Smart Community Project in Kitakyushu

—Transcript of a webinar offered by the Clean Energy Solutions Center on 15 May 2014—
For more information, see the clean energy policy trainings offered by the Solutions Center.

Webinar Panelists

Mr. Takao Ikeda	Senior Economist, New and Renewable Energy Group, New and Renewable Energy and International Cooperation Unit, The Institute of Energy Economics, Japan
Mr. Sakuma	Senior Assistant Director, International Affairs Office, Energy Conservation and New Energy Department, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry
Mr. Nakanishi	Senior Chief Expert, Corporate R&D Headquarter, Fuji Electric Co., Ltd.
This Transcript	Because this transcript was created using transcription software, the content it contains might not represent precisely the audio content of the webinar. If you have questions about the content of the transcript, please contact us or refer to the actual webinar recording.

Sean Esterly Hello everyone, I'm Sean Esterly with the National Renewable Energy Laboratory and welcome to today's webinar, which is hosted by the Clean Energy Solutions Center and the International Smart Grid Action Network also known as ISGAN. Today's webinar is focused on the Smart Community Project in Kitakyushu.

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

I'd like to go over some of the features of the webinar. For audio, you have two options; you may either listen to your computer or over your telephone. If you choose to listen to your computer, please select the mic and speakers options in the audio pane; doing so will eliminate the possibility of feedback and echo and if you choose to dial in via phone, please select the telephone option on the box on the right side. We will display the telephone number and the audio pin that you should use to dial in. Panelists, we just ask that you please mute your audio device while you

are not presenting and if anyone is having difficulties with the webinar platform, you may contact the help number at the bottom of that slide which is 888-259-3826. We encourage anyone from the audience to ask questions to the panelists and presenters at any point. If you'd like to ask some questions, simply type your question in to the questions pane and submit it there and if you're having difficulty viewing the materials with the webinar portal, you can find PDF copies at the links posted on that slide which are cleanenergysolutions.org/training and you can follow along as the speakers present and we'll also post an audio recording of today's webinar to that site.

Today's webinar agenda is centered around the presentations from our guest panelists, Mr. Sakuma and Mr. Nakanishi and these expert panelists have been kind enough to join us to provide an overview of Kitakyushu Smart Community Project and discuss the key findings of the project and Mr. Ikeda is also joining us to help moderate the question and answer session of the webinar.

Now before out speakers begin their presentations, I want to provide a short informative overview of the Clean Energy Solutions Center and then following the presentations, we'll have a question and answer session with the panelists who will address questions from the audience, some closing remarks, and a brief survey.

This slide provides a bit of background in terms of how the Solutions Center came to be. The Solutions Center's initiative of the Clean Energy Ministerial and is supported through our partnership with UN Energy. It was launched in April of 2011 and is primarily led by Australia, the United States, and other CEM partners. Some outcomes of this unique partnership include support of developing countries through enhancement of resources and policies relating to energy access, no-cost expert policy assistance, and peer-to-peer learning and training schools such as the webinar you are attending today.

There's four primary goals for the Solutions Center: first goal is it serves as a clearinghouse of clean energy policy resources; second goal is to serve to share policy best practices, data analysis tools specific to clean energy policies and programs; and third, the Solutions Center delivers dynamic services that enables expert assistance, learning, and peer-to-peer sharing of experiences; and then lastly, the center fosters dialogue on emerging policy issues and innovation around the globe.

Our primary audience is energy policy makers and analysts from governments and technical organizations in all countries. We also strive to engage with the private sector, NGOs, and civil society.

One of the more key features that the Solutions Center provides is the Ask an Expert Policy Assistance and Ask an Expert Program has established a broad team of over 30 experts from around the globe who are available to

provide remote policy advice and analysis to all countries at no cost. So for example, if there is demand in policy evaluation, we're very pleased to have Bruno Lapillonne, the vice president and co-founder of Enerdata, serving as our expert. So, if you have a need for policy assistance in the demand and policy evaluation or any other clean energy sector, we do encourage you to use this useful service. Again, it's provided free of charge. So to request/assistance, simply submit your request by registering through our Ask an Expert Feature at 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 the Expert Policy Assistance, the database of clean energy policy resources, subscribe to our newsletter, and participate in webinars like this.

