Deana: ... It is slowly getting easier today, but for those who know us, the acronym is CAEATFA and that's how I'll be referring to us today. Before we start, I'd like to thank Chuck Goldman and Chris Kramer in the Lawrence Berkeley National Labs for your work in the field and being with us today, as well as the Department of Energy, who helped with a technical assistance grant to help LBNL get involved. As well as Megan Campbell and Alex Hill with the CPUC's EMB team. My colleague at the PUC, Jennifer Karen, and Ashley Bonnett and the rest of the CAEATFA staff. Thank you very much for all your hard work here.

So welcome. As you know, we're doing this meeting in person as well as on the webinar. So thank you very much. For those who are here in person, please sign in. Leave a business card at the back and then come up to the microphone if you have any questions or comments. That will allow the folks on the webinar to attend. And just in case there is an emergency while you're here, for health and safety go out to the foyer and walk down the stairs on the north and south side of the building and we'll go across the street to Capitol Park if you hear an emergency alarm.

There's also restrooms in the foyer on the north and south side of the building and the bathroom closer here. Also a note for everyone that this webinar is being recorded and will become a part of the public record. We will ask the folks to introduce themselves while I ask questions just so we have a better understanding of who's in the room. I think that's it for my housekeeping issues.

We're pausing for technical issues. Which was me.

Okay, for those on the webinar who couldn't see the screen, if you could put it in the notes section, [inaudible 00:02:04] that you can see the screen, so let us know. Also for those on the webinar, you are on mute, so if you have a comment or question, please raise your hand. We have a few folks fielding questions today, so we'll be looking at, um, in case of any duplicates and then we'll pause and make sure that Chuck and I get a chance to talk about that. But I think we'll cover it in the Q&A.

Chuck: Usually clarifying questions are okay.

Deana: Okay. So some students here will take clarifying questions through the presentation, but at the end we'll talk about [inaudible 00:02:40]. Just another few items for the agenda today, again, this is Deana Carrillo, the executive director of CAEATFA. I'm going to give you some background on the letters of direction and why we're here. Talk a little bit about some of CAEATFA's thinking in coming up with the comparative criteria, or I should say, coming up with the criteria for a comparative assessment of energy efficiency financing programs, and then we're going to overview our process. And at that point, I will get to hand this off to Chuck Goldman. Chuck is the director of the Energy Analysis and Environmental Impact division at Lawrence Berkeley Labs. Did I get that right?

Chuck: Yes.

Deana: And we are lucky that LBNL recently published a report that is very specific, some of the issues that we'll be grappling with over the next few months. So we're lucky to have him here. Thank you very much.

So a quick moment to talk about the legislative directive around this effort. And for context [inaudible 00:03:40]. Okay. So far we've worked out our technical issues. For context, in 2013 the CPUC determined in a decision to establish a California Hub for Energy Efficiency Financing. It is the first of its kind in the nation that we are aware of that provides an open market platform for third-party capital providers for energy efficiency retrofits. And when CPUC asked us if we would take over as administrators of that effort, we said yes and we went to the legislature to ask for budget authority. It's a $55 million pilot program. And while we were in that process of seeking out budget authority, the legislature tapped CAEATFA for establishing this working group to develop criteria for a comparative assessment of California's energy efficiency financing program. You'll see here that the language focuses predominantly on PACE and on-bill financing, but in additional conversations with legislative staff, they determined they were very interested in the CHEEF, also known as the California Hub for Energy Efficiency Financing.

As I noted, the CHEEF Finance Pilots were authorized in September 2013. They authorized a suite of pilots, seven, across sectors. There's two residential pilots, four commercial or non-residential pilots, commercial or non-residential, so industrial buildings, and one multi-family pilot. In speaking with my colleague, Jennifer Karen of PUC, she has noted that this working group process will directly inform one of the PUC studies on the pilot. An overall note that the PUC does a lot of EM&V, and I told myself I wouldn't use acronyms and now I have a brain freeze on the E. Evaluation, measurement, and verification. Thank you. Those are all part of the public process and can be found here.

So I just to spend a few minutes thinking a little bit [inaudible 00:05:55] CAEATFA's thoughts on how to approach those processes. And it's been an interesting one because originally it was a criteria for comparative assessment. Well, okay, we can pull that together for you. And as we looked at this, we realized that it's just not that easy because if it was, someone would have already done it. We're really looking at different program structures and regulatory context.

If you think about our PACE financing, which are structured for local government implementations, predominantly what we're seeing in California is private equity money and private financing coming into these programs. These local government programs for direct financing. We have the CHEEF pilots that are regulated by CPUC, using ratepayer funds, and they're indirect financing for third parties. And then on-bill financing, which is direct financing of rate tier funds. And a myriad of other programs that we have here in California. Local government programs to public utility programs to Prop 39, ECA, the statewide energy efficiency program that the I-Bank is launching. This, to me, shows why the legislature has asked us to come up with these criteria. California has a lot going on and this will help with the process.

So how do you do this? We initially went through what are the statutory goals of the program because you can't compare apples to apples or apples to oranges. And as administrator and where our focus has been, it focuses on vehicles, consumer protection, are we getting the energy savings, are we leveraging existing structures. From a program administrator, those are the questions I ask myself. What are the goals? How do we get it done? How do we do it and then how do we get it done cost effectively? We built in animation. I'm a new user.

And none of that matters unless we meet our state energy efficiency and conservation goal. This is all about greenhouse gas emission reduction. So the big question is are these financing programs enabling us to conserve more energy and doing it cost effectively? That's why we're here today.

I was looking for a Dilbert cartoon but Calvin and Hobbes seemed to sum it up. What are our goals? Is it building character? We know that EE financing does that. Why are we trying to save energy? So just looking at some of those policy goals.

So what do we look at to compare programs? What are the policy goals the program needs to achieve? Why energy efficiency? There's the energy savings, there's a lot of co-benefits and assets. Customers' health and safety, their own comfort, renewables, water. There's a lot of co-benefits besides energy efficiency, from job creation in the PACE program was a statutory goal and some of the other goals.

Why financing? Why has the state and the utilities and CPUC looked at financing for these? I think it's clear that with the goals we have in California to reach our greenhouse gas emission goals, we can't do it on ratepayer or taxpayer dollars alone. Financing is definitely a way to remove a barrier. This is an area that's a little tough for me because I think people put a lot of pressure on financing. Financing in my mind removes the barrier, it doesn't build demand. Not many people fall asleep thinking about financing. I think I took that from [inaudible 00:09:41]. That wasn't you. But I do, I think about financing a lot.

And then how are we implementing these processes? What are some of the best practices that we look at? Is it consumer protection? Is it marketing? Is it making sure that we're coordinated with the contractors, that we're not getting in the land industry by leveraging that industry?

And then are we actually achieving those goals? We could spend a lot of time evaluating our programs, processes, and impacts. CAEATFA has personally, not personally, as an entity, has built some great consumer protection programs without a lot of deal flow and there's some tensions there and we've learned from that. But the question is what are the best practices and how do we define those. The challenge is finding that balance and on policy implementation and evaluation and then doing it cost effectively, not only in our results but also our implementation.

So a quick overview of the workshop series, our goal today is to create a common understanding and language. There's a lot of those coming from a lot of different places with input here and we want to make sure we can have a common foundation. CAEATFA will be hosting a series of educational workshops. This is the first of three that we have planned so far, with presentations from stakeholders on various metrics. And we want to learn from the administrators on how they evaluate their programs and then we'll be discussing the pros and cons of the criteria. So part of it will be drafted based on this workshop discussion, everything will be part of the public record. We want your input. And then the working group will be the discussion on the proposal, making recommendations on all the criteria. At the end of the process, CAEATFA will summarize and publish the material and send that on to the legislature for their consideration.

