

Energy Management: Benefits, Challenges and Energy-savings Opportunities in Small and Medium-sized Hotels

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Webinar Panelists

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Adriana Villoslada Creara - Energy Experts

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Katie

Today's webinar is focused on energy management, benefits and challenges and energy savings opportunities in small and medium sized hotels. Before we begin I'll quickly go over some of the webinar features. For audio, you have two options. You may either listen through your computer or over the telephone.

If you choose to listen through your computer, please select the mic and speakers option in the audio pane. Doing so will eliminate the possibility of feedback and echo. If you choose to dial in by phone, please select the telephone option and a box on the right side will display the telephone number and audio pin you should use to dial in. If anyone is having any technical difficulties with this webinar, you may contact the Go to Webinar's helpdesk at 888-259-3826 for assistance.

If you'd like to ask a question, we ask that you use the questions pane where you may type it in. The audio recordings and presentations will be posted to the Solutions Center training page within a few days of the broadcast and will be added to the [Solutions Center YouTube channel](#) where you'll find other informative webinars as well as video interviews with thought leaders on clean energy policy topics. Finally, one important note of 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 featured in the Solutions Center resource library as one of many best practices resources reviewed and selected by technical experts.

Today's webinar agenda is centered around the presentations of our guest panelists Loreto Duffy-Mayers and Adriana Villoslada who have joined us to share the best practices to promote affordable reliable and sustainable and modern energy use among small and medium sized hotels in Americas. Before we jump into the presentations I'll provide a quick overview of the Clean Energy Solutions Center. And then we'll have some welcoming remarks from Richard Campbell of the Organization of American States.

Then following the panelist presentations we'll have a question and answer session where the panelists will address questions submitted by the audience. At the end of the webinar you'll be automatically prompted to fill out a brief survey as well. So, thank you in advance for taking a moment to respond.

The Solutions Center was launched in 2011 under the Clean Energy Ministerial. The Clean Energy Ministerial is a high level global forum to promote policies and programs that advance clean energy technology, to share lessons learned and best practices and to encourage the transition to a global clean energy economy. 24 countries in the European commissions are members covering 90 percent of the clean energy investment and 75 percent of the global greenhouse gas emissions. This webinar is provided by the Clean Energy Solutions Center which focuses on helping government policy makers design and adopt policies and programs that support the deployment of clean energy technologies. This is accomplished through the support in crafting and implementing policies relating to energy access, no cost expert policy assistance and peer to peer learning and training tools such as this webinar.

The Clean Energy Solutions Center is cosponsored by the governments of Australia, Sweden and the United States and with in-kind support of the governments of Chile. The Solutions Center provides several clean energy policy programs and services including a team of over 60 global experts that can provide remote and in person technical assistance to the governments and government supported institutions, no cost virtual webinar trainings on a variety of clean energy topics, partnership building with development agencies and regional and global organizations to deliver support and an online library containing over 5,500 clean energy policy related publications, tools, videos and other resources.

Our primary audience is made up of clean energy policy makers and analysts from governments and technical organizations in all countries. But we also strive to engage with private sectors and NGOs in civil society. The Solutions Center is an international initiative that works with more than 35 international partners across a suite of different programs. Several of the partners are listed above and include research organizations like IRENA and IEA and programs like SE4All. And the regional focused entities such as ECOWAS center for renewable energy and energy efficiency.

A marquee feature of the Solutions Center provides is the no-cost expert policy assistance known as Ask an Expert. The Ask an Expert service matches policy makers with more than 60 global experts selected as authoritative leaders on specific clean energy finance and policy topics.

For example, in the area of energy efficiency financing we are very pleased to have Ivan _____ of _____ serving as one of our experts. If you have a need for policy assistance and energy efficiency financing or other clean energy sectors, we encourage you to use this valuable service again. Again, the assistance is provided free of charge. If you have a question for our experts, please submit it through our simple online format, cleanenergysolutions.org/expert. We also invite you to spread the word about this service to those in your networks and organizations.

Now I'd like to provide a brief introduction for today's panelists. First up today is Loreto Duffy-Mayers. She has worked as an environmental manager in several green hotels in the Caribbean and is currently the regional program manager for the Caribbean hotel energy efficiency and renewable energy action program. Following Loreto, we'll hear from Adriana Villoslada. Adriana is an international business development specialist at Creara. She has more than ten years of experience with multilateral projects in the areas of sustainability, economic development and competitiveness. And with those brief introductions, I'd like to welcome Richard Campbell to the webinar to give a few opening remarks from AOS. Richard?