Now, I'd like to provide some brief introductions for our very distinguished panelists and moderator today. Our presenter will be Mr. Sakuma who is the senior assistant director of the International Affairs Office with the Energy Conservation and New Energy Department and Agency for Natural Resources and Energy and the Ministry of Economy, Trade and Industry (METI). Our second presenter today is Mr. Nakanishi who is a senior chief expert from Fuji Electric and is also a visiting professor at Waseda University. Finally, our [Indiscernible][0:06:19] moderator today who will be leading the question and answer session is Mr. Ikeda from the Institute of Energy Economics in Japan.

So with those brief introductions, I'd like to welcome Mr. Sakuma to the webinar for his presentation.

Mr. Sakuma Hello everyone, all participants and good morning, good afternoon, and good evening for all participants. I am Yas Sakuma from Ministry of Economy, Trade and Industry. I am very honored to share our Japanese Smart Community Project before our presentation on the Kitakyushu Smart Community Project. The aim of my presentation is showing the Japanese Smart Community Pilot Project for all Japan and today at the webinar the part that I'd like to share for all participants in the world about the Kitakyushu Pilot Project which was one [Indiscernible][0:07:38] of finalist projects which was published in the previous Clean Energy Ministerial Meeting on the 12th of May. Let me start my presentation about the Smart Community Pilot Project as a Japanese national project. Please go to next slide.

Before beginning, I'd like to show you the Japanese strategic energy program, which was established in previous April. After the great east Japan earthquake, we had a serious situation on the energy supply and to overcome this severe situation, we conducted all efforts by conducting a loading dock count in the industry sectors especially for the factories in the Japan and contribution by the [Indiscernible][0:08:58] Japanese

industry, we compete the energy efficiency on 2011 which was less than that of 2010 and based on this situation, Japanese national, our ministry, revised the strategic energy plan in previous April, so I'd like to show you the essence of this strategic energy plan about the smart community sector. The basic viewpoint of energy policy in Japan, we put the 3E + S concept which are energy stable supply, energy cost reduction, and environmental awareness, the last one is safety for energy supply and demand. Also, we should consider the global viewpoint which is including developing energy policies with international movement appropriately and also we considered the necessity of economic growth by the energy sector. As for the renewable energy issues, the strategic plan evaluates the renewable energy is promising and the merging capitalist important energy and also the domestic energy sources. So Japan will accelerate the renewable energy introduction as far as possible for initial three years and also after three years, we will keep expanding the renewable. Please go to next slide.

As for the Smart Community perspective, I choose two things from this strategic plan. One is the realization of smart energy consumption through the various options to the end users. We will create the mega-watt market which is the [Indiscernible][0:11:59] of the amount of energy consumption in the energy market and also we will foster new energy enterprises so that they're promoting the smart communities and will conduct some project about the information technologies and the home electricity management system and community energy management system by this project. Through these efforts we will create a more efficient energy supply system and to realize the energy resilience nation. Next slide please.

Let me share with you the background about the Japanese energy supply and demand. After the great Japan earthquake, as I mentioned, we had placed the CBS station about energy supply and demand and so it was judicious to overcome this situation and after the feeding program's commencement which was in 2012, another concern we occurred that we need to adjust the power fluctuation including voltage by the introduction of renewable energy in the energy market in Japan. To form these programs, the system having the efficient energy usage including electricity, heating, and transportation by utilizing information or communication technology and we put this system of smart communities in Japan. Next slide please.

This is a concept of smart community in Japan, so many of attendees understand already so may I share you briefly of this concept. At the moment the power utility energy utility hub supplies the necessary amount of electricity at the same price category than the client by consumers in Japan. In the near future, it will be realized that the high amount of renewable energy is deployed. The consumer will [Indiscernible][0:15:26] supply demand adjustment function, which the supplier side used to be responsible for at this moment. So the smart community will have big improvements that energy supply and demand structure transformation will be. So please next slide. Next slide please.