Here's a little timeline of that process. We are asking for public comment if you wish on this process of issues that you'd like to be considered or criteria you'd like to be considered by February 22. We're going to be accepting that public comment on a rolling basis, so it's going to be a very public process. Even if you aren't part of a formal working group, the public will have an opportunity to make comments and we want to hear from you. We have established a deadline. If you're interested in participating as a member of the working group, just submit that to us by February 17. In March our board will consider and approve that working group and then later in March we're going to have a second public workshop related to the CHEEF and on-bill financing, and then the third public workshop with presentations from PACE and then the fourth public workshop will be to discuss and propose on the criteria. It's all clear now, I'm sure.

So this is the process that CAEATFA will be undergoing. We also have a [inaudible 00:12:37] for public comment. Ashley Bonnett is here and she'll be taking that. Ashley, can you give a wave for those in the room? And with that, I think I'm going to pass it along to Chuck.

Chuck: Okay, thank you. I guess I have [inaudible 00:12:52]. Does it get bigger if I move this back? Not really. Okay. I'm worried about people being able to see.

Deana: [inaudible 00:13:09] Nope.

Chuck: I had the direction right. Okay. We'll try. I will try the slides.

Okay. It's a pleasure to be here. My name is Chuck Goldman. I'm a staff scientist at the Lawrence Berkeley National Lab. I've been working with CAEATFA and I, and they asked LBNL to talk about a recent report that we did for the State Efficiency Action Network called "Making It Count" and to talk about some of the comparative assessment criteria that the state might want to consider looking at financing programs.

So here's sort of a roadmap of what I hope to cover in the next thirty or forty minutes. I'm going to provide you with an overview of the report itself and the approach that we took and what the contents are. I'm going to give a little bit of a deep dive into evaluation, measurement, and verification 101. I don't know how many folks in the audience or on the webinar are steeped in the world of utility evaluation. I'm going to assume that most people are not. But if you're thinking about the world of assessing financing programs, you need to think about it a little bit, so I'm going to hope to provide context. And talk about some of the evaluation issues for efficiency financing programs, and then I'm going to provide some thoughts about a comparative assessment framework, some of the criteria that folks might want to consider. So that's the game plan.

This is a slide that just shows you the title of the report, we just released it maybe a couple weeks ago. There's a webinar on it tomorrow that we'll be doing at LBNL. But basically we've been looking at financing programs at LBL for the last seven to ten years around the country and what, where as these programs have begun to scale up, it's clear that we need to think about some of the issues that are unique to efficiency financing programs compared to other programs that are funded by the utility customers. So the motivation for this was that we worked with the SEE Action, they have a financing solutions working group. These are people who are running programs around the country. These are people who are regulators, they're people who are involved in the industry and they have a lot of questions about things like what's an appropriate regulatory framework to think about the world of financing.

We also have developed as et of tools in the industry for how we plan and evaluate efficiency programs. Financing poses some challenges and one of the things we were asked to do was think about how do we use, how do the traditional tools, have they been used, potential studies, cost effectiveness evaluations, impact evaluations, how do they work for financing programs? Do they work? What are the things that are not covered? So that again was some of the motivation for the report.

The basic questions are, can we place financing in a regulatory context that would preserve accountability while preserving sufficient flexibility to program administrators and customers? Even about that, there's always this trade-off between deal volume, consumer protection, appropriate oversight. Typically people from the financing industry want a fair amount of latitude and flexibility. Oftentimes, regulators are looking at process, looking for public accountability and they may not want you to move that fast in the market. And then again, the second point to the tools that have been used to screen traditional programs for cost effectiveness and assess potential savings and impacts be adapted in ways that make them work for financing programs.

So in terms of our approach in this report, we interviewed industry stakeholders in five states, California, New York, Connecticut, Massachusetts, and Maryland. We reviewed all the public filings and documents around the financing programs in those states, and what we observed is that, as Deana outlined, California is looking at a suite of financing pilots that CAEATFA is developing and offering and there are a number of existing financing programs in the state. We see examples in New York and Connecticut of very large efforts. In New York, the Green bank is sort of authorized already with several hundred million dollars, possibly up to eight hundred or nine hundred million is sort of the number that they're talking about. Connecticut, they're sort of at the one hundred, two hundred million dollar level. And these green banks are financing both efficiency and renewable projects and in some cases they are created by the legislature and in some cases they are overseen by the public utilities commission in New York.

In Massachusetts, the utilities offer what's called a HEAT Loan Program and that's actually now at about a hundred million a year annual volume, and the commission, when it got to that scale, the commission said "Well, maybe we should take a closer look and think about what kind of impacts we're getting. A formal evaluation might be god with all the other programs in Massachusetts." And in Maryland the utilities ran a financing program that [inaudible 00:18:03] the proposals for financing programs and they've also introduced a recent bill, a green bank bill, but that program at this point has not been approved by the commission, but it's a couple year stakeholder process in Maryland to think about financing programs. So it was a wealth of information about their experience and their views on the topic.

This chart, you probably can't read back there, tries to summarize the programs that we looked at, a number of, a wealth of costs and other criteria. So for example, are utility customer funds sought or used in the program? Is the program administratively regulated and if so, by who? Is the program part of a resource acquisition portfolio that the utility is using when they're requiring other efficiency programs? Is it treated as a separate distinct program or is it just part of a total portfolio? Does the administrator get performance incentives depending on their performance? And conceptually, did the policymakers in the state think about financing as a complement to the other programs that they traditionally run, rebate programs, incentive programs, technical assistance programs, or do they ultimately think of financing as a program offering that's going to substitute for the traditional rebate program that they've offered in their state?

We highlight those issues because we think it helps to frame the regulatory context and the policy choices that you're going to make. At the bottom of the chart, you see an indication of the size of the programs in terms of their initial authorization and some indication of the types of financing or credit [inaudible 00:19:41] that are offered by the program. In many cases, the programs are offering a suite of financing tools to the green banks.

So one of the things to think about in financing programs is that for most of the last twenty years, we've had loan programs, on-bill financing programs for twenty or thirty years in the US. In most cases, those programs have been just part of the portfolio that the utility has offered and they complement other offerings that the utility has done. So we have many examples where the utilities offer rebates that cover part of the cost of a measure and then sometimes the utility will offer market rate or below market rate financing where customers could finance the rest of that. In that case, we talk about financing as a complement to a portfolio of programs.

But in the last three, four, or five years, there have been some, and as programs have ramped up around the country, we've come to realize that these programs have, we have very aggressive savings goals, sometimes they result in rate impacts and the person obviously saves money on their bills but they'd o impose rate impacts on non-participants. So there are policymakers who are looking for a way to scale up efficiency programs and they're thinking about they want to leverage private capital, they want to bring that into the market and also looking for business to pay a greater share of the cost. So people are starting to think about financing as a substitute and in some cases they describe a vision where financing programs will ultimately, we will transition away from rebate programs and move toward financing only strategies. So that's articulated by folks in Connecticut, by policymakers in New Jersey, and a couple of states.

Now, these are just statements. These are essentially largely untested and one of the things we're doing in this report is trying to sort of create the framework where you can actually test those hypotheses about whether or not efficiency financing really should maintain, be maintained as a complement or whether you really can transition toward a substitute kind of approach. They're not mutually exclusive and even in the short term, what we observed is even though some states have laid out this long term policy goal, as a practical matter today what's happening is policy programs are offered ... Excuse me, financing programs are offered as a complement to rebate programs in all the states that we looked at in the five.