Richard

Good morning and thank you Katie. Good morning to all. First of all, let me start by welcoming each and every one of you to this important webinar on energy management, benefits, challenges and energy savings opportunities in small and medium size hotels. The Organization of American States is delighted to partner with the Clean Energy Solutions Center and the InterAmerican and Caribbean network of small hotels in organizing this important webinar. As you all would know, energy costs are some of the most significant items affecting the bottom line and by extension the competitiveness of small hotels in our region. The purpose of this webinar is to report affordable, reliable, sustainable and modern energy usage amongst small hotels in the Americas in general but this one focusing especially on small and medium sized hotels in the Caribbean.

It is the second such webinar produced in collaboration with the Clean Energy Solutions Center. The first one being held in December of last year and delivered in Spanish. This system of webinars is part of the OS's support to tourism SMEs, tourism small and medium size enterprises in the region and in particular the small accommodation subsector. Tourism industry people in the Caribbean remain among all principle stakeholder. So, we felt very strongly that we must include a dedicated webinar in English specifically targeting this group. The OIS has had a long track record of support to the small hotel sector in the Caribbean dating back to the early 2000s through the small tourism enterprise project.

Many of you may recall that the small tourism enterprise project _____ as it was so fondly known in the region targeted small hotels with 75 rooms or less and other small enterprises offering tourism services such as attractions, transportation, guided tours, restaurants, cultural entertainment experiences, etcetera. Key objectives were to enhance the competitiveness of tourism enterprises to meet international standards, to implement environmental

standards, to enhance awareness of sustainable tourism development requirements for the region, to provide training and capacity building programs tailored to the requirements of small tourism enterprises and to contribute to achieving these objectives. And also, to increase access to better environmental management practices.

It was with respect to the objective of increasing access to best environmental management practices that the OS was able to provide assistance to small hotels in the Caribbean through the provision of tool kits for environmental work throughs, environmental conservation and energy management. These tools were provided over 15 years ago. So, with the change in technology, updated information is clearly required to be provided as we go forward. We are therefore deeply indebted to our partners at the Clean Energy Solutions Center as well as our expert presenters today, Loreto Duffy-Mayers from CHENACT and Adriana Villoslada from the Creara - Energy Experts for consenting to deliver these presentations and to provide this important information.

Our other partner in this exercise is the InterAmerican and Caribbean Network of Small Hotels which was formed in San Jose, Costa Rica in 2013 and was fully constituted one year later in _____, Ecuador in 2014. The network was established as a mechanism to promote closer links among owners and operators of small hotels in the America sub region and to share experiences, case studies and best practices and to undertake joint activities. The annual meetings are in conference of the network as they have been called have often either received information on energy efficiency or lamented the need for improved energy efficiency in small hotels. As we continue our support to the small hotel sector, we look forward to collaborating for the other initiatives related to energy efficiency and energy management with our partners.

With your cooperation, these initiatives will be successful in contributing to the competitiveness of the important small hotel sector in each of your destinations while giving other small tourism enterprises the opportunity to be more competitive during these changing times. This is the end of my remarks and from the OS I want to say again welcome to all of you and thank you to the Clean Energy Solutions Center and to all valuable presenters this morning and we look forward to a successful webinar. Thank you. Back to you, Katie.

Katie Wonderful. Thank you for those opening remarks, Richard. We really appreciate it. We are going to start with Loreto today. Loreto, welcome to the webinar. We are going to—you should be seeing a screen share right now.

Loreto Yes, I am. Yes.

Katie Oh wonderful. Welcome.

Loreto I am having some challenges here. So, if I disappear I think it would have to go straight to Adriana but I'm going to try very hard and hope it works.

Katie Ok. Wonderful. Would you like us to show your slides for you? Just in case you have issues?

Loreto Yes.

Katie Ok. Great. Looks great. Ok. Wonderful. Welcome, Loreto, to the webinar. It's all yours.

Loreto Thank you very much. Ok. Good morning everyone. I think as was explained earlier the whole focus of the webinar is on energy management benefits, challenges and energy saving opportunities in small and medium size hotels. Well, the CHENACT program which has been running for the last nine years or so and is a joint venture of the Caribbean hotel and tourism association which is the private sector side of the accommodation sector and the Caribbean tourism organization which is the umbrella organization over the ministries of tourism. And the program was funded by in the main by IDB and then by the CDE which was a European union organization, GIZ, UNIP and the governments of the countries.