So based on this regard, we put the importance of the smart community project in Japan and we started the major flow of smart community project in Japan from [Indiscernible][0:16:29] 2011, this slide is showing the outline of the four major smart community project in Japan. The Yokohama city, Toyota city, Kitayama city, and Kitakyushu cities. This webinar after my presentation, we will share the details of the Kitakyushu city project and I'd like to show you the brief description of this project. As for the Yokohama city, which is the wide area metropolis type, in this project, about 4,000 households will be participating in the demonstration project and as for the Toyota city, which is the separate housing type, we put the up-to-date technologies home appliances in the 76 households in Toyota city by evaluating the demand response project. In the Kitayama city, which is in Kyoto, this project is the housing development type. Approximately 700 households are presented in this project. Finally, the last one is Kia-Kyushu city, which is the type of [Indiscernible][0:18:33] a year. Let's go to next slide.

First, I'd like to believe [Indiscernible][0:18:46] the Yokohama city demonstration project. This project consists of three parts, mainly one is the [Indiscernible][0:18:56] energy management system, which is above this presentation and second is integrated BEMS system electric, which stands for Building Energy Management System. The CEMS stands for Community Energy Management System and in the [Indiscernible][0:19:24] Energy Management System, it's composed of two company housing sites and the aim of one site is to reduce the approximately 40% of energy usage by introducing renewable energy and distributed energy system in the company's house and the other one is the purpose of this other housing is self-sufficiency rate of 80% or higher for electricity electric energy. On the integrated BEMS system, there are a lot of buildings having the energy management system in Yokohama city so the one with the main building, which was in the Toshiba company, integrates all energy by the system. The aim of this project is to reduce the approximately 10% of energy consumption and [Indiscernible][0:20:50] system, the aim of this project is to cut the energy consumption about 20% through conducting the demonstration project. Next slide please.

This is a Toyota city project. About 70 households which is equipped with solar PV, fuel cells, [Indiscernible][0:21:32] which is heat pump technologies having heat pump technologies and secondary cells having driving hybrid vehicles and electric vehicles. Next slide please.

This is also showing the Toyota city project and by utilizing the electric money systems, we put the incentive point to the household to reduce the electricity during the peak hours and also if the households reduce the electricity, the project awards the household by the electric money through this project. Also the video uploads for the transformation sectors by awarding points to the drivers who avoid congested area in the near future. We will identify this demand dynamic pricing system through this demonstration project in Toyota city. Next slide please.

Let me share one technical issue about E to H, which means equal to home electricity and Yokohama city project and Toyota city projects involved in this technologies. These both demonstration projects incorporates the E to H technologies and the Yokohama city, it was first time to introduce this E to JYhamaH technology system in the world which was in June 2012 and after the demonstration project, we also prepared the standardization by collecting data from this project. Next please.

This is a side project on the - city. This is also the verification of the demand response system, but the main feature of this project is the participants from household without power generation such as solar PV or another energy system and the project distribute some display to the 700 household and the participant can see whether the amount of electricity consumption and if during the peak time, the electricity price will be added with the regulatory price and through this project, we verified the role of this demand response. Next slide please.

Finally, this is the Kitakyushu project. I don't want to go into the details so just briefly, this project is the project having the testing the dynamic pricing demonstration for the [Indiscernible][0:26:21] establishments and 230 households in the Kitakyushu city. The [Indiscernible][0:26:32] some equipment shown in this slide they are the residential buildings and commercial buildings and also some museums in this city. So next slide please.

So it's a telling result about this national demonstration project. We will achieve about 20% of pickup effects from this project in the Kitakyushu city and the _ city. The number of this result is in the fiscally FY 2012. It's not finalized detailed results but we reached some achievement through this demonstration project. So may I pass my baton to Mr. Nakanishi to explain the details of the Kitakyushu city. Thank you for your attention and I'm happy to have any questions after our presentation. Thank you.