So that's the background. So we're going to do a little bit of a dive into EM&V, sort of provide a couple, so that common vocabulary that Deana talked about. So a couple of definitions. In the world of utility customer efficiency programs, administrators, commissions around the country typically require utilities to evaluate or administrators to evaluate the programs that they offer periodically. They do that oftentimes by hiring independent consultants or contractors. In some cases, some commissions maintain the authority to do the evaluations themselves. They have an independent entity that does that. In other cases they let the administrator sort of hire the consultants. But in any event, we're performing studies and activities aimed at determining the effects of individual programs or portfolio programs.

Specifically, measurement and verification is originally thought of as sort of at the project level. It came out of sort of the energy service company industry where when ESCOs did projects, they had as part of giving customers a performance guarantee, they had to measure and verify the savings over multi-year periods. Typically involves data collection, monitoring, and analysis associated with the calculation of gross energy and demand savings for individual sites or projects. So as a practical matter, M&V can be a subset of program evaluation. And then what's happened in the world of utility efficiency is they sort of just have this term called EM&V and it's really a catchall for the evaluation literature and activities that go on. It's used today in the context of looking at both program impacts or a portfolio of customers who could save as well as for assessing the impact of specific individual projects, oftentimes for large customers.

In terms of the rationale for why we evaluate, the reasons that are historically given are it's really important to document and measure the savings of projects and programs to determine how well they've met their goals. You need to oftentimes prove the effectiveness of energy management both to the customers who purchase these things as well as to policymakers who are providing public dollars. A harder bar to meet is to try to understand why the effects actually occur. In so doing, you try to identify the ways to improve current and future projects and programs as well as to think about what impacts you're actually having on the market.

And then finally in the world of utility planning, what's happened in the last twenty years is when we first started offering efficiency twenty-five or thirty years ago, it was an information service. It was energy audits. And over time we came to the conclusion that efficiency could actually defer and avoid generation and transmission and distribution assets. So we started treating efficiency as a resource. But in order to be treated as a resource, we had to demonstrate and document that it was actually predictable and reliable and that we could actually verify the savings. So essentially today in California and many other states, efficiency is looked at from what's called a resource planning perspective. Now that may not be, that only really applies in the world of customer funded programs. For state programs and public programs, the lens is somewhat different. But in the world of utilities, when we have resource planning processes we're looking at efficiency programs that provide many benefits to customers but we're looking at those programs to see if they will in fact defer future generation investments and possibly avoid transmission and distribution investments, and that's how they're evaluated from a cost effectiveness perspective.

So this is a chart that's probably worth showing and thinking about. One of the challenges of efficiency is that it's difficult to measure. When you get a photovoltaic plant on your house, you can measure the output and it's pretty clear what you're getting. Efficiency is different than that and this chart essentially shows, we basically have energy use before project and before installation, you can follow the project over a several month period of time and then we come up with what's called, we observe the energy use after the efficiency project's been installed. We do not observe what would have happened without the efficiency project. That's what we have to essentially forecast or estimate. And there are a variety of techniques to do that and that's what the field of EM&V is about. But essentially when we talk about energy savings, we're really referring to the energy that's saved that you would not have used but for doing this kind of project.

So when you think about EM&V you have to think about how good is good enough because what you're really dealing with is an estimation and you have to decide how much is worth it to spend to make that after you to determine what the impacts are. So you have to balance the effort to put into it versus the amount of effort that you get with the precision of the outcome. And so essentially we've developed this framework in the industry that tries to think about EM&V in risk management terms. You essentially balance the cost against the value of the information that's derived from the EM&V. That's the framework that's used in much of the evaluation in terms of how you target your resources, what programs you decide to evaluate, what the biggest uncertainties are, where you put your efforts, and so on.

And then I alluded to in the last graph, defining a baseline is a critical element against which efficiency actions are compared to determine energy savings. You have this notion of counterfactual and it's frustrating to people, they want a lot more certainty than that, but if you have a PV facility you can look at, I have a photovoltaic installation on my house, this was my consumption, I put one in, here's my consumption afterwards. The difference is what happened because I put a PV system in. Well, when you do efficiency investments, you have a similar kind of process but you're essentially having to do building analysis before and after, you have to do, oftentimes you're using large samples to make these kind of judgments about what's happening.

And then finally, one of the things that comes up, typically in the world of finance but also for efficiency, we know that customers today can go out to Home Depot or go to their contractor or buy high efficiency equipment. They don't need to use a utility program. They don't need to use CAEATFA's program. They can just go out and do this stuff. So we have this concept that there's sort of naturally occurring efficiency out there and we also know that some people would have done things without the programs existing.

This is actually one of the most complex issues in evaluation because the reality is in California we've been doing efficiency programs for thirty years and it's very hard to separate out what you know and don't know but the utilities have run programs for thirty years in this state and they have influenced the entire market as a result of running those programs. The vendors, the retailers, the contractors, the customers, everybody knows in California that we have these kind of service offerings. So it's very hard to construct a world where you didn't have those offerings and what would be done. But that is one of the challenges that you sometimes get asked and we have to think it through.

So there's a lot of effort put on thinking about net savings. But it's defined as the total change of load that's attributable to the financing programs or to the efficiency program. It's worthwhile to think about it because you want to make wise use of public or ratepayer dollars but also it is a challenging area.

Okay, so turning to evaluation issues that are specific to financing programs. We want to fame them as the savings levels that are directly attributable to financing strategies and we want to try to understand the influence of financing within specific markets and project types. So if you're doing some kind of attribution analysis, you should consider whether in fact the program financing was essential compared to private sector options today, so a customer can go out and get a new furnace and put it on their credit card, they can get a home equity loan, they can do that. Some customers, not everybody, if you're creditworthy and you have those kind of resources.

So you have to ask yourself the question, would you have done, was the financing really an important element of you deciding to make this investment? You also have to decide the influence of financing relative to the other program offerings that are out there, so in California we have information, we have education, we have technical assistance, we have rebates, and you can ask us what were the factors that influenced their decision-making process.

And finally we have this notion in the world of utility customer programs that sometimes we're running programs because we're actually trying to acquire savings, actually acquire a resource and we're using, those savings are essentially going to defer generation, transmission, and distribution investments, and other times the policy rationale for efficiency is that we want to reduce the market barriers that are out there. We want to try to transform markets and reduce barriers so that the market functions efficiently and that there's more activity in the private sector. These conceptual frameworks are not mutually exclusive, but they definitely, you ask different questions in terms of evaluation depending on what your policy objectives are for the programs.

So you'll see some people around the country who are offering green banks saying "We're going to transform the market for private financing. We're going to change the way we do business and how customers look at efficiency and green bank is the way we're going to do that." So those evaluations are dealt with differently than people who are just saying "Oh, I'm offering an on-bill financing program, I'm trying to get a certain amount, I'm trying to be a savings hole and this is an efficient way to do that."

So in our paper we came up with this sort of set of criteria and sort of a decision tree logic about how you think about what impact you're having on a financing program. So the first question is did the financing generate more savings than would have occurred without it? One of the hypotheses in financing programs is that financing allows customers to go deeper, to install more measures, better equipment, and so on. And that's part of what you have to ascertain when you look at a financing program compared to a world where one doesn't exist.

The second level is you have to ask yourself the question, did that program's financing generate new savings or simply replace private financing? What if you were allowed to run a program and you determined that a whole bunch of contractors in your program, the contractors used to offer financing from Trane and now they just get your financing from CAEATFA because it's easier? Or [inaudible 00:33:25]. We don't [inaudible 00:33:27]. But you have to ask yourself the question, did the program financing generate new savings? You ask that question if there's public dollars at risk or ratepayer dollars. If there's no public money being involved, well, then it's just private market after [inaudible 00:33:44] and you don't worry about it too much. But if you are losing public dollars because for administrative cost or because you're buying down interest rates or you're setting the loan loss reserves, then it's a reasonable question to ask about whether you're actually additionally enhancing the market.

