



## Global First Power Micro Modular Reactor Project at Chalk River Community Telephone Town Hall May 20, 2020

### **Neal Kelly:**

Good evening everyone and thank you for joining us tonight. I'm Neal Kelly and I'm happy to be your host for tonight's Global First Power Telephone Town Hall meeting. Before we get started let me explain how this Telephone Town Hall works, right now residents from across the Ottawa Valley are answering their phones and connecting to this discussion. This is just like a traditional town hall where guests arrive and file in through the front door, except in place of a front door there are thousands of phones ringing in [inaudible 00:00:38] across the valley inviting them to join us. So people will continue to join us over the next few minutes. The Telephone Town Hall is live and interactive, and allows us to reach out and talk with thousands of people from the comfort of their homes. It's a great way to stay connected especially today when we can't gather in person.

Tonight, we are joined by representatives from Global First Power, who are ready to take your questions and share information about their proposed Micro Modular Reactor project at the Chalk River laboratory site. We are also joined by a representative from Canadian Nuclear Laboratories, the company that manages the Chalk River site. We have about one hour together, we're already experiencing a high volume of calls so we'll try our best to get to as many as we can. As mentioned earlier we may have participants joining throughout the call, so for anyone who has just joined us welcome to the Telephone Town Hall with Global First Power. Before I turn things over to our Global First Power representatives a couple of housekeeping notes, given the unprecedented times that we are in we are hosting this session while working remotely and adhering to social distancing protocols. So please bear with us, we apologize in advance for any technical issues we may run into.

Also, tonight our session is being conducted in English. However, we do have staff who are able to respond to questions in French. The full transcript of tonight's session will be available in French on the Global First Power website within the next few days. Okay, moving along I want to introduce our speakers. Tonight we're joined by Eric McGoey, engagement and communications director for Global First Power. [Rosalie 00:02:45] Ahlan, the project manager for the Micro Modular Reactor project at Chalk River and Neil Kemp, Global First Power's technical director.

As mentioned we are also joined by [inaudible 00:02:59] from Canadian Nuclear Laboratories, should there be questions specifically about CNL Small Modular Reactor program. Now here's what you need to know to participate on this evenings call. If you have any questions for the panel please press star three to get in line to ask your question. An operator will take down your question live, you will still be able to hear the town hall conversation while you are waiting and when I call your name, you will be able to ask your question live on air. So again, please press star three to get in line to ask your question. We are also going to ask you to get involved a little later on by responding to some poll questions. I will provide instructions on that in a bit. Now, this evening's agenda is fairly straightforward, first Eric is



going to provide an overview of Global First Powers proposed Micro Modular Reactors project, after that you'll have a chance to ask questions.

If we don't get to your question tonight or if Global First Power doesn't have the information to respond to your question, they will get back to you within the next few days. Now, before I turn things over to Eric just a reminder, if you want to ask a question to our speakers now or anytime during the call press star three, and for anyone who has just joined us on the line welcome to the Telephone Town Hall with Global First Power. Now I will turn it over to Eric McGoey, a Global First Powers engagement and communications director to provide an overview of their micro modular project at Chalk River. Take it away Eric.

**Eric McGoey:**

Thanks very much Neal and hello to everyone on the call. Thank you very much for taking the time to join us this evening, I know these are difficult times for everyone right now. So I want to start by thanking all the frontline workers who are keeping us safe, whether they're in healthcare or transportation, grocery stores, all the people keeping us healthy and fed and safe. A big thank you as well to all of the energy workers who are keeping the lights on in the province.

And thank you everyone who has joined us here for the call. I really appreciate your interest and your patience as we work through the kinks and doing this virtually instead of in person in your community. Just weeks ago we were busy planning a series of in person community information sessions. We had venues booked and materials of production but unfortunately we had to postpone those sessions. So virtually meeting with you is the next best thing for now. So onto our project, Global First Power is an Ottawa based company focused on project development for small nuclear power plants. To provide an alternative to diesel for electricity generation, for communities and mines that are not connected to the provincial electricity grids. We are proposing to construct and operate a small reactor at the Chalk River laboratory site. Our project will provide a solution to help meet Canada's energy needs, specifically for heavy industry, mining and remote locations while also supporting Canada's environment climate change goals.

Our projects could serve as a model for the future, and be a solution that provides clean, reliable energy to support Canada's heavy industry and mining applications or for far north or remote communities. But also be a solution that contributes almost no greenhouse gas emissions or smog and the solution to support Canada's environment and climate change goals and help build prosperity. The global first project... the Global First Power project pardon me at Chalk River is working in collaboration with reactor technology developer Ultra Safe Nuclear Corporation and Ontario Power Generation, which is the company that generates about half of Ontario's electricity and it's safely operated nuclear reactors for almost 50 years. Both companies are represented on the call here today. Neal Kelly our host, Rosalie Ahlan and I, Rose who's the project manager worked for OPG. Neil Kemp works for us USMC and he's the technical director there who can answer all the technical questions you might have.

