

## India's Super-Efficient Equipment Program (SEEP)

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### Webinar Presenter

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### This Transcript

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Sean Esterly

Today's webinar hosted by the Clean Energy Solutions Center and the Super-Efficient Equipment and Appliance Deployment. We're very fortunate we have Aditya Chunekar joining us today. Aditya will be discussing India's proposed Super-Efficient Equipment Program otherwise known as SEEP.

One important note I'll mention before we begin our presentation that the Clean Energy Solutions Center does not endorse or recommend specific products or services. Information provided in this webinar is featured in the Solutions Center's resource library as one of many best practices resources reviewed and selected by technical experts.

Now, before we begin, I just like to go on some of the webinar features. For audio, you have two options. You may either listen through your computer or over your telephone. If you choose to through your computer, please select the "mic and speakers" option in the audio pane. Doing this will eliminate possibility the feedback and echo and if you select the telephone option, a box on the right side will display the telephone number and an audio PIN you should use to dial in. Panelists may I ask you to please mute your audio devices when not presenting. And, if anyone has technical difficulties through the webinar, you may contact or go to webinars Help Desk at 888-259-3826.

I encourage everyone to participate in the webinar. To submit their questions, you can use the questions pane and we go to webinar panel. You can do this at any point throughout the webinar. If you have any difficulty viewing the materials through the webinar portable, you can find PDF copies of the presentation at <http://cleanenergysolutions.org/training> and I will send out that link momentarily and you can follow along as our speaker's present. Also, an audio recording in the presentation will be posted to the Solutions Center training page within a week or two of this presentation.

So, we have a great agenda prepared for you today that is focused on the conceptualization in line in implementation of National level energy efficiency programs legacy and before our speakers begin their presentations, I just want to provide a short and informative overview of the Clean Energy Solutions Center initiative and then we will be breaking up again 'cause I've been chasing today with several short questions answer session. Again, I encourage everyone to submit any questions that you may have throughout the webinar and we will be kind to address those questions. And following the presentation, we will have closing remarks and a brief survey.

So, let's try and provide a bit of background in terms of how the Solution Center came to be. The Solution Center is an initiative of the Clean Energy Ministerial and then supported to a partnership with UN Energy. It was launched in April of 2011 and is primarily led by Australia, the United States and other CEM partners. So, outcome to this UN partnership includes support of developing countries, the enhancement of resources on policies relating to energy access, no cost expert policy assistance and peer-to-peer learning and training tools such as the webinar, you are attending today.

So, there are four primary goals of the Solution Center. One is served as a clearinghouse of clean energy policy resources. Two, serve to share policy best practices, data, and analysis tools specific to clean energy policy and programs and the third goal is that the solutions been able to deliver dynamic services that will enable expert assistance, learning, and peer to peer sharing of experiences and then lastly the center foster dialogue on emerging policy issues and innovation across the globe. Our primary audience is energy policy makers and analysts from governments and technical organization in all countries. We also strive to engage private sector, NGOs and civil society.

One of the marking features that the Solution Center provides is the expert policy assistance. This is known as it Ask an Expert program and it's a valuable service operative in the Solution Center at zero costs. So, we've established a broad team of over 30 experts from around the globe and they are available to provide remote policy advice and analysis to all countries. First example in the area of appliances and equipment, we're very pleased to have Christine Egan, the Executive Director and Collaborative Labeling and Appliance Standards Program she's serving as their expert in that area. So, the other need for policy assistant on appliances and equipment where any other Clean Energy sector, we encourage you to use this useful service.

And again, this assistance is provided free of charge. So, to request assistance, you may submit your request by registering through our Ask an Expert feature at <http://cleanenergysolutions.org/expert>. We also invite

you to spread the word about this service to those in your networks and organizations. So, in summary we encourage you to explore and take advantage of the Solutions Center resources and services including expert policy assistance, subscribed to our newsletter and participate in webinars like this.

And now I'd like to provide a brief introduction for our distinguished panelist today. Aditya Chunekar of Prayas Energy Group has been working on research and advocacy related to energy efficiency policies in India. He has contributed significantly to the conceptualization and design of the Super-Efficient Equipment Program, the soon to be launched, largest, national level energy efficiency program in India. He's also assisting the Bureau of Energy Efficiency (BEE) and the World Bank on several issues related to implementation of SEEP. So, please join me in welcoming Aditya to the webinar.

Aditya Chunekar

Hello everyone. I'm Aditya and I'll be talking on our experience of developing India's Super-Efficient Equipment Program. So, I hope that Prayas Energy Group.

Next slide please.

I hope with Prayas Energy Group which not-for-profit organization based in Pune in India. We do policy research and advocacy in the areas related through electricity sector. We work in regulation; we work in rural electrification, renewable energy. We also work natural resources, coal natural gas regulation and then energy security climate change and of course energy efficiency. So, we have been working such in the previous and we have a work succeed publications available on our website.

Next, so we have been associated with the development of the Super-Efficient Equipment Program in India and last year SEEP initiated asks us to document experiences that we had when developing this program and the data framework where this kind of program can be implemented in other countries so and so. So, we have the come out with the guidebook for SEEP, which is available in our website, and it should be shortly available on. See the website also I believe.