Mr. Nakanishi

Hello, hello. [Indiscernible][0:28:33] Mr. Sakuma, I will talk to you about smart community demonstration in Kitakyushu. So I'm with Fuji electric, which is a manufacturing company, and I'm a senior chief engineer in division in charge of smart fleet technology. Today's topic is smart community demonstration in Kitakyushu. Fuji electric contributes to this Kitakyushu smart community project as a [Indiscernible][0:29:03] member and also provide energy management system, smart methods, [Indiscernible][0:29:10] battery system and so on. Next slide please.

So you spoke about the introduction of Kitakyushu. Next slide please.

So in the city of Kitakyushu, the population is almost 1,000,000 and the area is 500 sq. km and located between Shanghai and Tokyo so the upper picture, all picture shows [Indiscernible][0:29:55] which began to operate in 1901. From that era Kitakyushu provided foundation of industrialization

of Japan and [Indiscernible][0:30:07] Kitakyushu has been developing. Next slide please.

However, due to the high economic growth after World War II, Kitakyushu faced a severe environmental population. This picture shows the same areas in comparison between 1914 and present time. Through the collaboration among industry, academia, and government, Kitakyushu overcame severe health problems and got back to the blue and starry sky and fish and seafood. Now Kitakyushu is erected as environment city. Next please. Next slide please.

Further to this historical reason, Kitakyushu project has other significant reason. It's a special energy supply zone. Generally speaking, in Japan, only 10 general electric utilities have obligation and rights to the universal electricity studies as the society's infrastructure; however, the demonstration area in Kitakyushu is a special supply area which is permitted to supply dedicated demand instead of those major electrical utilities. Then it is possible to change the [Indiscernible][0:31:50] electricity price by altering the actual power contract. In cooperation with Kitakyushu [Indiscernible][0:31:57] district power supply [Indiscernible][0:32:00]. Kitakyushu Corporation possesses a power generation facility consisting of natural gas engine cogeneration system and also brought also private power distribution lines. Using the distribution line, electricity is supplied to the households, factories, office, and so on. On the other hand, [Indiscernible][0:32:34] is supplied to [Indiscernible][0:32:36] works, therefore the local production for local consumption is accomplished based on [Indiscernible][0:32:48] area and [Indiscernible][0:32:52] area of [Indiscernible][0:32:53] usage of [Indiscernible][0:32:55] and electricity energy. Next slide please.

So I'm going to give you a picture of Kitakyushu's smart community creation project. Next slide please.

This project was launched by Kitakyushu smart community council that consists of more than 67 organizations including city of Kitakyushu [Indiscernible][0:33:31] IBM Japan, [Indiscernible][0:33:37] corporation, and Fuji electric. Location is [Indiscernible][0:33:43] area in Kitakyushu city. This area is approximately 1.2 sq. km. This creation project includes not only energy issues but also social activities according to master plan to be formulated. As the project [Indiscernible][0:34:03] the planning budget is a total of ¥16.3 B and 38 subjects include digital energy management with installation of solar PV equipment. This project is promoted in five years from 2010. Next please. Next slide please.

In the smart community creation project, mainly main subject is energy issues. So its goal is to save by 20% and to reduce CO2 emission by 50% as environment city. Next slide please.

As Mr. Sakuma mentioned, in April 2010, the Kitakyushu smart community creation project was selected by the ministry of economy, trade, and industry of Japan as a demonstration pilot project in one of four areas where the next generation energy and social system demonstration program is to be implemented which aims to create Japanese style smart fleet and it oversees the [Indiscernible][0:35:36]. Next slide please.

I will show you the demonstration area using the photo here. You can see the coordination, bicycle rental station and that's a factory and also hydrogen pipeline is here described by the [Indiscernible][0:36:07]. The hydrogen can be extracted by the byproduct gas [Indiscernible][0:36:17] in process of steel making at the steel works. This hydrogen is supplied to fuel cells and stored at the hydrogen station in Kitakyushu and the housing complexes commercial facilities and public facilities in [Indiscernible][0:36:36] district. Next slide please.