And then the third question is what is the impact of other program offerings? Oftentimes in those states that are considering financing as a substitute, they're saying "We no longer need to have rebate programs. Financing is going to do all of this for us." That's part of what you need to look at in an evaluation where you have rebates that are still offered and what customer uptake is like in those markets versus what customer uptake is where you just have financing programs. You have to talk to customers about what were the decision criteria that they used.

So in a California context, these questions can be applied because you can look at what level of savings do specialized efficiency financing products collectively generate above and beyond what would be achieved in the private market that exists today in California. There will be issues raised in a specific pilot programs and those will not get you the staredown in California because of the plethora of offerings that we have in this state, but you can ask questions about the level of additional savings the pilots generated beyond existing products, such as the private market or the PACE program. You can ask questions about the benefits of those savings. And then you, in terms of PACE specifically, you can ask questions about what level of savings do PACE programs generate above what would happen in the private market without PACE. To set those questions up, I've actually got the data to look at. It'll be a challenging effort but it's sort of something that you can certainly consider.

So to go a little bit deeper about market transformation, when people do market, when people state that they want to transform markets and that's their policy objectives, one of the ways that we think about that is that fundamentally you're trying to reduce market barriers. If you want to do that, you have to have sort of a theory about why you're intervening in these markets, what you hope to change, what barriers you're actually trying to reduce, if you're successful what will happen, and what's your exit strategy for getting out of the market.

And then what you oftentimes do is you try to establish market activity baselines against which progress will be measured and you develop interim metrics because we actually want to transform markets and it's typically a five or ten or fifteen year process. And the problem we have is that everybody has a short attention span and the time horizon of regulators is their term is six years and their time horizon is two or three. So you only have to construct, you can even think about can you develop interim metrics to help you decide whether you're on the right track or not. Are you making progress toward that longer term goal that you've articulated?

So this is a program logic diagram that comes from Connecticut, their green bank program where basically they're offering this example, financing credit, program credit enhancements. They want to, that will hopefully reduce the low risk profile and that will lead to lower interest rates, longer terms, better marketing. Because they're doing that, they will be collecting a lot of data on loan performance over time. One of the big issues in the financial community is we don't understand the long term performance and the credit risks of loans so therefore we have to create public programs so we can actually understand default and those kind of issues. And also one of the theories is that this kind of, as we increase the financing supply we also increase demand. But green bank programs have been going on for there or four years in Connecticut, mostly focusing on renewables. They'll doubtless be doing much more on efficiency. And they're constantly thinking about a systematic evaluation of their program using, trying to construct this framework about how they think they're influencing and changing the market.

So this is a chart that we developed for the report where we went through all the time periods. If you're thinking about a market transformation program from the very beginning of when you're setting the program up in terms of baseline data to when you are getting, when the program is being implemented, are getting data on financing demand and you can do surveys about whether customer awareness or availability is increasing overtime against the baselines you've established. Then after a year or two in the program, you'll start to get some information on mode, volume, and project performance, some information on savings.

And then a couple years out, three or four years out you might actually be able to do information about whether or not you actually have more lenders in the market, whether or not they've actually changed their rates and terms and underlying criteria based on the knowledge that they've gained because you've been in the market with this program for a while. And then finally, you can look at over time changes in overall savings levels and things attributable to financing. The point of this slide is to say that it's probably, if market transformation is your policy objective, it's worthwhile thinking about what kind of interim methods are appropriate to think about for your program administrators that are fair, that are reasonable, and again trying to realize that we know that it takes ten or fifteen years to transform markets. On the technology side, you can see what's happened with compact fluorescents or LEDs or technologies that have penetrated markets, they take many, many years. And on the policy side or the administrative side or with different models, it will clearly take that long as well but it's worth thinking about it.

In the California context, one of the challenges is that, it's an important question to ask, do the pilots have an intentional theory of change? CAEATFA set up six or seven pilots when the PUC asked them to do that. What were you trying to focus on? Were these under-served markets? Were these places where you wanted to do activity that hadn't been done before? Were we testing new things? That's when that leader's going to have to be administrator to sort of get a sense of what their motivations were. Then we can notice that over the time that these programs have developed, a lot of other things are happening in the market. Three or four years ago, or two or three years ago when this program started, the situation may have been actually very different than it is today with PACE and what's going on. You have to consider that as you think about what's an appropriate evaluation framework.

I go back to see the highlight that this is really uncharted territory. We've done market transformation analysis for technologies for the last ten or fifteen years and we have methods that we've developed about how to do that and it's not easy, but when we're looking at sort of program design concepts like financing, this is really a new area and because of there existing a private market already it's really important to think those things through to really decide whether you're actually, what barriers and gaps you're addressing and whether you're making a difference. It's a pretty dynamic environment.

One slide on cost effectiveness. In the world of utility customer programs, typically programs or the portfolio is evaluated for what's called benefit cost ratio or net benefits. One of the key things to understand in financing is that in California our programs are used, are evaluated against multiple cost effectiveness tests. Two that are the most common are called the program administrator test, the total resource test. The program administrator test just looks at the cost that the administrator incurs, the incentives, the administrative cost, and weighs those against the benefits from the program, so the savings from the program are then translated into avoided energy costs, avoided capital costs, avoided transmission and distribution costs.

The point of this slide is to note that what can happen in financing programs is you may be reducing the rebate level of the incentives you're offering to customers, and if your administrative costs are reasonable, it may [inaudible 00:42:02] that your benefit cost ratio goes up from the administrator's perspective. But if your loan volume or your actual amount of activity doesn't really increase, it may turn out that your benefit cost ratio is higher but your net benefits decrease from a program administrator's perspective. And so that's why we suggest to people in the report that they should look at both dimensions, look at BC ratios as well as net benefits, because if your goal is to acquire all cost effective efficiency, which is a state goal in California, then net benefits is really the ultimate metric that you want to think about. But it's one of the things you need to think through in terms of what happens with financing programs because essentially, in theory what you're doing is you're trying to get participants to pay a greater share of the costs.

A comparative assessment framework, so this is the last module for me. Deana mentioned this. It's really important to note that when you're thinking about the range of financing programs we have in California, from CAEATFA's programs to on-bill financing to PACE, Prop 39, there clearly are other policy objectives or public benefits that have been articulated. Local economic development, in the case of PACE, water conservation to mitigate drought, clearly consumer protection and lending practices is sort of a broad public objective that all administrators have to be cognizant of. One of the things to think about are these concepts of breadth and depth. One of the things to think about in these programs are some programs, who's actually being targeted in terms of the kinds of customers, who's being reached. Sometimes you have programs that you want to serve under-served markets. Those may be rural areas, they may be parts of the urban area. You may be serving parts of the market that are, don't have enough ready access to credit. So one concept is, you could be offering finance programs that are, actually increase the breadth of which efficiency offerings are available to customers.

Another concept we have is sort of depth. So one of the things we realized is that we have aggressive savings goals in this state in aggregate. What we have to do at the project level is get deep savings and we have to get lots of people to take it up. That's the way you're going to achieve the state's climate goals, at least on the efficiency side. So one of the metrics that people look at are savings per home, comprehensive retrofits, they look at the mix of measures that are being installed, the number of measures installed per houses, and that may give you a clue as to whether or not your financing program is helping you go deeper than you would have gotten just by a rebate program.