What I do today is I'll briefly describe that guidebook and the some key features of the framework which we can use to develop the program. So, my presentation instead of being a long 30, 40 minutes presentation, what I do is I'll break it up into three components and I'll present on each for some 10 to 15 minutes and then probably we can have a question and answers round after each component. I guess that way it will be more interactive.

So, the three components that I will be talking on is—the first one is background, rationale and features of SEEP. This again is the background analysis that we need to do in order to conduct a program like SEEP and the third component is program design and implementation.

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So, for the background, I won't go much into why energy efficiency is important. For all the country then especially in developing countries like India I guess we all knew it as an [inaudible] [00:09:43] so I straightly jump into this concept of market transformation which the program SEEP is based on. So, operationally the DSM programs, the demand-side management programs have been resourced—have had a resource acquisition perspective. This perspective and of looks at DSM as an alternative to supply side resources and design to release specific—it is targeted specific consumers and it is designed to use specific levels of energy and demand savings. They're having quite impact but the impact has gone to be limited and also there are several measurement issues involved in it as it may going the leakage and spill over and leadership, et cetera. So, more and more experts have been talking about adopting a market transformation perspective which targets the entire market. So, the idea is to transform the entire market to energy efficient appliances rather than focusing on some specific consumer sectors. So, it has a significant wide spread impact and most of it is kind of common and it's kind of sustainable and the good thing over, this is indicators of success are measurement of market growth over time which is comparatively easier to measure. So, the market transformation is simply easy to measure and it has a widespread impact.

Next.

So, the barriers to market transformation. There kind of very well known and they have been existing quite a long time. The first one is that there is low market demand due to high first cost sensitivity and lack of awareness about energy efficiency among and this is particularly saw in Indian buyers. I mean they are very cost sensitive and then the second barrier is because there is low market demand, manufacturers are reluctant to make the high initial investment of changing their production lines and building volumes of super-efficient appliances.

Next.

There are various interventions in market the transformation and I'm sure a lot of you must be very well familiar with this figure wherein we have appliance labeling programs that creates awareness and generation, that creates awareness among consumers and hence develops a market push. And there are only [inaudible] [00:12:53] who are these marker enough to

think to first of all care about a lot of things that are associated with high energy use and then also think about by the market is needy and therefore manufactures as well as consumers, they do appreciate this labeling programs and deal [inaudible] [00:13:19]. At the end of the spectrum are the appliance standards. These standards may mandatory efficiency settings for appliances. So, they say that any appliances with efficiency less than to some level they are not allowed in the market and therefore all of those who are not adopted to energy efficient technologies, they kind of—they are falls to get a line that the new standards that have been put into the market. Know the financial incentives that the SEEP program likes. That comes somewhere in between the labeling and standards. So, these are for the early modality who are interesting in both developing the products are well as adopting them both manufacturers and consumers and so these are targeted, these incentives are to encourage them to buy these super-efficient appliances to produce these super-efficient appliances and to have a market transformation.

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So, the concept of SEEP is based on super-efficient appliances so let me tell you a bit about this super-efficient appliances and this is an India's specific example. We can see what I've done is of the RACs means room air conditioners. So, what I've done is, I've taken four major appliances and I have converted the average consumption of the current stock for each appliance and then the five star appliance. Now the beauty of energy efficiency in India has start—has standard labeling program in India and it gives difference stars to different appliances based on the efficiency. So, one star is the lowest efficiencies and five stars is the highest efficiency. So, what I've done is the red bar shows the five star efficiency and the green one is the super-efficient appliances. So, we can see that are two kinds of gaps in the efficiency data. The first gap is between the current market average and the five star appliances that are available in the market. Now, I have to say that the five star standards, they are innovate lacks in India because it consist of a number of super-efficient appliances which are 40 to 50% more efficient than the current most efficient appliances available in India. So, there are these two gaps that one has to overcome. If they all realized the savings potential of super-efficient appliance.

Next.

So, the program that we have been thinking on. We have proposed—before that I just wanted to show the quantum of savings that the market transformation to super-efficient appliances can bring about in India and we'll talk about this graph later in second section. Well, this is just to show that if only 60% of stock for four appliances, which is the room, air conditioners, refrigerators, fans, TVs. In 2020s super-efficient, we can

save about 60 billion units and avoid peak capacity of 20,000 megawatts. Now, I go with this in second part when you look at kind of analysis is required for other than [inaudible] [00:17:26] but for the [inaudible] [00:17:31] thinking that this indicator more than savings are people.

Next. So, based on the—next slide.