This video shows the schedule of smart community project. Now we are going to conduct the demonstration in the final stage and also to summarize the project. Next slide please.

Now I would hope to review the demonstration subjects. Next slide please.

Main objective in demonstration is to realize the low carbon society and then to use the newer energy effectively. As you know, the newer energy [Indiscernible][0:37:26] are not stable so we are challenging that kinds of power system and contain the equipment cost and then those demonstration subjects conducted first supply and demand optimum operation, second maintain both [Indiscernible][0:37:53] control, third demand response, finally the allocation of heat, electricity, and hydrogen. Community [Indiscernible][0:38:04] system so called since it's the core of this field demonstration project. Based on the community involvement type, this seems [Indiscernible][0:38:21] for supply and demand of electric power, heat, and gas. In case of supply-demand [Indiscernible][0:38:33] is changed to the lower level [Indiscernible][0:38:39] so called [Indiscernible][0:38:42] in interactive way. Since communicate with home energy management system HEMS management system aims for [Indiscernible][0:39:00] and also retail energy management system BEMS demand which goes through the [Indiscernible][0:39:15] infrastructure including smart meters those [Indiscernible][0:39:20] manages their own demand to change the usage of electrical equipment for their product line. Next slide please.

This picture shows cooperative energy management for community involvement. [Indiscernible][0:39:45] which capacity is 33 MW is supplied to community load which is approximately maximum of 20 MW. The surplus is supplied to [Indiscernible][0:40:05]. These networks are described by green colored line in this video for the optimum usage of renewable energy and demand control several energy management system has been developed and sent out to community energy management

system, control over the charging and discharging of battery, controlling of fuel cell Corporate and public demand response with lower [Indiscernible][0:40:44] which is described by [Indiscernible][0:40:50]. Next slide please.

Let me talk about several component system: community energy management system, smart power convergence system, and smart meters. In this figure, we talk about [Indiscernible][0:41:08] community energy management system, actually new energy systems [Indiscernible][0:41:17] variations in electric power generated by the new energy system caused the supply and demand imbalance and also because expectation to new energy is increasing significantly, a reverse flow voltage is a problem. [Indiscernible][0:41:39] in solving these problems such as [Indiscernible][0:41:46] bottom left side. One is predicting electric power generated by the new energy system. Usually, the prediction is towards demand [Indiscernible][0:42:06] in this since it predicts [Indiscernible][0:42:15] the new energy system and also usage [Indiscernible][0:42:19] for supply and demand, controlling supply and demand and controlling the frequency. Third, stabilizing roads and providing the [Indiscernible][0:42:33] response for balancing supply and demand. Finally, the using of smart meters so that the whole of customers can be [Indiscernible][0:42:42]. Next slide please.

Now I will show you the control procedure in [Indiscernible][0:42:59]. As you know, the central dispatching center has a responsibility to balance the demand and supply by way of controlling generator. On the other hand, community energy management system can manage both the uncontrolled generators such as [Indiscernible][0:43:20] wind turbine and also demand. This prediction function is to provide and predict not only demand but also [Indiscernible][0:43:35]. As for the commitment function, which is to plan start and stop in 30-minute interval corresponding to fluctuation of the demand and renewable energy. This coordinate demand response produce [Indiscernible][0:44:04] twice a day for every 30 minutes, very [Indiscernible][0:44:11] rather than the combination of the central [Indiscernible][0:44:16]. Next slide please.

So this picture shows the role of a smart power convergence systems [Indiscernible][0:44:33] wherein inverters with the inertia energy increase to be used for renewable energy. The main electric power transmission system lacks desirable capacity and has low quality [Indiscernible][0:44:50] in frequency. The smart power convergence systems creates a key road in solving these problems and provides energy in the face of disaster so the function is five points faster communicating with EMS stabilizing loads by two-way communication and by providing desired capacity in an emergency. Reducing and instructing its frequency variations by high-speed frequency control. One of the functions, controlling [Indiscernible][0:45:36]. Next slide please.