And finally, people looking at loan performance, we want to make sure that people who are getting access to financing are paying off those loans and that the default rates are very minimal.

A couple of examples from our report, some of these metrics really have trade-offs. So for example, Massachusetts, the HEAT program has volume, a hundred million dollars a year, which is a pretty good sized program for Massachusetts. But when they did the evaluation, they found that only about nine percent of the market was actually participating in the program over a multi-year period. So they didn't look at market penetration in the evaluation, just looked at loan volume and aggregate savings. Also, in terms of measurements, only ten percent of the loans were used for weatherization. About eighty percent of the loans were used for single measure equipment replacement, new heating systems, new air conditioning systems. So the point of this slide is to make you, you probably need to have multiple metrics when you think about programs and program evaluation in terms of framework.

This chart also from, I believe it's Massachusetts, gives you an indication of the mix of measures in that particular program. So basically, windows and doors were being [inaudible 00:45:58] by forty-five percent of the customers, new HVAC systems were about forty percent. Another way to look at programs is you've got a program that's doing very low cost or moderate cost kind of measures, you've got other programs that are getting a much broader mix of measures and that may be what you want to do as a policy goal but it's part of the evaluation.

So this is my last slide and I want to call your attention to some of the bottom there parts of it. The top four or five things are what's used in evaluations from a resource planning perspective. When we look at the benefits of efficiency programs at the portfolio level, we realize that they can reduce commodity prices because you're dampening demand, you can avoid transmission and distribution capital if the programs are locally concentrated and focused, they definitely have environmental benefits in terms of avoided carbon and NOx and SOx. But utilities sometimes offer programs because we have good data often that shows that programs can help with bill collection and service rate of savings. They clearly can provide access to energy savings opportunities for all markets. And they have economic development benefits, local economic development benefits, and those things should be factored in if you have a comparative evaluation framework, some of the criteria that you may want to consider. So with that, I look forward to your questions and comments.

Deana: Thanks, Chuck.

Chuck: We did that in less than thirty minutes.

Deana: Yeah. We are going to be out of here before four. I think what I'd like to do is offer any comments from the room or questions or issues that folks would like to raise to the group, and if there aren't many then we'll move to any questions that might have popped up throughout the process.

Megan: So the first set of questions is specific to the report? To Chuck's presentation?

Deana: I think just overall questions.

Megan: Oh, okay.

Deana: Yeah. Or comments, please. Yes, please. And just a reminder, everybody's on public record. We would like-

Megan: I'll be on my best behavior.

Deana: Thank you. [inaudible 00:48:20] We would like folks to introduce yourselves and please speak into the mic for the folks on the webinar. It depends on how interesting you are, I guess.

Megan: Okay, great. I'm Megan Campbell, [inaudible 00:48:29]. Hi, everyone. Just a couple of comments, really. I've been thinking of a few things that Chuck said in his presentation and thinking about an ultimate goal and kind of developing comparative criteria. A really good framework to start out in the paper there, Chuck was talking about whether these programs are complements or substitutes. And I think that's a great [inaudible 00:48:53] to think about in terms of criteria for each one. Some things are going to get a little nutty because it would be nice to think that every program and PACE that achieves [inaudible 00:49:03] is, in fact, in one bucket or another. I think we're going to see certainly [inaudible 00:49:11] so far pushing the kind of borders across the line there. Some are going to be getting outside of programs and participants are going to be connected to funds from rebate programs. They're going to have the participant pool that's kind of a mix there.

I think that's probably going to be the case for the CHEEF pilots that are coming up as well and the OBF will be an interesting one. Right now it is really a complementary program but they are considering a pilot that's going to entirely look at OBF as a substitute program in the future, so that kind of work will be interesting. But certainly, Chuck, I agree that this kind of runs of what's developed criteria, whether other programs are complementing, [inaudible 00:49:54] a few days and we might need to develop some sort of hybrid approach that [inaudible 00:49:58] talking about.

A couple more criteria to maybe think about. There's the residential and non-residential and there might be some criteria that are appropriate for residential and some that might be more appropriate for non-residential so we want to think about that distinction as well. And another thing to think about as we're developing criteria is timing. All of these programs, we're looking at OBF at least right now as a complementary program, have been in the market for a while. PACE certainly had a number of years already in California. CHEEF pilots all have a different starting period as they roll out, so really thinking about what is the time period that is appropriate for us to start really looking at the criteria for all these different programs, especially since they're all going to be in very different timelines.

Chuck: I'm not sure what you're suggesting there.

Megan: Right.

Chuck: Some programs are much more mature in terms of [inaudible 00:50:58].

Megan: And at what point do we think a program is going to be mature enough to start looking at that criteria? Is it twelve months after the first participant? Those are the kind of things we have to think about. Thank you.

Deana: Thank you, Megan. Any comments or questions online?

Speaker 4: A few things came to mind as I was listening to your presentation. One, I think as we come up with criteria, I don't think we're all going to agree. So I think that will be good to flesh through as we grapple with different things, and I welcome that. That's part of the discussion, I think, of establishing this public process through a working group. I cannot grasp in my crystal ball about what to submit this criteria to the legislature, what it will be used for. My guess is it will be a comparative assessment of California's energy efficiency financial programs intended to find what quote-unquote bars are more effective with different policy goals and the challenge that that will still bring us at that point.

And then they take that [inaudible 00:52:12] to the next step into how you create a baseline in a traditional EM&V lens, which, I'll be candid, I didn't know this industry existed before my experience with CHEEF. It's very robust. And comparing that with some of the other efforts we have going on in California, the eco loans and the energy commission that gives zero percent interest loans to schools and local governments for energy efficiency upgrades. How do we take this effort to do a comparative assessment when these programs are at different levels of maturity with different policy goals? I bet Chuck is just [inaudible 00:52:54] with that.

Chuck: I think Megan's comment was really on the mark. I think one of the things that we'll probably do, you'll probably end up mapping the programs to markets and their relative market maturity and that will at least as a first cut provide some picture about potential overlap and timing and things like that. So if I was a legislator and I know that there's only one program that targets the rural market, that may just make me feel better about knowing that there are four programs that go after single family residential homeowners with the same cast, ten thousand, fifteen thousand, twenty thousand dollars. But one of the challenges I think you're going to see at least in the initial thinking that we've done and you've done is it's clear that the policy objectives are a little bit different from those that are articulated for a public program like PACE by legislators versus a ratepayer funded program by the PUC. So you need to, both programs, the exact same program could have merit in the same market but if the policy objectives were different it still might be reaching different customers and still be appropriate.

Deana: Yes, please. For those on the webinar, people are walking to the front of the room. That was my NPR [inaudible 00:54:29].

Peter: This is Peter Thompson from PTA. I just have a question around the, question about whether the finance [inaudible 00:54:39] of new savings are simply replacing private finance. This question's more of a caution. I'm concerned we'd go down a path where we ask customers "What other types of financing did you consider?" Because you may end up in a leading question. When we look at trying to create a [inaudible 00:54:56] with rebates, we asked a simple question, "Would you have done this without access to the rebate?" And I think a more appropriate question for these financing programs is this: "What are you [inaudible 00:55:06] this specific program?" Because there may be may reasons why they participate in the program. It may be that the [inaudible 00:55:11] participating and maybe just the program's really successful at integrating themselves into contracture sales processes. So if we think of it as being a potential substitute for private finance, we might end up with some leading questions and we should make sure we avoid those.