Basically, the objective of CHENACT was to improve the competitiveness of the small and medium size hotels which is less than 400 rooms in the Caribbean region through improved use of energy. I actually went far too far ahead in that last slide. But basically, what we focused on was doing initially energy audits in hotels throughout the region. But the main focus was on Barbados, Bahamas, Jamaica though we did touch hotels in the eastern Caribbean, Dominican Republic and Trinidad and Tobago. We did in total we audited approximately 170 hotels either through detailed energy audits or walk throughs. And the results that we found were extremely interesting. But the object was to try and—initially we were looking at renewable energy. But of course, we discovered that until energy efficiency is covered, renewable energy actually can be way more expensive than it should be. So, we focused very much on trying to implement energy efficiency opportunities. Oh sorry. I've gone backwards now again.

Now the electricity consumption in the Caribbean hotels by end use showed us very clearly that air conditioning takes up almost 50 percent throughout the whole region. There are some areas that use slightly more but unless you have no air conditioning this is basically the scenario across the board. Lighting took up 11.5 percent and kitchen and refrigeration equipment was the next highest one at almost 11 percent. So, the focus that we made was basically on those three areas where we thought we would make the most impact. And throughout our audits we found that there was potential savings of anything from 10 percent up to about 65 percent in energy and up to 50 percent in water.

And one of the things that we recognized is that people don't realize that there is a correlation between your water use and your energy use because it takes energy obviously to pump water. And if you are wasting water, you're also wasting energy. We also discovered that quite surprisingly that energy could account for up to 60 percent of operational costs in some hotels. Now it

wasn't often that high, but we did find some small hotels who were having serious challenge with their energy bills.

This slide here shows the difference between the three main countries that we touched, Jamaica, Bahamas and Barbados. And what it will show you is that the average which is the line you see in the middle. The average use per guest night, the average kilowatt hours per guest night in Jamaica, 50.56 kilowatts per guest night, Bahamas 81.56 kilowatt hours per guest night while Barbados was 32.17. Now that is, shows that Bahamas is using nearly, not quite but nearly three times what Barbados is using which Jamaica is using nearly twice. So, the question straight away, why?

Now Barbados and the eastern Caribbean. And that would include anybody from say Antigua all the way down to—well, leave out Trinidad in this case because their energy use was significantly different. But all the way down to say Grenada. And what we found was that the clientele was significantly different in that our clientele in the eastern Caribbean tends to be much more UK, Europe and other Caribbean while that of Bahamas and Jamaica tended to be North American. And I think we all know that in the hospitality business that the North Americans, well, mostly the Americans rather than the Canadians seem to love arctic temperatures in their rooms. I mean we tend to have to set the air conditioning units about 15 degrees in those rooms. As opposed to in the eastern Caribbean it's quite comfortable at 23 degrees and most of the time we found a lot of the guests don't even use air conditioning.

We found the difference also was significant in the building design. Those in the eastern Caribbean the buildings tend to be much more open. There's very few hotels have enclosed lobbies. And we tend to have open corridors so there's less air-conditioned buildings. Whereas for varying reasons in both the Bahamas and Jamaica the building designs tend to be enclosed. Bahamas actually can get cold so therefore having an open lobby all year was very uncomfortable. But apart from that I think for security reasons [Break in Audio]

Katie

Loreto, we seem to be losing some audio. Loreto, can you hear me? All right. It seems to be that we're having some technical difficulties with Loreto. We'll try to get her back online. Adriana would you be—can we go to you for your presentation and we'll go back to Loreto when we get her back online?

Adriana

Yes, I'm ready.

Katie

Wonderful. We will change the webinar over to you. Wonderful. Thank you so much Adriana and we will work on our technical issues with Loreto and thank you so much. Welcome to the webinar, Adriana.

Adriana

Thank you very much. So, I will be presenting now since Loreto is experiencing this issue. My presentation is focused on the notion of nearly zero energy hotels, what we call neZEH. I will be talking about European project and the European experience. My presentation will have three main points. The first is the concept of neZEH hotel, what does it mean. The second will be an overview of one of the pilot projects in the context of this

project which is the Corona Del Mar hotel. And finally, I will go through the issue of financing this kind of energy efficiency and sustainable energy projects in the hospitality sector.

So, what is a nearly zero energy hotel? Well, the definition is quite simple. It's just a hotel with a very high level of energy efficiency. And that energy efficiency can be reached also with the use of renewable energy sources. That can be for example on site generated energy. So, we can be talking about energy efficiency hotel which also have photovoltaic plant in its facility. The goal of the European project was to accelerate the rate of scaled innovation in hotels in Europe. That was a project financed by the European Union and we participated in this program as the national leader for Spain with other peak engineering and consulting firms in Europe.

So, the way that the European commission supported European hotels were by three means. First is providing technical advice to the hotels that were committed to the program. The second was choosing some pilot projects, what we call the nearly zero hotel pilot projects and using them as demonstrating flagships. And third was providing these hotels with training and capacity building support. That last point included also some support with promotional material, marketing plans, etcetera. So, they could also benefit from that improvement of their image because they became more sustainable. But maybe out of all this support what's more important was the technical part that we provided while analyzing their energy balance and we started the facilities of the hotels identifying the main opportunities for energy efficiency.