So, based on the savings that, tremendous savings that are involved in the market transformation of super-efficient appliances [inaudible] [00:18:01] a program we [inaudible] [00:18:08] it shows half of these group if you can [inaudible] [00:18:16] going from the utility sponsors [inaudible] [00:18:25] program to where it is can find to their own territory to program that has a nationwide scope. On one hand and on the other hand, if you go up the supply chain from customer to the manufacture. So, the thing is a program that is targeted at manufacture and that goes on the national level. It is much more effective in achieving the market transformation and you'll see the features, the benefits of features and benefits of this program on the next slide

So, one of the thing is it does bypass a problem so that's utility programs. I mean the number of utilities all over India and there are regulators so we do have adopt with everyone in order get approval for them and that's why it does includes huge transaction customer. Secondly, the second thing is targeting the incentives and manufacturers does reduce the subsidy requirement cost for super-efficient appliances because in and most only their technology cost and then does not involved in the in the retail mark-ups and taxes. The second thing is because it is on the national level and there is a large market size. It's a goal incentive for manufacturer to actually that are this kind of appliances and participate in this program. So, as I said it has reduced transaction costs because we have a bit less number of manufacturers rather than dealing with millions of consumers. Secondly, are related as expected also the monitoring and verification is want to easy in a program like SEEP. The focus is only on shipments and sales. Finally and this has been an interesting things that came out of SEEP is we can use this program for them to look part of which are suitable for Indian conditions and we have found this in our program for ceiling fans which are I will talk on later so the technology both commercially all level but we have to be opted for Indian conditions.

Next.

So, the status of SEEP in India, now the Bureau of Energy Efficiency which is the nodal agency in India to implement all the activities related to energy efficiency. The BEE is implementing this program that financial assistance from the World Bank. The initial idea is to incentivized some 2 to 5 million super-efficient fans and the super-efficient fans they consume about 35 Watts as compared to market average of 70 Watts and the air

million rate which is one of the factors to quantify the quality of the fans that's similar to the fans with the normal fans and then adopt of the— there's a reverse bidding mechanism which assures that there are multiple winners, and hence multiple manufacturers can participate in the program. I talk in this because within mechanisms going up toward section.

So, I just want to say, a few details about this program and what's this. It is in fact, there's 2 to 5 million numbers, it's kind of a small number if you compare to the annual sales of fans in India, which is around 30 million so. So, the idea of this particular program is more of a pilot which is targeted at the national level and once we do expect once we get the expected of terms from this program, there is a plan to extend this program on a number of other appliances. The reason for this pilot was that it is the first of its nine programs in India. There has been known program which against incentives at national level to energy-efficient appliances and therefore we do have to check on the instructional structure for this, the monitoring and verification mechanisms and how about things to know. So, that's that I do understand that the program is not implemented as we have and we don't have any research from the program and writing a guidebook based on the experience of the program which is not implemented, how could an idea it is but we did think about developing the entire experience, this has been a long experienced over 2 years or so. Documenting the entire experience of how every decision are related to SEEP has evolved. I think that itself will be a good idea and it can be a good learning experience for people who want to implement this program. Of course the guidebook or the framework that we are suggesting. It's not a kind of the rulebook that should be done. The particular development will depend on countries specific situations and conditions but we don't think that this kind of framework will be a good guiding kind of book for development of these programs. So, that's on the program per se, the super-efficiency development program.

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So, that's the end of the first component and if there are any questions, I'll be happy to take them.

Sean Esterly

Yeah, thank you for that first part of your presentation Aditya. Do I want to do that—I have one question for you and that is what has been the experience with the utility funded DSM programs in India?

Aditya Chunekar

Okay, so one of the reason why of the thought of going to the national level, was apart from the impact, the way the impact, the experience of utility-based DSM programs in India has not been already put and the reason for that is first of all, almost all of them are in financial loses and therefore they have their priorities and although it's a good reason to get more into energy efficiency but they more into short term things to avoid

these financial losses. So, their priorities lie elsewhere. So, that's a one thing and secondly there has this city of lack of expertise at the utility level. I mean a lot of DSM activities, they're having some DSM activities to be fair and they're having raise more like 1000 or 5,000 appliances or consumer is targeted. And all of them having on pilot scales since last what, 10 years or so and they haven't been scale level as yet and this is probably related to the capability of utilities to—data on a large scale, apart from a number of other reasons also. So, in fact that's the one reason why the program like SEEP which is on national level and which involves an agency like Bureau of Energy Efficiency which is capable enough to handle this kind of programs as a good but for these large scale programs in India. So, any other questions?

Sean Esterly

No other question at this time. If the audience does have any other question I'll just remind that they can submit them throughout the webinar in the question's pane.

Aditya Chunekar

Okay, so background analysis. Next. So, in this section, I will go briefly on what kind of analysis is required for developing this program as well as promoting this program to different policy makers on the [inaudible] [00:28:06]. So, there are four major types analysis that we did and I think it's good to know. There's appliance consumption analysis, saving potential analysis, cost-benefit analysis, priority analysis. Now there are number of points in every analysis that we need to look at and I think the basic constraint over here is the lack of data at least in developing countries like India and therefore, we do have to go around a lot of things and make some high level assumptions and I think the basic idea that one has to think about is that this kind of analysis is not intended to be very accurate and some intended to be a given indication on what is the scenario and what will happen then there will be a market on some issue, the super-efficient appliances. So, that has to be considered when we look at this analysis. Now what I'll do is I'll briefly cover the analysis I have been talking into detail about each analysis will be very time consuming and I—we'll have it in the guidebook but what I'll do is I'll go to each component and then I will talk about individual analysis.