This picture shows the configuration with smart meter system. A smart meter [Indiscernible][0:45:59] communicates with community energy management system to concentrate. Communication between the smart meter and concentrator is established by a wireless mesh from the [Indiscernible][0:46:19] display by a Wi-Fi system. You can see the right hand bottom place, which shows the effect of energy conservation [Indiscernible][0:46:43]. Next slide please.

I talk about the disaster response. Next slide please.

Let me explain the [Indiscernible][0:47:03] management comparing [Indiscernible][0:47:06] concept and Kitakyushu concept. Thirty years ago, the onsite management was discussed and performed by the supplier which combines consumer with producer comes in because of adopting [Indiscernible][0:47:24] so the [Indiscernible][0:47:27] management is more important. In Kitakyushu's demonstration project as committee involvement, we tried two types of demand response programs which are dynamic pricing and incentive programs. The former program is to change the behavior of the consumers by changing the electricity price by season and by time. The better one is to encourage the behavior change in consumers by granting the points which make the consumers go out. [Indiscernible][0:48:15] in the visual consumption in residence wasted energy so it makes consumer to go to the central shop or something which is [Indiscernible][0:48:38] consumption. So it's kind of recommendations. Next slide please.

This is the example of demand response for household posts in summer 2012. In Japanese summer, peak low time is the afternoon so we decided to change electricity price from 1:00 p.m. to 5:00 p.m. Actually demand response was [Indiscernible][0:49:10] if maximum temperature reduced, over the following day, it's higher than 30 degrees Celsius. Above all, total number of [Indiscernible][0:49:18] was 40 days in this demonstration. In this video this six kinds of lines mean the pricing level. Also dotted line is the price of no demand response [Indiscernible][0:49:45] which also given time of use price, as you see. Next slide please.

Let's take a look at these results. This graph shows comparison of demand response group and no demand response group at level the price is 105 amps. It's very high which is 10 times higher than the basic price. During the peak time, the load of demand response group is lower than that no demand response group. After the peak hours, that duration is opposite, so the load group is higher than the [Indiscernible][0:50:43] group. These results indicate that the demand response can achieve the load from expensive times to cheap times. Next slide please.

This graph shows the reduction rate group compared to the [Indiscernible][0:51:05] group. As shown in this graph demand response reduced load from 9% to 30%, which is reduced by the effect of

[Indiscernible][0:51:19]. The higher their level, the larger the deduction ration you can see. So the next slide please.

So I'll show you the demonstration of community energy management system districts. Next slide please.

This string of [Indiscernible][0:52:00] you can glance through the whole status of making operation plan and [Indiscernible][0:52:11] of detail status from this screen by [Indiscernible][0:52:16]. Next slide please.

You can see the results of demand forecast community over each consumer. [Indiscernible][0:52:37] results of several [Indiscernible][0:52:39] and operations can select the best method. Next slide please.

This screen is for [Indiscernible][0:52:53] results of generation plan. [Indiscernible][0:52:56] renewable energy and generation prediction and operation plan of generators and [Indiscernible][0:53:07] display. Next slide please.

We are going to summarize today's presentation. Next please. Next slide please.

The Kitakyushu smart community creation project was selected by the ministry of economy, trade, and industry of Japan in April 2010 as a smart community demonstration pilot project. We have been developing community energy management] system with cooperative [Indiscernible][0:53:50] such as [Indiscernible][0:53:53] and so on to realize a concept, local production for local consumption using renewal energy and both demand and supply control. Based on the community involvement, social demonstration of demand response is conducted and reviewed by way of what's dynamic pricing and incentive program. Finally, we desire to make proposal of smart grid system through the reconstruction assistance in [Indiscernible][0:54:26] areas where experiments of [Indiscernible][0:54:31] remind us the importance of stable electric supply. So thanks for the attention.