So, in order to select the best hotels for this program we conducted a selection process where we—at the beginning we had 30 applications from different hotels that came from a public call. And out of them only five candidates were audited to determine whether they could be a good pilot case or not. So, listing the five hotels was the first task. Then conducting feasibility studies of the hotels to assess their like capability of developing energy saving measures. And third, after that audit finally we selected only two pilot projects. And this selection process was replicated in each European country that made part of the neZEH project.

So now we enter in the second point of this presentation and it's the pilot case of Corona Del Mar hotel. So, as I said, Corona Del Mar was one of those hotels that were selected. This is a medium hotel, a small medium hotel not very different to those in the Caribbean I understand. Also, the weather is not that different because it is located in the Mediterranean area and it's in the coast, so the weather is usually very warm. It's a first line beach hotel with 429 rooms and it's open the whole year.

One of the reasons that made us to select Corona Del Mar was that this hotel had proof to have a serious concern with environment and energy efficiency. For example, they already had the ISO 14001. They also hold the EMAS certification and they even had conducted a carbon footprint project and they had a calculation of the emissions of the hotel. So, as I said from a technical standpoint it's important to start looking at the facilities of the hotel. So, what

we call, usually call it is energy audit or energy study. Just to make you aware of the type of construction it was from the late '60s, '69. It has a consumption or had a consumption of energy of 1,697 milliwatts hour with 129 rooms and 93,880 the number of stays through the whole year. So, the occupancy level of the hotel is high. It's almost 80 percent of the during the whole year. So that is to say that it was a relatively busy hotel. It's a very touristic area here in Spain.

Ok. So below there is a summary of the main end use equipment and facilities of the hotel. So, as we can see when you look into the different energy equipment it's not really, it's not very efficient. For example, when it comes to lighting Corona Del Mar had only four percent of efficient lighting which is the LED. While the other technologies were pretty old and inefficient. They also had six boilers and a lot of fan coolers. Here as in Barbados air conditioning it's mandatory at least five months or six months in a year. And Corona Del Mar also has very energy intensive facilities such as the spa, the gym, sauna, restaurant, kitchens, conference room, etcetera.

So, our engineers, they conducted this energy study trying to identify the assumption share by use and by fuel type. So, we found out that electricity was responsible for 64 percent of the energy consumption while propane gas was the 36 percent. Propane gas was mostly used for the kitchen and the hot water. Going through consumption equipment, the largest consumption were found in the kitchen equipment, laundry and cold chambers. So that indicated that those were the areas to study and to focus on in order to save energy.

After conducting the energy audit, we found out the most interesting energy saving measures. Usually when engineers conduct these kind of studies they come up with a list of the best measures to implement and what we do is that we present them in three different levels of priority depending on the technical and financial criteria. So obviously what is more attractive for the client, in this case for the hotel is that measure that is easy to implement from a technical standpoint but also has a good payback or a good return on the interest. So according to this criteria implementing all these measures we could save up to 37 percent of the energy consumption and investment requirement to implement all these measures would be almost half a million euros, 580,000 euros.

One of the most expensive measures was the replacement of the boilers, the boilers that were used for heating the pumps. This is for a [Break in Audio]. And the amount of savings that could be reached through this replacement would be up to ten percent. The investment needed will be 105,000 euros. The time that we will be needing to get paid back from that measure will be more than eight years. I'm going to talk a little about the other two measures following this order that are also system for the laundry. This is a very—I could say a pretty modern technology to replace the use of electricity but even to save some money in the need of using hot water to clean the clothes.

And the third is the aerators. This is a technology that is used in _____ of the hotel to reduce the _____ and consequently save some energy. Ok. So, after implementing these measures the energy savings that were achieved by hotel

Corona Del Mar were 623,000 kilowatts hour per year which means a 37 percent reduction on the total energy consumption. In terms of money that implies 51,830 euros per year that were savings for the hotel and also it had very good impact on the CO2 emissions. They were cut by 38 percent. And the investment as I said was almost half a million euros or more than a half a million euros basically. Hotel Corona Del Mar was also a success because it provoked other hotels within this hotel chain that was called RH to also implement sustainable energy projects. So, another 17 hotels were encouraged by this experience with Corona Del Mar to conduct energy audits, do carbon footprint calculation going through energy improvement renovations, etcetera.