Next slide.

So, the first one is appliance consumption and the basic question that we are trying to figure out always is what is the contribution of major appliances to total consumption? I mean we don't want to run the SEEP program for all the appliances out there. It makes a good sense to focus on those appliances that have a good saving potential. Now, the way this can be done is through extensive surveys, energy consumption surveys. For example the U.S. has something called as residential energy consumption survey which is done every four years and they go and ask their own full structure, characteristics of the housing unit, the energy consuming



behavior, appliances and recruitment. And then when you have the house billing data, we can use this information and then some [inaudible] [00:30:49] they allocate household's total usage to specific end users suggest heating, cooling et cetera. Well, that's one way to do it and if you have that, it's well and good but in countries like India, we normally told have this kind of extensive. Survey with just specific point energy consumption.

So, I guess in this situation of both idea is to focus on the areas of socioeconomic service that normally a lot of nations undertake and these surveys they do this areas on every households and then they asked for different characteristics such as education, income and ownership of appliances like how many, whether they do have a fan, a TV or all the appliances. So, this kind of survey is probably very useful in identifying the stock of appliances and it also it's just a report the ownership of appliances. So, one has to be careful like we have not only that every household owns a particular appliances to know but a number of appliances in the household. So, the appliance stock data is really important. It's one set of data that we will need to find the appliance consumption. The second is the unit energy consumption. Now this has its own set of challenges because unit energy consumption which is the energy consumed by particular appliance. It depends on the power consumptions of direct appliance as well as the usage back in the appliance among different consumers. Now, appliances we have different sizes and types. For example in a refrigerator, we have medium direct cool refrigerator or frost-free refrigerator. These are two different technologies which are prevalent in India and then they come in different sizes also. So, this size and technologies, the two determine the total energy consumption of the refrigerator.

So, one way to approach this problem is to figure out—now what is the most common appliance—what is the most common model in a particular appliance getting data that's being sold and then the use that as a centered standard appliance for your appliances consumption analysis. For instance, in India, 3% of the refrigerators sold are of the direct cool category and most of them are in the size of 160 to 200 liters. So, we can consider that as your standard more the rating sold energy. So, again, these are all very high-level assumptions and they fit well but the kind of indicator analysis that we are trying to do for you. So, once we have how many appliances the households had and how many and what's the usage by some of those appliances we can now figure out the individual contribution of appliances with the total electricity consumption. We then can check, we can compare that with the residential—the sales of these electricity utilities to different like this like residential or commercial just as a gross check. So, that's on the appliance consumption analysis.

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So, the next thing is, so this is an example of appliance consumption analysis that we did in India and like is said we looked at the surveys, the socioeconomic surveys and under the ownership of appliances. We also convert the number of appliances in a particular household and then we control standard model that—and estimated its energy consumption and then we open up some data across all the appliances in the country. And it can be seen over here that only five appliances are end users—that is lighting, ceiling fans and refrigerators, television and air conditioners. They are going for about 18% of the total consumption. Now, one has to think air conditioner we cover here just takes 4% of the total consumption but it's kind of it is going to increase significantly in the future. So, it doesn't make sense to kind of focus on this four appliances and this is a kind of input that one gets from the appliance consumption analysis.

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The next analysis relates to the saving potential. The saving potential of a market transformation consumable to super-efficient appliances. And the key idea here is very simple. Can you figure out how many appliances are going to be sold in the future? You have [inaudible] [00:36:38] a baseline scenario where you predict a trend of efficiency levels of this appliances and then you estimate the efficiency levels of super-efficient appliances and the same potential is just other things we're doing this two scenarios. Of course, I mean doing this is not as simple of the sums that are number of assumptions that involved in this. I will just talk on a very a few key assumptions that and maybe [inaudible] [00:37:15] analysis. One thing that these trends of how many appliances are going to be sold in let's say 10 years or 20 years. I mean one way to move that is to more than the ownership of appliances in different households based on the incomes which can be done I think for their GDP and based for their GDP improvement you figure out. You can predict what will be the appliances sold. Of course in countries like India where people appliances in their homes, the sales they include the first buy as well as a replacement. So, there are also needs to go into the [inaudible] [00:38:10]. The second thing is if we are [inaudible] [00:38:15] it's more enough. You can actually take the sales patterns from different market report which the industries normally relied on and that India than can give you good indication of how the sales side going for say last 5 years or 10 years and you can think that assumptions. Also the baseline scenario, it's always good to relate this scenario to some program related to energy efficiency which is already existing in the country. For example in India, we do have a wide scale standards and labeling program and what we did is to compare the super-efficient program that the standards and labeling program in different scenarios of it. The super-efficient scenario is very important to identify which super-efficient appliances it will be—you'll have to choose with this kind of analysis. I got more on this at the third section that we said the technical specifications for the program and but one thing—there's one