Chuck: I think, Peter, you raised a really important point, which is that if you're thinking of financing as a complement and your contractor network and your administrator have that framework that it's sort of a bundle of service offerings and it's going to be very hard to disentangle the incremental value of that one element because it really is a bundle, and I think that's a really important concept. It's clear that the utilities in California have thought about that and have tried to wrap their programs around a series of concepts, like I have my webpage, it has my usage, I have an audit product, I have a rebate product, I have a financing product. And I even may have the same identity for that whole portfolio as a brand, Energy Star or something like that. And if you've run it for a long time it's not really clear that it's worth your time or effort to try to disentangle that.

Sometimes you can do comparative analysis. Sometimes one utility does it one way and the other one does it the other way so you can actually make maybe some inferences. But it's challenging and it's not clear how productive an effort that really is. Again, one of my first slides was sort of about risk and reward and risk management, how much effort is it really worth to spend on picking through this problem versus to them it's what you're getting.

Deana: We've got a question on the webinar and then we'll go to another one of the [inaudible 00:57:16]. So we have Chris Kramer on the webinar.

Chris: Hi, Deana.

Deana: Hi, Chris.

Chris: Hi. So I just wanted to raise one quick point because there was some discussion around the issue of timing both from Megan and from Chuck and I think that relates in part to the approach that you take toward all of this. By that, I mean when Chuck talked about the difference between resource acquisition and market transformation, one of the things we talked about was that market transformation tends to have these ten or fifteen year timelines. I just wanted to make it clear that that doesn't necessarily mean that what you might learn from a resource acquisition approach isn't relevant to a market transformation framework.

So for example, if you evaluate in your one or your two or your three how you're doing, you start a program, you see what the results are, and you evaluate how well that's going, that may inform what your fifteen year prospects are and that's really important information to look at. And in fact, although we didn't include this, one would exhaustively even think about that, is when you're thinking about your interim metrics for market transformation, one possible metric you might actually include is what are the resource acquisition results that you're seeing in those early years.

Deana: Thank you. I think that raises a good point. Now can you tell me how? We'll get there. It worked out for a while. I'll figure it out.

Joe: Joe [inaudible 00:59:14] with Renew Financial. We're the program administrator for the CaliforniaFIRST program and just a couple things, PACE specific to think about. We're looking at leveraging of public funds, so right now we have the ten million dollars for the loan loss reserve, but then how does that also play into the sentiment of the local governments that we work with to even be able to offer this type of financing? Because many local governments prior to the loan loss reserve weren't comfortable with offering residential in their jurisdiction because of the issues with Freddie and Fannie. So residential PACE now is over a billion dollar market and a lot of it is to do with not only the funds, but also the policies that are in place, loan loss reserve, consumer protections being another. So being able to judge that when we're looking at maybe we only have half the available market without these policies is something to look at as well.

And then on the individual projects, looking at the deep dive retrofits but also how a financing product factors into when something breaks, so those replacement costs of your HVAC going out, how do we factor in the attractiveness of each of those products I think are just another thing to look at as we evaluate.

Deana: Thanks, Joe. And as we mentioned, we've asked the PACE administrators here in California to participate and provide a presentation workshop. So we'll be looking at some of those program structures at [inaudible 01:00:42] workshop.

Chuck: I think it's clear that the loan loss reserves that California's offering for PACE has clearly jumpstarted the market. You only have to look at all the other states that haven't offered that in the residential PACE market. I would agree with you, Joe, that it's not going to be hard to conclude that the loan loss reserve was pretty critical to overcoming the barriers that some of the local governments fixed.

The second point that you raised about the dollar volume of the PACE market and what kind of projects people are doing, I think will be an interesting area to sort of characterize it to help legislators understand what fraction of folks are installing renewables, how many people are dealing with drought issues, how many people are dealing with earthquake stuff, how many people are doing efficiency measures. That kind of information at the project level acclimated over the portfolio will provide a nice picture of what PACE is being used for and I think will help people understand it relative to other alternatives.

Deana: I think that's a good time for one of my subsequent questions, which is the estimated energy savings and how do we ensure that we're collecting the data we need and that we're estimating it correctly? Because I think for at least [inaudible 01:02:08] of the CHEEF, there's some tensions here. We will actually be getting pre-project and post-project actual data and always knowing what measures are installed. Knowing and thinkingg through some of the net benefits and the other issues you raised and estimating energy savings, it was the common knowledge in the discussions I've had with those, especially in the residential market, that just installing an energy efficiency measure doesn't mean that you're going to get savings. At that point, the policy ultimately goes dun, dun, dun. Right? That's not necessarily what you want to hear when you install an energy efficiency measure.

But there's so much issue on, or concerns with actual lending here and I've created this in my own house, we got a smart thermostat and all of a sudden I started using it and I don't think we got savings, although the tools were there. That summer, my behavior was not. It was cranking that thermostat up, and now that I know better, a lot of it was about education, a lot about that behavior, so one of my questions especially, I don't think that's the case in the commercial market unless there's a type of use change. What are your thoughts on actual energy savings, estimated energy savings, the data necessary to actually figure out if these programs are working?

Chuck: So in the residential market, if you have a decent sample size and you're able to get building data pre and post, then you should be able to use a building analysis to develop some estimate of gross savings, assuming that you know the measures that were installed. If I were an evaluator, I would be, and if they were both efficiency and renewables projects that were being done, I would probably try to segment the data so that I have the people just doing efficiency investments in separate groups and people doing efficiency and renewables investments together because the data issues for some are different.

One of the challenges I think with PACE will be, if many people are actually remodeling their home or doing something they may actually be changing the floor area, they may be changing that. So like for example, in a typical on-bill financing program, most people are not doing major remodels, you're just sort of replacing something. So the footprint of the house and the consumption is sort of about the same, so you feel comfortable with the pre-post comparison within a customer level. But when you look at a PACE, I don't know the answer to this, I don't know if PACE did that well, but it's a fair question to ask. If thirty percent of the people in PACE are remodeling and adding floor space, then you need to factor that into a billing analysis of energy use per square foot, may be different for very good reasons because the house is a lot bigger afterwards or whatever. Those are all knowable things if you have good enough data and if you have a good, big enough sample size.

So that answers the question of gross savings at a customer level. IT doesn't at all deal with the question of attribution, whether you would have done it anyway or that kind of stuff, those are all things that you need to use survey techniques and other kind of techniques to sort of think about. The threshold question is, you can, if people sign utility bill releases when they sign up for PACE, I don't know if they do, or if the utilities are willing to cooperate or if the PACE administrators are willing to cooperate, you conceptually can do this. If this data is not available, which oftentimes people are resistant to share it, then you're back to the world of you know the measures that re installed and you use engineering estimates for what you think the savings are and you'll, the burden of proof, the credibility of those results will be left and if you had a billing analysis they still may provide some value. I wouldn't recommend it. In California and in this day and age, we should be able to get billing data from a sample of homes.

Deana: I'm silent because I don't have anything else. I agree, we should be able to. I think there are issues right for administrators, especially when we look at when PACE became active in California in 2009, we've got a lot of activity and we've got, we know more today than we did then on some of the needs around data. So how to fill those in to processes without [inaudible 01:06:56] program administrator and kind of hear the discussion of when we're documenting that, even administration, the ability to sell the project. I'm not advocating one way or another, I think the data should be available, I'm just trying to put on the various hats.

Chuck: So when you participate in a utility efficiency program today in the commercial and industrial area, I think you oftentimes as part of participating you agree that the utility can use your billing data for some evaluation as long as they protect your confidentiality and privacy. So it's pretty common practice, I believe, in the utility arena for evaluation purposes to have access to this kind of data to be in the commercial market.

Deana: And we'll be building new best practices for energy efficiency programs.

Megan: Deana.

Deana: Oh, sorry.

Chuck: It's okay.

Deana: I got engaged here.

Chuck: Yep.