Ok. This is the last part of my presentation. I'm going to talk very briefly about how can we manage to finance these type of projects, in the case of neZEH project there were three possibilities or three sources of financing. One is always the own hotel resources or the hotel capability to get financing through going to commercial banks. The second is using the available European or national financial instruments that can be credit loans with special advantages or better interest rates. Sometimes a lot of countries they have subsidies or grants for this kind of projects depending on the, on each country and its policies.

And finally, I'm going to explain this with a little bit more of detail, the possibility of financing these projects through an energy performance contracting company or an ESCO company. So, an ESCO company is the type of company that uses its resources to invest in the hotel renovation project and it gets paid through the savings that the ESCO achieve through this program. So, the idea is that conducting the energy measures will generate an amount of savings, energy efficiency savings and even energy incomes that through different years it will produce a cash flow that finally will be used to pay for the investment needed.

So, it has some benefits because it's the company, the ESCO company is the one who makes the up-front payments. The hotel doesn't need to have that amount of cash available to start the energy efficiency project. The ESCO company usually it's an expert in energy efficiency or in energy sector. So, they will be in a better position to determine which are the best measures to implement and to warrantee that those savings will get saved. That is what we see that these kind of projects are warranted somehow because the energy savings will happen. There are not investment risks because it's assumed by the ESCO and also the energy operational management performance will be better because it's done by the ESCO who is the expert. Of course, as many of you may know there are a lot of types of energy, of ESCO companies and different types of projects depending on the share of risk and the different conditions and particularities of each contract.

So, to put it simpler what is, what does it mean that a neZEH project is bankable. Well, a project is bankable if lenders are willing to finance it. And how do they decide if this is a bankable project? There are two criteria which are very common financial indicators. First is the net present value. If the

project is able to generate positive cash flows through the lifetime of the project, then it will be a bankable project. And also, if the internal rate of return is high because that means that compared to other potential projects, the energy efficiency project has a good internal rate of return, has a good profitability finally.

So why are these projects often attractive and profitable? Well, the good news of energy efficiency projects is that they generate incomes and they also lower some costs. We were talking about the amount of money that is in energy as an operational cost in the Caribbean hotels. Well, through energy efficiency projects, it's expected to lower this kind of costs because energy and water consumption are expected to be lower but also because of the lower costs for maintenance and replacement rate because usually the ESCO company also assumes the replacement of the bulbs, of the lamps, of the climatization equipment when needed. And also, the other advantages of this project is that it can benefit from a better image of an image of sustainability that can attract more tourists, more people to that hotel.

Finally, this is my final slide. And this is the process how the bank usually assesses this type of project. So usually the hotel conducts a feasibility study. That's what we call the energy audit and presents that energy audit to the bank. The bank conducts project evaluation and a risk analysis using their own protocols and forms and decides to give credit to that project with or without a warrantee depending on the bank's stance on that project. And the hotel will implement the project with the support of that ESCO, can be a contractor, can be the technology provider, the engineering firm. That will be the company implementing the energy measures and putting the efficient technologies in place.

Through that project the credit is _____ back to the bank through the energy savings and the amount of money that they saved in each bill month by month. And this is how this project basically works with an ESCO financing partner. So, this is the end of my presentation. Thank you very much.

Katie

Wonderful. Thank you so much Adriana for that presentation. I'd just like to take a moment to remind our attendees today that they could submit a question through the question pane at any time. We're still having some technical issues with Loreto so we will make sure to post her presentation online, so everyone has the ability to see that. We're going to go to some questions for Adriana. Adriana, our first question today is which hotels are the best candidates for this project?

Adriana

[Break in Audio]

Katie

Yes. Yes.

Adriana

Yes. Yes. Well, I think we will look for a hotel with big energy consumption, with large amount of energy consumption. Ideally, that will be also a hotel with good opportunities in terms of energy efficiency because it's old, because it has old technologies in place. Those will be I think the two considerations.

Katie Ok. Wonderful. Thank you so much. Our next question is, was the wind generation project implemented considering it had 39 payback? Why solar photovoltaic energy was not considered as part of the energy efficiency savings projects? Adriana?

Adriana Yes. Yes.

Katie You want me to repeat the question?

Adriana Yes, please.

Katie Ok. I'm sorry about that. Was the wind generation project implemented considering it had 39 payback? And also, why solar photovoltaic energy was not considered as a part of energy efficiency savings projects.

Adriana Well, because in this case, it was the wind generation, the opportunity. Probably because photovoltaic needs a surface on the rooftop for it. So maybe they didn't have that possibility because sometimes the rooftops in the hotels are very busy at least here in Spain because they have a rooftop bar or even a swimming pool

Katie Wonderful. Thank you for answering those couple of questions. We were able to reconnect with Loreto. Loreto, are you—we're going to jump back to you to present your slides. Welcome back to the webinar.