Takao Ikeda

Thank you very much Mr. Sakuma and thank you very much Mr. Nakanishi. Hello participants, my name is Takao Ikeda from the Institute of Energy Economy of Japan. I'm very much honored to attend this webinar as a moderator and as Mr. Sakuma mentioned, recently once clean energy ministerial in Korea in this webinar is implemented by CEM, Clean Energy Ministerial, initiative and there [Indiscernible][0:55:29] was released [Indiscernible][0:55:31] and the winner was released and the Kitakyushu project was [Indiscernible][0:55:37] a finalist for this award. This is a very good chance to ask the expert from the Kitakyushu project which is done by Fuji electric and please send us a question in your webinar's screen.

Thank you very much and from one of the Japanese participants, he is request me about MEMS mentioned what is the meaning in Japanese. Mansion in Japanese actually means condominium or apartment and this [Indiscernible][0:56:33] is a multi-housing complex energy management system. Mansion in English is a very big house. Second question: the question is given the high building and population density in Japan, do you see any potential of implementing district heating-cooling network within the smart energy system framework, for example using waste heat from industrial plant.

Unidentified Speaker Thank you for the question about utilizing a heating system. Actually we also contacted the other smart community project of this nature, this major project as I mentioned and the other project includes the project to efficiently use waste heat generated public facilities such as garbage incineration plant, which was conducted in the Osaka city. So as one question, we all saw the potential to utilize the heating in city are and also in Tokyo area, there is a district heating system by utilizing the [Indiscernible][0:58:42] system for the district heating supply system. Thank you.

Takao Ikeda Thank you very much Mr. Sakuma. We have the next question: are the results of 20% peak load reductions sustainable from year to year, Mr. Nakanishi?

Mr. Nakanishi Actually, I'm also unaware of this question. Actually it is difficult to conclude the reduced 20% reduction but during this project, three years, we keep the 20% reduction so maybe we need another [Indiscernible][0:59:53] something. This year is the final year so we will discuss about this sustainability for this kind of reducing systems, reducing the energies.

Takao Ikeda Thank you very much Mr. Nakanishi. The next question is also to you: thank you for nice presentation. I was not sure about the interface with National Grid. How do you manage community energy and the energy from the National Grid?

Mr. Nakanishi In Kitakyushu's demonstration project, the area is a special zone which is supplied 33 MW [Indiscernible][1:01:03] but in this grid also connect to the National Grid but almost energy from the 33 MW consumed in this demonstration area and also surplus is in steel works, so the most part does not flow from this area to the National Grid.

Takao Ikeda Thank you very much Mr. Nakanishi. The next question is also about demand response: do you have idea of what part of consumer behavior is mainly being affected through dynamic pricing? What activities are being shifted to low periods?

Mr. Nakanishi Dynamic pricing and incentive program?

Takao Ikeda This is about dynamic pricing and what activities are being shifted in lower period?

Sean Esterly Hello gentlemen, are you still there?

Unidentified Speaker Yes.

Mr. Nakanishi So using the dynamic pricing the consumer cuts the air conditioners, then after the peak load, the load shifts after that peak load period.

Takao Ikeda Thank you very much. Next question is for Mr. Sakuma about the evolution of smart community. How do you see the evolution of smart community energy system in Japan in the future, for example can other plans to have all the communities as integrated community energy system by 2050? So in Japan do you have any plans after this [Indiscernible][1:04:06] smart community project.

Mr. Sakuma Thank you for the question about the future plan about Japan's smart community project. As Mr. Nakanishi mentioned, this smart community project is a five-year project and this year is the last year of this five-year project. It's still on the preparation. It's on the constellation phase or the next stage about smart community project. We did not decide whether what project will be done or whether how big the scale of the project and as for the future plan about smart community, actually we don't have the complete plan to install the smart community in all Japan. In the strategic energy plan, it mentions we will plan the energy [Indiscernible][1:05:33] energy technology development but we are not sure whether the smart community project will be included in this roadmap, so this is what I can say at the moment.

Takao Ikeda Thank you very much Mr. Sakuma. I see another activity, other than this for smart community project only for smart community project in Japan or we have other projects?