point that I don't want to talk or you is by looking for their electricity consumption from these appliances. One has to look their testing material of this and different countries are different so that if our refrigerator if the—if it seem that it consumes 300 units in the US that consumes, let's say 350 units in India that they are not exactly compatible because their testing methodologies maybe different they may have different temperature settings for the ambient levels and the internal compartment levels. So, those point has to be considered and by comparing the units across the countries, they should be normalized based on their own country. So, that's one point and again there are number of points to be considered here which I won't go into detail. So, the final thing is the calculation of saving potential. And an example of it can be seen in the next slide, which I've shown earlier. This is—so what we have done is we have compared the saving potential of the program, the super-efficient equipment program to what will happen if [inaudible] [00:41:11] energy efficiency continues but it's standard and labeling program in a more appropriate way. That is the kind of type standard and labeling but it not too ambitious. We also considered scenario where we does get ambitious and it does type in the standard area specific but the savings from super-efficient program is much more than even the aggressive in the typing of these standards.

Next slide.

So, once the potential is estimated, the next thing is the cost benefit analysis and the cost effectiveness has to be part of identification of the super-efficient technology and cost of conserved energy is a good indicator of it which—but the incremental cost of the efficiency level is our distributor or what are the total saving of the—what the life of the product. So, what they think is what—so essentially what it says and [inaudible] [0:42:22] how much rupees you will spend to save a unit of electricity and if that is less than the cost of supply of electricity then they [inaudible] [00:42:35] sense and then these kind of [inaudible] [0:42:37] use all the energy efficiency usage and therefore they are the and that's good because they have the cheapest [inaudible] [00:42:48]. So, the cost of conserved energy is the primary indicator and then there are different kind of benefits that can be monetized and calculated. For example, energy savings of fuel which you will see an avoided generation then the savings on capital expenditure which you won't have to put up in order to meet the amount. Then we also saw savings of emissions that can be awarded to continuation and then there will be a few want to extend the benefits of these programs like this. There will be also utilization of capital that has been freed due to avoidance of its [inaudible] [0:43:38] can be used for other activities. You know of course that the other activities can going to increase of emissions so someone can say it cannot process, it cannot eliminates your greenhouse gasses savings but one has to be careful about that aspect.

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So, I'll figure that one important thing and probably this kind of thing is very particular or very relevant to countries like India and in the Cost of Conserved Energy is not the only parameter which you should, which should develop this but there are other areas as well and one thing is the, political acceptability of developing a program like this. For instance, in India a program for and a plan the exceeding plan is more acceptable rather than a program for air conditioners, which is [inaudible] [00:44:48] as seen as energy rate appliance. And this is more development in India who has one third of Indian household who don't have access to electricity and therefore a program that's subsidizes and conditional consumers is— there's no justification input as well there won't be any political attraction to the programs like this also. The third is the industry structure and again this is probably specific to countries like India because we do have a lot an organized organization. The number of manufacturers which has small scale and of which the number of organizations with a small scale and it is very difficult to control all of these organizations because if you have a program like SEEP there will be a less amount of manufacturers and this can be an issue. The other aspect also technology fluidity. For example in case ceiling fans in India, the technology had almost stabilized so everyone is working on just and placing the ceilings and there's almost no work having on the technology side of it. So, it's almost stagnant and a program like this and probably made them development on or adopt again from international market whereas compared to say televisions, the technologies involving very rapidly and an interesting part if the technology also, not only increases the quality of the program but it also increases its efficiency. So, that is the second thing. The last thing and which has been a care take of most energy efficiency programs is the rebound effect and this is more and some appliances then other. For example in air conditioners, people in India do try this which have the air conditioners and because of electricity that is and there is a very much, very broad possibility that people starting to use the air conditioners more because the cost efficient and that India significant effect whereas as compared to refrigerators this kind of effect will be based on because you already used it for 24 hours and you know you it will be use it more. You may go for larger sizes but again that is also limited in India because of the use of the energy crisis. So, yes there are the so, the primary point here is the cost of technologies not the only parameter which decides but appliance is ideal for a program like SEEP. There are all these other parameters also that will influence the choice of appliances and the final choice will of course depend on the country specific situations.

Next.

So, I think these four analyses are the background analysis which one should conduct for a program like SEEP. And I know I have not gone into

every details of this kind of analysis I didn't given a very high level or will be worth it but there are all these details in the guidebook and if there are any questions right away I'll be happy to answer.

Sean Esterly

Yeah, thank you Aditya, could you talk about the accuracy that we expect from the savings potential analysis and then how you deal with that.

Aditya Chunekar

Okay, I mean like the guiding principle is again this kind of analysis is not accurate. I mean it's accurate in a certain extent but it doesn't have to—make sure to have a very good accuracy and one way to deal with it is to do a sensitivity analysis. For example, when we compare the market transformation from the power supply efficiency advances, we did a three different levels. So, we said, what happens if 30% of the markets gets efficient? What happens if 60% of the appliances also are efficient? What happens if 90 appliances are efficient? So, this kind of sensitivity analysis, it's very helpful. And we present this kind of program to policy data of bureaucrats then they can see their input and some argument like even if 30% of the total appliances are super-efficiency even then the savings are much more than the ever since hundred [inaudible] [00:50:06] program that you will pursue. So, that kind of presentation is very good and probably that's the [inaudible] [00:50:16] this levels of accuracy.