So the project really is about using ultra safe nuclear as patented Micro Modular Reactor design, and the proposed plant would provide approximately 15 megawatts of heat energy that could be converted to electrical power. That translates into about five megawatts of electricity or about enough power to supply electricity to roughly 5000 homes. Our demonstration project is our attempt to prove that our technology is economically competitive alternative to diesel power, and it doesn't have the same greenhouse gas emissions and therefore a smaller environmental footprint. We've applied to the Canadian Nuclear Safety Commission for the first in a series of regulatory licenses that would be required to start the reactor, and of course also the Environmental Assessment or EA is also in process



and that covers the full lifecycle of the project from construction right down to decommissioning. Now for both the licensing and the EA engagement with indigenous communities, and the public is a key part of that project. So we're pleased to have this opportunity to engage virtually with you this evening. I'll stop there Neal and hand it back over to you.

**Neal Kelly:**

Okay, thanks Eric. That's Eric McGoey, engagement and communications director for Global First Power for anyone who has just joined us on the call. Lots of good information there Eric, to provide the participants with an overview of the project. Perhaps this is a good place to start off with our first online question which is, I've never heard of your company before and you don't appear to have ever run a nuclear plant. How do we know you will operate safely and with appropriate safety precautions in place to protect our community? Eric, would you like to take that question?

**Eric McGoey:**

Sure Neal, that's a great question. I think the first thing I'd like to say is the project that we are doing at Chalk River isn't a science experiment, it really is a business experiment. The technology that we're using is well understood, it's been tested in labs in a number of settings and we're quite confident that it's safe and it's going to work. But I think you can draw some comfort from a number of sources, one is that there's a tremendous track record of nuclear safety protecting both the public and employees in Canada, and alternative power generation of course is very proud to be part of that track record but so frankly is CNL. We're very pleased and proud understandably that as an industry we haven't had a single fatality due to nuclear power involving a staff, employees or the public, and that's a track record that is enviable, it's significantly better than any other aspect of the energy sector and it's one that we're fiercely protective of and we want to continue.

So I think when you look at the folks around the table, whether it's a technology developer like USNC who's very proud of their technology, and they can talk about the inherent safety features in the design, in the fuel, in the reactor itself and then you've got an operator like OPG, that takes its responsibilities very seriously in terms of public and employee and environmental safety. Plus you've got the host CNL who have their own track record on the same front, and I think it's the right combination for delivering a safe, credible project that everyone can be proud of.

**Neal Kelly:**

Okay, thank you Eric that's a very good overview. I want to tell folks that we have a number of callers already in the town hall, a number of you are still joining. So we will be answering your questions live in just a couple of minutes but just before we do I mentioned earlier that we'd like you to get involved tonight through some quick real time poll questions. So let's do our first poll question.

So the first question is, before tonight's Town Hall had you heard of Global First Power and the proposed project at Chalk River? Here are your possible responses to be entered on your phone, please press one if this is the first time you've heard about the proposed project? Press two if you know a little bit about the project and want to know more, press three if you already know a lot about the project and have specific questions you would like to get answered. Once again our question is, before tonight's Town Hall had you heard of Global First Power and the proposed project? You can enter your answer on your phone. Press one if this is the first time you've heard about the proposed project, press two if you know a little bit about the project and want to know more, please press three if you already know a lot



about the project and have specific questions you would like to get answered. Thanks to everyone who participated in the poll, and we will have the results a little bit later on the call.

So, like I said there's a number of callers on the phone line waiting to ask a question. So our first question is going to be [Marcel 00:40:07] from Fort collage, and Marcel do you want to ask you a question? You're live on the air.

**Marcel:**

Yes, I want to know why do we need nuclear power in this area? We've got plenty of electricity, we got like a little town like Fort [Kollege 00:02:54] we got a dam up here and we don't even use that power. We send it on the grid and we got a power house in Waltham, we send it up over in Ontario... you want to make more power you send it to somewhere else. Why don't you go and build that power over there?

**Neal Kelly:**

Okay, that's a very good question Marcel. Can I call on Eric to answer that?

**Eric McGoey:**

Yes, thank you very much Neal and thank you Marcel, it's a great question. I think the most honest answer we could give you is that you're absolutely right, there is no need for more electricity at Chalk River and if we were thinking about this as an electricity company that wanted to look at the markets, the Ottawa Valley is not a place that we would be going and looking to build new transmission infrastructure of any technology... new generation, whether that was solar or hydro or gas or nuclear. What this is really about I think it's two things, one is taking advantage of the tremendous infrastructure and tremendous talent that we have at Canadian Nuclear Laboratories, where we've got a site that has been used to do innovative research and high tech work, supplying things like isotopes from the research reactor that have had a great benefit for Canada in the world, and really not wanting to let that advantage go away.

The other piece is that the real market here is not building a reactor at Chalk River for the sake of building a reactor at Chalk River. It's doing it there because this is a safe, licensed site that is used to nuclear and has a lot of expertise that can be relevant to the project where we do a commercial demonstration that proves really whether or not the claims that have been made about Small Modular Reactors in terms of how inexpensive they can be, how convenient they can be, how maneuverable they can be and really locks in those stacks. So that if there's someone who's thinking about opening a mine in the far North of Ontario where there is currently no electricity transmission for example, or up in one of the territories where they're off grid. They don't have any grid supply of electricity from hydro or from renewables or fossil fuels and the only option they currently have is fossil fuels.