Mike: Mike Lemyre from Ygrene Energy Fund, one of the leading PACE providers in the state. Just to the point of the collection and I think the comments [inaudible 01:08:04] made about the automated, the one more document to sign. I think that what we haven't seen any projects, frankly, that increase the size of the footprint. We know that because we're not just the post project audit or pre-project approval, but underwriting, servicing, administration, there are a number of layers to it. Which, that speaks to a larger point I was going to make. In thinking through the policy, whether it's data collection or type of measure, I would concur just to the bodies take a much more nuanced view and not simply say "Okay, we're going to establish a policy that gathers a specific piece of information or a set of data upfront and/or at the bank end." But how does this, or how is this, could be incorporated into underwriting standards, project eligibility standards, contractor certification, oversight?

So there's, whenever I engage or my staff engage with local administrators or local government as well as the state entities, we kind of walk through the various levels of qualification and evaluation and determination for these projects. Is that simply a bolt-on type of function in the beginning that never ends? But a lot of these things that are being discussed are already accommodated or contemplated at various points of the process. The actual mechanics of PACE, I think the full service firms, those of us that have done residential, commercial, multiple jurisdictions, but really scaling, a few firms have kind of figured that out because we built this in. So I think that the execution administration of the projects and how that's done should be contemplated in setting out policies.

Chuck: That's a great point. Sort of in the world of utility customer efficiency programs, what you're suggesting is what we call best practice in terms of oftentimes when you do the program design you have evaluators sitting at the table with you from the beginning thinking about the design of the program and thinking about what outcomes we have to actually measure, and sometimes the evaluators work with the administrators, sort of thinking about well, build this system in. It sounds like what you're suggesting is, you guys are already thinking about that and you've already, in various stages of process and efficiency evaluation, you've thought about the design of the PACE program and how it reveals itself. You're right, it'll be simple to evaluate them because it sounds like you struggle with some positions already.

Mike: Well, I didn't say simple, but yeah [inaudible 01:10:47].

Chuck: You're saying that in the PACE outreach you deal with, you're not dealing with places where you're actually doing major additions, it's mostly in place kind of, [inaudible 01:11:00] remodeling activity going on that you're covering.

Mike: There's some level, there may be some level of remodeling activity that's directly necessary to implement the energy measure itself. You can't approve a solar project, a solar installation on a rooftop with a faulty roof or some manner of repair. There's a tolerance for that. But yeah, the industry, I think a number of players in the industry have systems and processes and policies that evolved extensively. I've seen that over the last seven years. I think that was really the gist of the comment. Thank you.

Deana: I point at the screen and I say again, I think that this breakdon iks actually from HERO programs on the number of improvements that they've installed with HVAC. I'm not sure what falls into other but I'm sure we'll hear more about that in a minute.

Chuck: I don't know if Chris is still on the phone, if he would know where that slide came from.

Megan: It says WRCOG.

Deana: I think this slide came from LBNL or DOE on the PACE evaluation.

Chuck: Oh yeah, what it's doing now?

Deana: Yeah. Because there's a lot of work being done with this area right now. In your research, where does zone neutrality come in?

Chuck: That's a good question. Originally, historically, there was a program that's been around for fifteen, twenty years called PAYS, which came out of New Hampshire and Vermont where they basically tried to say that you could finance programs on people's bill and that it had to be bill neutral, the savings you got from this program had to exceed the cost. In our, PAYS has been around and it's been, might have been three or four utilities around the country, it never really had substantial market uptake, in my opinion, in most places that they've done this. It tends to be oftentimes consumer advocates and consumer protection folks trying to insist on bill neutrality as some protection to make sure that customers aren't fleeced. In our work and our report, not this one, but a previous one, we're not huge fans of bill neutrality provisions. We don't recommend them to program designers or regulators. We think there are other ways to build in consume protection issues aside from bill neutrality. But it does provide us sort of, it does force you to have a process where you have to demonstrate that the savings are going to be comparable so you can pay off debt service and that the customer is not adversely affected.

So if you're dealing with low income populations, people whoa re not maybe energy sophisticated, those kinds of protections may be appropriate for the first couple of years. Certainly if you're dealing with large commercial customers, I don't think bill neutrality is the kind of thing that they need. They're quite capable of making those kinds of determinations. But we do see those roles in place in some programs, in some states. I don't know. In California, do you have that?

Deana: The HEAT program does not have that, nor does the PACE program.

Peter: The OBF program upgrades [inaudible 01:14:22].

Megan: But on-bill financing is financing which is specific to commercial projects and requires [inaudible 01:14:27].

Chuck: And do you recall the motivation at the time it was adopted, what was the policy rationale that was given, was it sort of what I ...

Peter: I don't know if anyone else remembers, I wasn't around when [inaudible 01:14:40].

Chuck: No one else is as old as I am who knows this.

Peter: I can tell you, I've seen PACE for like fifteen years and argued with those guys when they first put it out and they feel pretty strongly about it, particularly for low income customers that it's a very important kind of protection. I guess I would say that if I was an administrator, another way to deal with this is to have reputable contractors and have other kinds of ways of managing this so those kinds of abuses don't happen. That may be a more effective way of doing it. That's just my two cents.

Deana: It sounds like we have a question or a comment on the webinar. Let's see, I'm going to find this [inaudible 01:15:28].

Megan: You asked if Chris Kramer could comment on the slide.

Deana: Oh, yes.

Chris: Yes, hi.

Deana: Hi, Chris.

Chris: I just wanted to clarify on the work I did, I'm not quite sure what the question was, but that did actually come directly from WRCOG, a staff person there. So it's not program wide data but it's just from WRCOG territory. WRCOG is the Western Riverside Council of Governments, the regional agency for the geographic area where that PACE program started. That PACE program's now bigger than that area, but that's still a large, if you think about it as the starting point for that program. One of the points I think about that data which I think Chuck sort of already made is just to say even with loan volume being high, it is for that program, it's still important to look at what types of projects are being done and whether there's energy efficiency potential in areas that may not be being reached by a particular financing program. If you were for example primarily reaching single measure HVAC and doing windows and doors, are there other types of projects where there is significant energy efficiency potential, that other category?

California's a little different, at least where I'm from. For example, in the northeast, there might be a lot of energy efficiency potential in weatherization, but if you're not really getting a lot of that with a particular financing program, then it may be worth asking whether there are, as you're comparing, what other programs might be reaching those types of projects.

Deana: Thanks, Chris. Any other questions or comments from folks on the webinar or in the room?

Megan: Yes, we have one.

Deana: Here's another issue that I think will come up ... Oh, we do have one.

Megan: We have one. Yeah, we have Al Gaspari.

Deana: Hey, Al.

Al: Hi, Deana. Sorry I couldn't make it in person, but I did want to comment on bill neutrality. Just a couple points. So I don't know if Frank's on but he was around when OBF was set up, but it was specific in the language and as the IOUs got approved to be lenders, that it was based on projected bill neutrality for the loan for OBF. I would comment on bill neutrality too because sometimes we conflate facts of, like, if you want to use historical bill impact analysis as an underwriting criteria, do you have to require bill neutrality? I would say that that's different than if you were using traditional underwriting or assigning the loan to the people's property and deferring in securitization. So I think that's something you have to look at because if it's not bill neutral it's really not reflecting their historical utility bill payment. If it's five X, I don't know if that's a good criteria.

The other thing too is the equipment you're targeting. So for programs that are going to be targeting private capital, you have to look at what's driving the private capital providers and that's the pulling capital so they're going to be looking for the big ticket items to drive out projects. That's a good idea for programs because you can target HVACs and other pieces of equipment. That's something that might be incompatible, though, with bill neutrality. But if you're doing something where you're looking at can you create something that's a quick turn, low dollar amount but you want to use some sort of alternative credit underwriting process then bill neutrality might be more applicable.