Loreto Yes. But can you hear me?

Katie Yes, yes, we can.

Loreto Ok. Good. Ok. Yeah. Show my screen. Let me go to my Power Point. Ok. I'm going right back to where I think we broke off which was on the slide—let me just see now—where we were discussing the differences between the islands. Would that be correct?

Katie Yes. That is correct.

Loreto Ok. And I think I probably—yes, ok. I think where I went off is where I was talking about the differences between the islands. We have an issue with the clientele. We have an issue with temperatures. We have an issue with in Barbados we use solar water heating and it's basically solar hot water heating already cold water. We also have a supply of natural gas where the other islands it's almost all electricity. We discovered that water costs less in Barbados so therefore it's not probably used as efficiently as it should.

In Bahamas, the hotels have an electricity surcharge. And that unfortunately means that the hotels themselves really have no incentive for reducing their energy because the guests are paying for it. In Barbados as well, because they've been on this program for so much longer we think it's because they've already implemented a lot of the recommendations. So therefore, that would explain like why there was such significant differences between the islands.

We had—I'm going to give you some examples of energy opportunities, energy saving opportunities which we recommended in three different hotels. Now this is a 25 room very small hotel. And we recommended they turn off their mini fridges which we found that is a problem in just about every hotel in this whole region. Mini fridges are left plugged in. We also noticed that a lot of those mini fridges are dinosaurs. Some of them are even there so long they're still carrying R12 gas which has been obsolete in North America and Europe for god knows how long. We discovered that a lot of these small hotels also have the big halogen floodlights. And a lot of that is because they have this idea in their head they must have these huge big bright lights on the beach for security purposes when in actual fact that's really not the reality of the situation.

We also recommended that they replace their conventional air conditioner units with the inverter type units. Because at the end of the day really the eastern Caribbean and say the smaller hotels in the northern, in the rest of the region are carrying split systems as opposed to central cooling units which the much larger hotels would use. So that made a significant difference to them. We also recommended that they go now from the CFLs to the LEDs. We did have, we did find situations in Jamaica where hotels were still using incandescent bulbs surprisingly in certain areas. But we did recommend instead of going through the CFL and on to the LED go straight to the LED. And in this particular case a small PV installation which was only to do their outdoor lights.

Now in this situation the recommendation was just an expenditure of \$28,000.00 to make annual savings of \$19,000.00 which gave a payback period of 1.43 years. Now you can see in a situation like that there's definitely it's a no brainer. Ok. This is a 247-room hotel, different altogether in the sense that this hotel was using a lot more high-tech equipment and so there was—and they were also a very energy efficient hotel already. So, you can see that there was a very large investment recommended down number nine there, combined heat and power. But that in itself had a four-year payback.

That combined with all of the other recommendations was to change out say things like the T12 and the T8 fluorescent lamps, to change them down to the T8 LEDs. Plus, the air conditioning, the inefficient air conditioning units to change those out, to put in a corporate utility management plan which is basically an energy management plan for the whole hotel. And to do things like turn off empty mini bars, turn off lights that are not needed, etcetera. And to do that an investment of just under \$3 million let's an annual cost savings of just three quarters of a million. So, the payback period is under four years which was still very acceptable in the hospitality sector.

And then finally, this was one of our champion hotels. We discovered in this particular hotel—and I just caught some of what Adriana was saying about the type of hotels that you actually look for are those that are using a huge amount of energy and in most cases it's unnecessary energy. You see the first five things here were things that there were major savings to be made by just

turning off things. In the case of water heater running unnecessarily, underutilized refrigerators. We found, I found in one hotel, one small hotel I think possible 25 rooms, they had fridges in every room, one of them had a yogurt and a Coke. So therefore, we found this throughout the region where there are fridges that are plugged in are usually very old and are absolutely costing, costing a lot more money than they are needed to do.

So, we found in this particular hotel there was almost \$40,000.00 just unnecessary things plugged in. But in view with the rest of the recommendations for the \$9,000.00 recommendation there was a potential savings of \$117,000.00. Now they also I have to say went a lot farther and invested some money into the hotel which I'll tell you about in a couple of minutes. But so, we say no brainers is the thing all the time. That's what everybody said.

So why have some of the hotels not implemented these recommendations? Well, we've found three things, the three Ms that are the biggest problem in the whole lot: maintenance, monitoring and money were without a shadow of a doubt the reasons why people do not do what appears to be the no brainer solution. We found throughout the region that maintenance contracts are not taken out until something goes wrong and by then it's usually too late. We found that the hotel staff and management really don't know what is working and what's not. And mainly that is due to a lack of training of the hotel staff.

