-report because you are only talking to participants who cannot quite do that through the nested logit model either because that's again participants and how they sort of thought [inaudible] and how they made the choice of each decision point but in the LCDC they allow us to sort of add that component. But... An added benefit of and LCDC also I think going back to cost-effectiveness is that it really helps us parse out the effects of finance [inaudible] as well a lot more clearly.

>> To your point, Chris, yes we agree. The self-report approach is not great without doing some kind of comparison group approach and at least right now we think the LCDC method is a good one to be able to do with both participants and nonparticipants. Now, who we define as a nonparticipant... Will kind of come later. Whether we define those as, say... Say a lot of pilot financing tto the upgrade home upgrade program would be look at considering non-versus men's versus those who went through the whole upgrade program without the pilot financing and use that comparison group or do you go completely outside and just look at folks who have not done anything at all but meet the criteria for both programs. So that will have to be worked out once we really see what these pilots do and who is really a true gun comparison group to treat as a nonparticipant that can help calibrate that self-report participant number.

>> Great.

>> Any other questions on the web?

>> Jeff[inaudible] on muting your line

>> hello can you hear me know?

>> Yes

>> Hello everyone excellent sorry I had myself muted Jeff Davidson from Lawrence Berkeley laboratory and as we were, we are usually presented in the first of these webinar series and we are hoping [inaudible] things through the development of criteria for sort of comparative purposes that is at the heart of this exercise and so I am coming at this with a very comparative lens and I just had a thought that I wanted to maybe get some reaction to from the presenters which is, and this was on the nonenergy benefits point. And obviously nonenergy benefits, some are relatively simple to calculate, some are very difficult. You can do a lot of work on any individual efficiency program financing or otherwise to try to figure out what the right number is there. But I'm thinking about this in a comparative context and thinking about the fact that an efficiency project generates nonenergy

benefits, you know, and how it is financed is not necessarily material to that. And I am wondering if when you are looking at a specifically comparative context if you look at a PACE financed project and you lack, or a project that is financed under... The on bill pilots for example, you know, is there any reason that we would expect different financing or what reasons would there be to expect different financing approaches would generate projects that had different nonenergy benefits or conversely you know if two different financing projects generate projects that consist of essentially the same set of measures or the like is there any reason to think that the nonenergy benefits they generate would be different? I'm almost thinking that the financing itself may not be that material here and if we know what the work was that was done that might be sufficient to estimate the benefits or even given that we often use shorthand's of X percent adder to account for benefits how important is it to understand this for each benefit program in a comparative sensor how can you think of these things is maybe the same NAB non-benefit add or the same across the across difference benefit approaches and might counsel out once you know what was actually finance I hope that was clear.

>> I can take a shot at that one. That is a good point, Jeff I appreciate hearing your comment on that. First of all I think that the kind of financing may have an impact, so but, specifically with these pilots the fact that they include a portion of the financing they can go to non-EMS, non-eligible efficiency energy measures right there that's going to have a huge impact on the amount of nonenergy benefits which would be quantifiable within that. But also our understanding is that even within the pilot there may be different lenders who want to focus on different kinds of measurements and different kinds of measurements themselves are going to have different nonenergy benefits. If you have a financing group that really wants to work to a lender who really wants to use the pilots to do HVAC change outs you know efficient boilers for instance may be the NEB value of the nonenergy benefit value is going to be quite low compared to another one who's going to do a whole home value upgrade [inaudible] installation on Windows and a whole different project so you can look at the measurements if you want to get the comfort issues because they will just come out of the measurements, but if you want to compare one financing program to another, start comparing, then I think you really need to look at what portion of the financing goes to the measurements as well as if part of the measurement is noneligible measures, maybe that could be a way of working around it but I don't see how you would completely disconnected from the way the financing is structured.

>> Let me say that maybe than on actual benefits [inaudible] project to project would actually potential nonenergy benefits would probably be the same, but the amount of them, the level of them would probably be different.

>> I piece that is the nonenergy measures [inaudible] because that piece is in some cases it's there and some cases it is not. That is the biggest differential.

>> I think that is one side of the coin. To flip the coin I think let's say we keep financing as a constant. I think one of the things that changes is what type of financing structure appeals to what type of borrower and the specific constraints of the borrower. So if we are targeted soared to certain niches or certain industry to get the most bang for the Bok or we want to make sure that energy savings is real for every Californian and not just, and we focus on low and moderate income different types of financing structures are going to appeal to different types of borrowers and I think that type of borrower is something we are going to have to account for or you will have to account for. And we will have to account for.

>> That's a great point because going into somebody's house and putting in more effective and efficient air conditioners when they already have one, they have a very different NEB profile then going into someone who has never had an air conditioner. It's a good point because you are opening up whole new sectors of the market. And you could have [inaudible] that profile as well.

>> I was just going to add that I think it depends on participant eligibility as well. I mean, someone who is not a homeowner cannot get a base, right, they can only get certain types of loans. So that might affect it as well.

>> Thank you.

>> [inaudible] Hypothetical a lot and I'm not sure what renter is going to... But the option is there. The one that we may find

[several voices]

>> Not under PACE, but

>> are there other questions online? okay, other questions and comments in the room? No I want to thank everyone for coming today. Again, this is the second in a series of workshops. Our number of PACE providers will be presenting next week. And for those in the room you are very lucky. Today the state treasurer's office is hosting lunch for a small [inaudible] fundraiser and there are hot dogs in the foyer. We are getting a heads up on summer. And they are having a hot dog sale. So feel free. And for those online I hope you all enjoy your lunches as well. Thank you very much for everyone's time.