Mr. Sakuma Actually, we conduct other project with regards to the smart community. The number of the projects is nine small one and these nine projects will supplement the major point of demonstration project and the Osaka project, which includes solar heating usage, waste heating usage, will be included in nine projects.

Takao Ikeda Thank you very much. We have another question. This is the last question we have so far. Please send us a question if you have. What is the overall financial payback period of the smart community demonstration project and how much is cost spent on all the installations and infrastructures to achieve the estimated carbon reductions?

Unidentified Speaker It's a very good question. We will evaluate the financial payback for this national project after the accomplishment of this project. We don't have the specific figure of the cons and the cost of the project. In this

Kitakyushu project case, the price of this project is about ¥7 B so it's a huge number of cost for this project. I'm afraid that I don't have specific evaluation number. Thank you.

Takao Ikeda Thank you very much. Yes, we have a new question: Through your presentation, you demonstrated that smart community energy system technically viable, which institutional hurdles you came across for such systems?

Mr. Sakuma Generally speaking, as for the smart community project, we will identify what is the benefit from the smart community and who will get the benefit from this smart community system and also we will have to formulate the system to collect the benefit from the beneficiaries from this smart community system. It's more typical to answer but generally speaking to realize the smart community system will be self-sufficient the society with evaluate the smart community system and the beneficiary will pay for the value from smart community system it's critical issues about this field.

Takao Ikeda Thank you very much Sakumasan. This is the last question. There's no more question from the participants right now. Please send us your question if you have and if you're waiting for the question, I have a question to Fuji electric company, Mr. Nakanishi, I understand this Kitakyushu smart community project is based on Fuji electric technology especially for the demand response area. Do you have any other smart community project other than Kitakyushu project including abroad?

Mr. Nakanishi Yes. Now we looked up the smart community system for industrial area, which is located in Indonesia or something. So the financial problem, we hope to extend the system to the [Indiscernible][1:13:11] computing system so when install the computing system, it may be more effective system, I believe that. Thank you.

Takao Ikeda I have another question to Mr. Sakuma. In the big four demonstration project in Japan and the Kitakyushu project is one of the four projects, would you like to introduce some feature from other demonstration project in Japan?

Mr. Sakuma In the presentation, I already introduced the other major project in Japan. We utilized the feature of the city for this project and the smart community is related to the urban development so it's important that the municipality's strong interest will lead this smart community realization so the government sector, we will cross communication with not only Japan but also the other countries through the proliferation of this smart community system.

Takao Ikeda Thank you very much.

Sean Esterly Mr. Ikeda we can go ahead if we received any more questions from the audience, we can definitely ask those, otherwise we can move on to the next survey to the attendees and any closing remarks if you'd like.

Takao Ikeda If you don't have a question, we'd like to finish our webinar today.

Sean Esterly Great, yes, if we receive any more questions, we'll definitely present those to the panelists, otherwise I'd like to thank again Mr. Sakuma and Mr. Nakanishi for the great presentations and Mr. Ikeda thank you for the wonderful question and answer session there at the end and at this point, I would like to just ask the audience to take a quick survey that we have. We have three questions that'll help us improve for our future webinars. So Maureen, if you could go ahead and display that first question for the audience. That question is does the webinar content provide me with useful information and insight? Next question please. The webinars presenters were effective? The final question, Maureen. Is overall the webinar met my expectations?

Great. Thank you so much for answering out survey and on behalf of the Clean Energy Solutions Center, I'd just like to thank you again, our expert panelists and moderator, for participating in today's webinar and also for our attendees who joins us today. I would very much appreciate your time and I do invite everyone to check the Solutions Center website over the next week if you'd to view the slides and listen to a recording of today's presentation as well as any previously held webinars. We will be posting audio recording within about a week of today's broadcast. Additionally, you'll find information on the Clean Energy Solutions Center site on upcoming webinars and other training events and we also invite you to inform your colleagues and those in your networks about Solutions Center resources and services including the no-cost policy and support. So at this point, I'd like to just hope everyone has a great rest of your day and this concludes our webinar.