Sean Esterly

Right, Aditya, that is all the questions I have at this point.

Aditya Chunekar

Okay, so we go on to the last, the last section of this presentation, it's program design and implementation. There are different stages in program design and implementation and then one thing is that the basic principles that guide these design should be that should be very simple to administer and these are kind of very broad and in a way very common sense kind of principles but it's good to just to know because a lot of times, what happens is in order to have a good monitoring a very strict verification we do tend make the processes very bureaucratic and they are a huge of—they discourage manufacturer as well as consumers from participating in this program. So, that comes for the second things that there should be adequate checks and balances because there is sizable amount involve interesting this program and whether you're giving money, you should be making sure that they had [inaudible] [00:51:53] the desired impact. So, there has to be a good balance between this I think with checks and the administrative of this. At the same time there has to be stakeholder inclusion. As a one thing that we have experienced in giving the program design in India, at least thought it may have lender the time of the program so always good to include all your stakeholders right from the manufacturers to retailers, to consumers, the different government agencies involved. So, that, it doesn't so happened that within the program is implemented. There are some issues on one particular area which you haven't considered and it's also good to have views from someone on all the different stakeholders. And the final thing is it's always good to have

transparency and accountability. While they do particular this agent? What was the rationale behind it? It's always good to have it somewhere documented on the website or any kind but there must be transparency then there is an increase accountability as people can ask to know what made you data for the clear decision and they can ask you, thinking behind it. So, those are the basic principles.

Next slide.

So, I talked on these—there are some few steps that we thought would be very important in a program like this and what I'll do is I mostly talking our experience really in India and how that can be useful to developing this process, this kind of program in other countries. So, the first kind, the most important is the funding. This will based if we could secure the funding but if you were to go [inaudible] [00:53:57] that paid your funding decisions. A, it should be sustainable and B, the project and costs in securing the funding should be minimized. Of course this is while overwriting I think that the funding should evident, it should how many courses you just go with more funding you have. If you do we'll have these features or if you are going to move funding that's [inaudible] [0:54:25] in which we can secure and even related fund from the central government or utilities or International Climate Finance. Now, there are pros and cons for getting funding from each source. If you get it from Central Government, it may be easier to get the funding because energy efficiency is enough—their acceptance level is they have high, everyone agrees there should be energy efficiency other than [inaudible] [0:54:56] comes in especially. The central government is a good source for funding. Although it's not sustainable priorities may change, the thinking may change and therefore attract—utilities, it's a sustainable kind of funding and then you can add a small surcharge in the data for energy efficiency activities but having a utility run program has its own set of disadvantages like I talked about in the first component. I mean the transaction cost, get hire, the measurement of impact, it gets complicated. So, there are a lot of issues involved there and although the sustainable the transaction costs are high. One [inaudible] [00:55:51] option that has probably come out in recent times is the international climate finance. And so [inaudible] [00:55:58] super-efficient equipment program. In India funded through the government technology fund which is well given to developing countries to develop and [inaudible] [00:56:13] technologies. So, the good thing about this kind of finance they are very well managed. For example climate technology finances are administered by World Bank they have a good expertise in conducting energy efficiency programs all over the world so and this kind of programs known modeling [inaudible] [0:56:37] but they also have a good expertise associated with it. So, the final kinds of the options across developing country specific situations but you will have consider these pros and cons of every source of funding.

Next slide.

The last thing is the technical specifications. Now, it's very—I'm, sorry, is very important to identify the right supervision appliances energy efficiency level. I'm not saying we should identify the technology. The program should be technology new poll because that kind of gives manufacturers freedom to develop their own technology and the program doesn't get a lot into a particular technology option. And there's one more thing that has to be considered is what are the technology is chosen, it has to be developed, it has to be suited to the Indian conditions. One very good example is the ceiling fan. For example, in India ceiling fans are used for relieve from the hot tropical climate whereas in other countries, for example, the US, ceiling fans is used either for acetic purposes or for facilitating the air condition room. But, also the technology is there, they are most speed in there US, they are low speed sense but as in India they are high speed sense so we just can't get those technology for you. It has to be adapted to Indian conditions. So, that has been a good learning out of this program and the specifications should be, there should be a right balance between cost and efficiency. And that's the cost of conserved energy kind of things. And of that we can't just go far of the high energy efficient [inaudible] [0:59:00]. So, you have all these principles that kind of guided the technical specifications and the way to actually right from the manufacturers to industry experts and even the testing, the people from testing laboratories because and already have participation from all the manufacturers. It's a very good—it's a way of good idea that all of them are aware of what specifications are to be considered when the program is launched. And that is to make sure of the maximum participation from the, you know on next slide.