We found in most cases maintenance is outsourced. In fact, things like air conditioning maintenance, things like that is given out to an outside company so the staff never learn. They also tend to be firefighting rather than doing preventative maintenance. Some of the ACs are so old fashioned they're still using R22 gas, fridges using R12. That kind of equipment should have been replaced long ago and now it is absolutely necessary because they're already in breach of the Montreal protocol and now will be in breach of the _____ amendment which is looking at replacing all of these refrigerants nowadays with the natural gas.

This is an example of a hotel where others are sent in and saw a sign on the wall which says solar water switches should only be left on for two hours if needed. Now they're only supposed to be turned on in the event that the guest complains that the hot water is not hot enough. And it usually means that the weather is bad and the solar is not working. These switches were on for the entire duration of the audit. And the auditors were there for three or four days. When they asked questions, the maintenance or the staff in the kitchen where the switches were told them well, we don't know. They've been like that all along. And when asked how long they were there they were told they were there for seven years. When they asked the maintenance manager about it, the maintenance manager says oh, well, he came and found it like that. When they asked the hotel managers the hotel managers response was you have to speak to maintenance.

So, to our point, a lot of people don't know what's working and what's not. In this case the electrical element in the solar hot water tanks is what was heating the water and not the solar panels. We found very little monitoring

was being done, the previous case being one in point. Bills are accepted and paid. Meter readers are read in some cases and logged but they are not actually analyzed and staff in a lot of cases are not empowered to question things. Small hotels we found simply don't have the information to do a proper analysis.

Now the water findings in a 200-room hotel. This was a very interesting one because this hotel had three leaks and they were not aware that they had them. They were continuing to pay their bills without question. And when we did the audit we discovered that between 2:00 AM and 6:00 AM the water usage was almost 50 cubic meters per hour. As you can see that's 11,000 gallons of water per hour. And it was actually costing them in the region of 366,000 additional in energy and water that they were not aware of. We found in the case of money—as we are aware hotels are in the business of selling food and drinks and they don't see the importance of investments in energy efficiency. Too many hotels are focused on marketing and revenue rather than cost savings. They don't think that cost savings is a revenue as well. In the case of the small hotels they're not able to get finance from the traditional sources like the commercial banks.

And we have found generally that the commercial banks do not understand energy efficiency and its importance. We found in the re-audits that we did that we've seen an increase in guest nights in all hotels really all throughout this region so there's no question that the region has made a comeback. But unfortunately, few hotels have implemented all of the recommendations we've made due to a lack of funding. Some yes, but most have not. And those who have done it are those that are owner managed, recognize the importance of energy efficiency and are the ones that [Break in Audio]. But we have seen savings between 10 percent for just changing out lights right up to 62 percent. We found that the hotels while they did repair the water leak did not do sufficient monitoring because leaks will always come back.

I won't go into the ESCOs because Ariana did mention that, but we are constantly looking for energy service companies who are willing to work with the small hotels. Our problem in the region is that it's not a homogenous region in that every island has its own regulatory framework. And the markets in each of the islands on its own is very, very small. So, the energy service companies have really not shown kind of interest that they would do in places like larger countries like Spain, Mexico, Canada, Dominican Republic but are actively looking for energy service companies that would show an interest in doing some work with us. We have success stories. We have—we're looking at several new funding sources and we see the opportunity for the ESCOs.

Just before I let you see, this is our CHENACT website. I have just done a final update on the slide demonstration project that we did in the region. We did \$50,000.00 grants to five hotels in Jamaica and Bahamas. We have installed two 50 kilowatt PV systems in two hotels in Jamaica and we gave them a grant of \$50,000.00 each which they matched. And so, the hotels now are up and running with their PV systems and already showing significant power savings. But they also have realized that the payback period has

dropped significantly from the seven years that they thought it was going to be down to five. And that is also going downhill.

We have another small hotel that we did an energy efficiency and a PV system installation, and we have found already that they're making in the region of about 15 percent savings per month. So, the weather in Jamaica has not been good and so the solar panels are not working as well as they should. But we hopefully that, hopefully that will improve.

In the Bahamas now, we have one small hotel that again we again gave a \$50,000.00 grant. And they are matching out of their savings because they were very badly damaged by Hurricane Matthew. And they installed solar hot water system and a solar cooling system for their kitchen. And they are already showing significant savings. But the champion hotel that I told you about in the Bahamas who we gave a grant of \$50,000.00 to and they matched it with \$60,000.00. Their energy bill has dropped from \$520,000.00 a year to \$250,000.00. So, it's a savings of 62 percent and they are a shining example to a lot of the other hotels in the region that this can be done.