Chuck: So do you link the underwritning process to the bill neutrality demonstration?

Al: We use, so for OBF, we use the projected bill savings for the customer to generate the loan agreement. So we would then, it is a loan and it's set flat after the loan is originated but we use the best projection of energy savings for the customer's loan so ...

Chuck: You said you use it to set the loan term? Is that what you're doing?

Al: Loan term and loan repayment. So the loan repayment is based on the projected energy savings per month where it's actually the annual energy savings divided by twelve. The other, as we look at the program and Megan is doing and her team is doing the evaluation, when we think about why we have such low defaults in the OBF program, I think that two of the key things are very high project quality and also the bill neutrality requirement, so.

Chuck: So we did a report on on-bill financing at LBL where we looked at thirty or forty of these programs around the country. Peter, you worked on that one. And what we found, we had limited data sets but what we found was, because you're right, Al, the intuition is if you got bill neutrality you should have lower default rates. That's the theory. But in practice we didn't actually find that. We didn't really find any significant difference between programs that had bill neutrality versus those that didn't in terms of default rates. Now, this isn't, we didn't have the greatest data in the world, it's what existed in the US and Manitoba at the time and people gave us different things, but I think it's, I thin you have a good hypothesis on your program but I'm just telling you that at least nationally we have not been able to prove the assertion that people have historically used about bill neutrality.

Al: I don't recall that paper, but did it normalize for underwriting criteria? Because one of the key things is that we are able to use the utility bill payment history, which is a very quick turnaround underwriting versus we don't do any sort of commercial credit, we don't put any liens on the property. So is that all equal across it? I know different programs ...

Chuck: Not [inaudible 01:22:00] for any statistical analysis. Unfortunately, Al, we didn't ... You're right, every program has different underwriting criteria and everyone has different default rates, everybody uses different definitions for what default was. And they pointed out that there really aren't standard definitions in the industry of those issues today so it is hard to compare across programs and I fully acknowledge that.

Al: Yeah. Okay.

Deana: Any other questions or comments in the room or on the webinar? I have one more issue that might be interesting to talk about. The [inaudible 01:22:41] ... I'm just going to say it. I'm like chilling right now. And that is, there is a lot of discussion in California about how we've gotten to energy efficiency standards. Meaning our building code in and of itself is so aggressive, or progressive, or assertive, bring your own adjective there, that we've been able to get a lot of energy efficiency in new buildings.

So now that there's a policy discussion that's been going around the last two years about stranded energy efficiency or orphaned energy efficiency as we talk about the IOU program. Specifically, that we're rebating or we're only defining eligible measures as those measures that are above code. Significantly, [inaudible 01:23:28] above code? Would that be [inaudible 01:23:31]? And so we have all those pre-existing building stock and that's probably like old here in California, it might be in other states, but there are energy efficiency at code that we may be missing. Candidly, I can't speak to how the PACE program's addressed. It doesn't, I believe, as they define an energy efficient measure. It is at a lower standard than are IOU [inaudible 01:23:58], whether they score a utility [inaudible 01:23:59]. Public utilities are above thirty.

But I was wondering, Chuck, in your research and looking at this, if that was an issue that came up in looking at other programs or if that was a criteria that makes it onto the list. Are we doing more than we are legally required to or do we go ahead and let everybody [inaudible 01:24:24] their home to bring some of it up to code?

Chuck: That's a policy call that people have to make. I do think it's a legitimate issue that there are certain parts of the market that are not aggressively retrofitting and modernizing their stock and that the turnover rates are quite different in different parts of the market and that it's appropriate to try to understand that and to account for it. It gets sticky in the industrial world when it's linked to performance incentives and so on. So I would predict that this conversation would not be as contentious if we were just talking about savings holes but it wasn't linked to financial incentives to utility shareholders. But that isn't the case in California.

I think also that the legislators feel that allows us to use existing utility bills as the baseline and how that's implemented will start to maybe resolve some of these questions. Again, you don't, when you're using public ratepayer dollars you want to make sure you're getting things that you wouldn't be getting already in the market. That's a reasonable question for regulators to ask and it's a reasonable question for utilities to try to answer. It takes a lot of good data and a lot of good market research to actually try to figure out what's going on in markets.

Megan: We have another one on the webinar, Frank Basaro.

Chuck: Hello, Frank.

Frank: Hi. Can you guys hear me?

Deana: Yeah.

Frank: Oh, cool. Hey, Chuck. It's been a long time. How are you doing?

Chuck: Good, how are you doing?

Frank: Good.

Deana: [inaudible 01:26:18] Frank Basaro is a good guy.

Chuck: Frank taught me everything I know.

Frank: No. I just wanted to go back, I'm sorry, I was trying to interject and I'm just not very adept at the webinar thing, sorry. But I think Al pretty much made a good guess at what we were actually doing way back when we designed the California OBF and required bill neutrality. It was based on the united eliminating program in Connecticut, by the way, which had pretty good success with the bill neutrality approach to credit underwriting and that was really what it was all about, was we didn't want to get into sophisticated being a bank like credit analysis so it was our proxy for underwriting was to use bill payment history and the bill neutrality approach. Excuse me, losing my throat, my voice here. So it was strictly based on that.

One thing I would say is I would highlight that in all the assessments I have been following over the years that I think Al's point is a good one about making apples and apples, the comparison to bill neutrality based programs and how they've been doing when it comes to the details. So just I would echo that. That was really all I wanted to say. Thanks.

Chuck: So Frank, in your experience, this applies for the commercial programs that you guys were running?

Frank: Yes. Well, commercial and public agency.

Chuck: Sure. But did you use residential? Because I must confess, my off the wall remark about PAYS comes from my background in residential programs, so I ...

Frank: I would agree with you there. Yes. Yes.

Deana: The on-bill financing for California has been limited to the commercial ...

Chuck: I understand that, but I do this, he has done a pretty aggressive on-bill financing rate for commercial customers. It sounds like it provided a very good racket, it allows you to get out of the business of doing credit underwriting and it's a simple approach that could get top value from a step loan in terms of loan repayments without having to do that.

Frank: Yes. [crosstalk 01:28:31]

Chuck: I understand why you did it. I think it's a great idea given that maybe a lot of small businesses didn't want to share with you all their credit information, didn't want to go through all that hassle, didn't want to do that kind of stuff. Makes a lot of sense why you came up with a method that sort of works in that market.

Frank: And, you know, at some point maybe it's an evolution we have to consider making to OBF to modify that, but I would say that at the time we designed it, it was also part of the rationale with the department of corporations in California that allowed us to get our exemption from certain aspects of the California lending laws, like annual registration and certain audit requirements that banks would otherwise have to go through. So it had some value in the early days, but you know, everything can change. And I completely agree, your comments relative to the PAYS program, I would agree with your findings there, yes.

Chuck: Okay. I stand corrected on the commercial market. That's great. These are all good points, my experience with, I had forgotten of the commercial that we did, but I'm more familiar with the residential side.

Deana: Any other questions? Thank you, Frank. Any other questions from the webinar or comments? Or in the room? Okay. Well, with that, I want to thank everyone for participating. Again, if you're interested in participating in the workshops or in the working groups, please let Ashley Bonnett know by February 22. We are asking for public comment throughout the process on a rolling basis that we provide on our website. Oh, that date is February 22. The comments for interested parties to be in a working group is February 17. My apologies. Self corrected there. And we look forward to everyone participating in this process. I'm really excited about it after today. Thank you very much.