So, now these financial—there financial incentive involved in this program and it's all these are three question to identify how to determine the level of incentives and other issue is to go to competitive bidding or other issue give just a uniform incentive to all the appliances in which scared of the incremental costs which has been identified to, you know, some analysis and negotiations with the manufacturer. Now there are pros and cons of every of what's the approaches. Competitive bidding of cost has an edge or a uniform incentive approach because it's a standard process. A lot of government agencies do have that and therefore it's good to have the acceptability. Second thing is compared to [inaudible] [1:01:02] the second discovery of prices and analysis and out part is kind of limited for the family and it has been that's a good thing compared to bidding. At the same time, it's probably good to have a maybe, good idea to have hybrid approach wherein for first [inaudible] [01:01:27] you do good uniform incentive approach that in you conduct some preliminary analysis based on information from industry and you give a uniform incentive to all the manufacturers who can meet the technical specifications. And after two years when all the manufacturers are familiar

with this new kind of technology then you can go for competitive bidding so that you can discover the price. Now again the incentive level, it should be in the right balance between cost and the potential to maximize savings. This also a [inaudible] [01:02:17] capability of manufacturers in the country to adopt that particular kind of technology and that also depends on what kind of going of—in the particular supply chain management as in even for developing product, what kind of raw materials, what kind of components would work and whether they are available. All those issues also have to be considered.

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So, the next thing is incentive criteria. This has been contentious issue and one thing is because our objective is a wide scale market transformation, it's always good to have some kind of eligibility criteria from manufactures. The one we had in SEEP is the have to have a certain amount of India scales in India as well as strong retailer and distribution network. Now, one flipside of this is, this kind of Dutch, the new companies are [inaudible] [01:03:34] out of this companies. I'm sorry, but the eligibility criteria also kind of mixed and should not only sees contenders and contenders who capable to put their [inaudible] [1:03:57] kind of product and deploy a large scale in the market well participate. The new companies that's already—there's an opportunity of them to collaborate if things [inaudible] [01:04:09] and get into the market. Also the second things is it shouldn't be the case that the manufacturers get the incentive and then develop these product and select to unleash component, advise it at the big high level. So, there is also, there is justification that we should have a ceiling for the maximum of retail price super-efficient equipment and secondly there has to be a periodical review of incentives. You just gone [inaudible] [01:04:47] and different throughout the entire division of the program and this, the periodical review should be fixed. Anyway that the manufacturer should know about this reviews at the start of the program you can see that all the incentives in the development of two years that the manufacturers do have an idea that the incentives that people are developing.

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So, the next is the disbursement mechanism and the—we can monitor the disbursement of incentives by monitoring either at production stage or at sales stage and this was in a way linked to the monitoring and verification which will you know see later. The thing is there are two things that should be fixed already. It should be the period of disbursement but, you know, disbursing the incentives and not only basis, monthly basis or annual basis and secondly there has to be performance criteria which should be met by the manufacturers and if the [inaudible] [01:06:06].



Next.

So, the most important aspect of the program is monitoring and verification and the monitoring has to be done for both quality and quantity of super-efficient equipment and because we are providing incentives and these incentives are not quite incentives, the incentives are given on every fan soon and therefore the among that's full of fan or among of the supervision equipment is very important and also the quality. You know there has to be purely text of it. Now, existing developing mechanism specifically for this, a good idea can be to use an existing mechanism to monitor the quantity sold. For example, in India they are using the existing tax systems like [inaudible] [01:07:20] or sales tax to track the production of super-efficient equipment and incentives will be linked to that. And that second thing is that has to be—I talked about this that there should be adequate testing laboratories with appropriate accreditation. This has been a huge problem in India. You know, we don't have testing, well, we are building testing laboratories in order to support this program but because incentives are involved, it's highly recommended that we have specific testing protocol and adequate testing laboratories to identify those. Then the final thing is that testing mechanism should include one-time conformance which kind of get the certificate of this product and super-efficient equipment and it should be followed by random check testing at manufacturer, retailers and customer level in order to ascertain the quality and there should be adequate classes in the program designed document that links to the quality of appliances and the feel.

Next slide.

So, evaluations is a very important aspect and one which is normally kind of ignored in India at least and that's—we suggest that there has to be—we have suggested there has to be a periodic evaluation of SEEP it should be conducted by an independent third party. The savings achieved can be calculated using the deemed savings approach. The deemed savings approach is what we look back into savings potential analysis in section 2. One indicator also of course market transformation, has there been a broad in—the market of super-efficient appliances and that may could be a good indicator of the success of SEEP. There can be also some indirect benefits such as consumers are more of that of these kind of programs and considered one of [inaudible] [01:09:58] energy efficiency [inaudible] [01:09:58]. There are other this agent regarding appliance buying. Also, it can happen that the—we get efficiency of the appliances category has increased and that kind of facilitates the setting very high standard and labels. Another is that the administrative processes should also be evaluated. At least this equal they are involved in the process should be interviewed and their views on how the process is. It should be taken into account and there should be a close in the program design which account

for this with [inaudible] [1:10:45] selection and at the same time customer feedback is an essential element of the evaluation.

Next.