So, I'll just finish by letting you see. This is our CHENACT website for which there's plenty of information that anybody can access. Hotels that have energy audits have access obviously by a password but it's up there and it's running and there's a Facebook page CHENACT as well for further information. So, there's the website and email address. So, I'm happy to answer any questions if anybody has any.

Katie

Wonderful. Thank you so much Loreto. I'm so glad we were able to reconnect with you. We do have some questions for both you and Adriana. I will start with you Loreto. Excuse me. There we go. Our first question is can you identify the organizations in the Caribbean, Trinidad and Tobago in particular that would be willing to fund energy conservative projects, conservation projects. I'm sorry.

Loreto

I mean there's lots of programs going on at the moment but in terms of funding, you mean grant funding for energy conservation projects?

Katie

Yes. That is correct.

Loreto

Yeah. I am not—I don't know of any programs in Trinidad at the moment because Trinidad it's very hard to get a hotel interested in energy efficiency programs in Trinidad for the simple reason that the energy costs are so much lower than everybody else's. So also, are their water costs. Now we did do others in Tobago at one point in time when the energy bills appear to be a disproportionate amount of the costs of the hotel. And that was due to the fact that that business in Tobago had declined significantly. Now it may—I also noticed Trinidad saying that their numbers had declined. It may be a situation in the future whereby they may be able to apply to some of the aid which are then doing energy efficiency in the region. But at the moment I really don't know of anything at the moment that is looking specifically at Trinidad and Tobago.

Katie Wonderful. Thank you for answering that. Our next question is for Adriana. Adriana, can you tell us are there any future projects planned?

Adriana Yes. I'm here. You mean in the context of the neZEH project? No. Because the project ended a few years ago. But we are constantly working with hotels in energy efficiency projects. We are developing a big project with the European investment bank for energy efficiency and renewable energy project in small, medium hotels.

Katie Wonderful. Thank you so much. Going back to Loreto, what is the capacity of the PV projects?

Loreto The PV ones that we did?

Katie Yes.

Loreto Well, we did two in two hotels in Jamaica are both 50 kilowatt systems. And then we did a smaller one maybe four or five kilowatts in a very small hotel in Jamaica.

Katie Ok. Wonderful. I would just like to give both of you an opportunity for any closing remarks that you may have or conclusion for today. Adriana would you like to have any final words for today?

Adriana Well, yes. I just would like to encourage any of you if you are hotel owners or experts to have a look at these opportunities and conducting maybe low-cost feasibility studies and see if it is appropriate to implement an energy efficiency project. For example, here in Spain lately we are doing a lot of PV installation because it also depends on the regulation and sometimes you can get support from your government or other institutions.

Katie Wonderful. Thank you so much. Loreto would you like to have any final remarks for today's webinar?

Loreto Yes. I mean I have to agree with what Adriana says. We have to encourage the hotels to look at reducing their energy costs. And there are a lot of low cost ways of doing it. And to be perfectly honest with you if those things have not already been done really and truly it's getting late in the day. There are—we have to recommend that you implement some kind of an energy management system or that you appoint an energy management person in the hotel to monitor what is really going on, somebody who will read the bills every day and really analyze to see where the energy is being used and to try to put in some plans in place to try to reduce energy without comprising service. But as I said before I mean my main concern is that hotels have always been in the business of marketing their products.

Always looking for ways to increase their revenue. Whereas there are so many areas that we've been able to prove that you can have a significant savings on your energy bill which means that you don't have to increase your room rates thereby making yourself less competitive. And actually, we made many hotels who made savings, significant savings of say between 30 and 50

percent more were able to add value to their products. So instead of increasing their room rates they were able to add breakfast to their room rates and made themselves more competitive. So, I think it's extremely important that hotels look at what is out there, look and see what is available to them and do what they can to try to implement some of the energy savings recommendations that have been made.

Katie

Wonderful. Thank you again. On behalf of the Clean Energy Solutions Center, I'd like to extend thank you to all of our expert panelists and to our attendees for participating in today's webinar. We very much appreciate your time and hope in return that there were some valuable insights that you can take back to your ministries, departments or organizations. We also invite you to inform your other colleagues and those in your networks about the Solutions Center resources and services including no cost policy support through our Ask an Expert service. I invite each of you to check the Solutions Center website if you'd like to view the slides and listen to the recording for today's presentation as well as previously held webinars.

Additionally, you'll find information on upcoming webinars and other training events. We're also now posting the webinar's recordings to the [Clean Energy Solutions Center YouTube channel](#). Please allow about a week for the audio recording to be posted. Finally, I'd like to kindly ask you to take a moment to complete a short survey that will appear when we conclude the webinar. Please enjoy the rest of your day and we hope to see you again at Clean Energy Solutions Center events. This concludes our webinar.