So, branding and marketing. This is very important. You know the SEE, the super-efficient equipment should have a distinct label with the information on energy consumption and saving very clear and you know language which is understandable. One, important thing in what we have been struggling with in India is how this particularly label gets linked to the existing labels in the country? For example, we already have those five different labels. One start [inaudible] [01:11:38] and addition of another label is it going to confuse or how we should design it so that [inaudible] [1:11:46] kind of a challenging question. There also has to be a creating marketing campaign to generate awareness among consumers and government endorsement on marketing campaign increases the credibility. They have seen that if a particular appliances, if the government sees that this is under the efficient, that clean is take more credible buy by the consumer, after them the manufacturer ends up seeing it. One of the critical component which is normally ignored in the campaign is the retailers and other intermediate actors. For example in the development of the program in India, we found out that the local electricians—they have a very important role in the consumers' plans buying this agent. So, they are the ones who recommend which fans to buy and which fans not to buy so or any marketing campaign that goes with super-efficient fans should have focused on the these intermediate [inaudible] [01:13:02] locally electricians.

Next.

So, one thing important, it is the institutional mechanism that should be in place for program. You know there are various options can be categorized into five main categories. One is the oversight of the program. Second is program design and who should do the program design? Third is the implementation or program and fourth is monitoring and verification and so fifth is process evaluation. We look at all these things and we look into detail. Now who should do good? It depends on a lot of the existing mechanisms and generally what we think is that the program design is it's good if a simple A and C like the Bureau and Energy efficiency does it because they do have expertise and program site or we'll say that the program should be with policy makers as well bureaucrats as well as industry experts and [inaudible] [01:14:12] organizations which can take part on it and my opinion [inaudible] [01:14:19] can, you know, if we done by an independent party and similarly the process evaluation.

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So, this brings to the final and I think the most important is the transparency and accountability. Ideally it's good if we have the website dedicated to the design of this program that be put up everything related to how all this agents would taken and all the information regarding the development of this program. Unfortunately that is not they haven't done it until the SEEP [inaudible] [01:15:09], the Bureau of Energy Efficiency has not done it, it was SEEP but what we have done is we have documented all these agents related to different aspects like the [inaudible] [1:15:20] classifications, monitoring and verification, incentive accommodation, mechanism, always [inaudible] [01:15:26] documented into a detail report which is publically available. So, these kind of things [inaudible] [01:15:35] the rationale and [inaudible] [01:15:40] in which the principles is based and there are also good to know to increase the accountability of all people who are involving in the contingency. Finally the program design document which comes up after all these analysis and the only program thinking on various aspects of the program design. The document should be open to comments from a wider section of society including general public and civil society organizations. This mixture of that views from all the parties involved are taken into account and that create potential good and effective implementation of the program.

Next slide.

So, that's all about this. I'm not sure how—how helpful or how informative this has been but that was a very general overview of all the aspects that have [inaudible] [01:16:48] in the design implementation of the program. I would say that for more details, the guidebook that we have developed publically evident is a good place to look more and you can always me this. My email in the last slide of this presentation but for the time being, if there are any questions, I would be happy to answer that.

Sean Esterly

Yeah, and thank you again. Aditya for the great presentation. It was very informative and I do want to remind everyone that the presentation and audio recorded in the presentations will be posted to the Clean Energy Solutions Center training page. Would you have one more question from the audience and that question do you think we need to—is there need to be separate testing protocol developed for super-efficient appliance?

Aditya Chunekar

It cannot prevents, there's no, it will depend on the case like case basis but for super-efficient fans what happened was all the fans in India they use induction motors whereas most of the super-efficient fans are based on [inaudible] [01:18:08] technology and that bigger need some additional testing protocol so even the program they will have to develop a testing protocol this super-efficient ceiling fans but that may not be the case for other appliances. So, it depends on the development of the appliances.

Sean Esterly

Right thank you again Aditya. We do have—I would like to ask the audience to answer a couple brief question. We have three questions lined for a survey. They just provide this some feedback on the webinar. Heather if you could go ahead and display that first question. You can answer the question when they go webinar panel and the first question is the webinar content provide me with useful information and insight? And the next question please, the webinar's presenters were effective? And then the final question. Overall the webinar met my expectations. Thank you, at this point Aditya, I'd like to just give you an opportunity if you have any closing remarks that you'd like to make?

Aditya Chunekar

I would just like to thank everyone who has helped me out. As I said there may be a lot of question related to this and please email me and if there are any questions you all welcome look at our website and this guidebook is available on the website so download it. So, thank you everyone. Thank you Clean Energy Solutions Center.

Sean Esterly

And, thank you again for presenting for us today. The links that is up on the screen right now is where you can find PDF versions of the presentation from today and within the two week. We will also post an audio recording of the presentation so feel free to share that information with those of your networks and organization. And on behalf of Clean Energy Solutions Center I just like to thank you again Aditya and to attendees for participating in today's webinar. We'll very much appreciate your time and I invite everyone to check out the Solutions Center website. For the additional webinars upcoming or previously held and then the other trainings events on that maybe up coming. I hope everyone has a great day. I hope to see you again at future Clean Energy Solutions Center events and this includes the webinar.