Generally speaking diesel generation sometimes compressed natural gas or liquid natural gas. So this is about using the infrastructure of an existing institution that has a great track record on nuclear to prove that this nuclear technology is economically competitive, and having proven that we can look at deploying these small reactors to communities that until now have had no option other than diesel. That's really what this project is about.

**Neal Kelly:**



Thank you Eric and Marcel that was a great question, so thanks for the question. We're going to get to another caller. Casey, you're next on the line. Casey you're live on the air please ask your question.

**Casey:**

Hi, I was just wondering if these SMRs were going to require constant workers on site like operators, mechanics, or if they will be able to go out for a period of time without any people on site?

**Neal Kelly:**

Thank you, Casey. Neil Kemp can I ask you to answer that question?

**Neil Kemp:**

Yes, thank you Neal. We will have operators on site 24/7 to safely operate the reactor. We do however in the design make provision for the plant not to have to rely on operator action to ensure safety, but in spite of that we will still have operators on site the whole time.

**Neal Kelly:**

Okay, thanks very much Neil and Casey I appreciate the question. We're going to go to another online question and this one I'm going to throw to Rose, and the question is how many people will be hired to work on the project, construction, operation and who will they work for? Will they work for CNL, OPG, Global First Power? Rose.

**Rose Ahlan:**

Thanks Neal, that's a good question I'll answer the second part of that question first. Who will they work for? That will be GFP. GFP, Global First Power is the... or will be the licensee and will be responsible for operating the site. How many people? That's still to be determined and it won't be hundreds of people like in our typical grid scale large power reactors, we see [inaudible 00:19:07] it'll be much smaller than that due to the size of this project. During construction we will be hiring a general contractor to help manage that process and when we bring that general contractor on board, we'll look at the staffing levels there but up again not a large number of people as much of the work to be done during construction will be done off site, and components brought to the Chalk River site and installed there. Modular part of a Small Modular Reactor benefit is that it's modular and will bring those... a lot of those components to site. So the actual construction window will be a short period of time and the amount of workers that would be on site would [inaudible 00:20:15]

**Neal Kelly:**

Okay, got it. Thanks Rose and thank you very much for that online question. The next question I'm going to go back to a caller. I want to go back to Joanna in Montreal and I'm going to ask Neil Kemp ask the question. Joanna, you're Live on the air if you want to ask your question please.

**Joanna:**

Yes, hi. I wanted to ask about the actual measurements of the reactor and why I'm asking that is because it seems to me that people are getting a false impression, that a reactor that you're talking about would be the size of a kitchen table or like a mailbox you just put on the side of the road. From reading your project description I don't know what the actual size of the reactor is because it doesn't say

in there, but when you add all the components together in the various buildings it's enormous. So, I would really like to have some more information on that regard because it doesn't seem like that simple to just go and erect or build or construct this in a remote area, with as you say operators full time I'm wondering what operators are going to work in remote areas. So all those questions are in my mind.

**Neal Kelly:**

That's a fair question Joanna. Neil, do you want to do you want to answer that please?

**Neil Kemp:**

Yes, gladly. I think that's a... it's a very good question. The reactor itself is approximately 12 meters tall and three meters in diameter. Which makes it possible to transport it by road even on like ice roads et cetera for remote areas, and similarly we make use of extensive modularization in the entire design in order to make sure that we could transport the plant relatively easily to a remote area. So our entire plant... all the equipment and hardware is approximately about 100 trucks of normal ISO containers that needs to be shipped to a specific site, and to put that in perspective that amount of transportation replaces approximately 10 million liters of diesel every year that is currently burned by fossil fuel plants in the remote areas.

So from the transportation point for the remote areas I think that the plant is actually significantly improved over the current situation with diesel generators. The plant is also designed to operate with very few operators. So although we do have operators on site the whole time, it is not hundreds of people. It supposedly more in the order of around five to 10 people on site for most of the time, and I hope that answers the question. Back to you Neal.

**Neal Kelly:**

Okay, thanks very much Neil and Joanna thanks for the question, it was a very good question. I want to get to another caller Ian in Renfrew County. Ian you're live on the air, do you want to ask your question please?

**Ian:**

Hello, it's Ian speaking. My question was, I thought initially you were planning to use these small nuclear reactions for peak lopping when the wind and solar green energy did not kick in, but from a remote location I can see it has different usages. But my original thought was how long does it take to start up these generators? And how long does it take to shut them down? Because the big nuclear generators of course take almost a week to get started and shut down. So for peak lopping would these generators be of any use? Thank you, that's my question.

**Neal Kelly:**

Okay, thank you Ian. Eric do you want to take a crack at answering that?

**Eric McGoey:**

Yeah, I think I'd like to have the first crack and then maybe send it over to Neil Kemp for the more technical answer, but I think the question about renewables and about peaks is actually really relevant because I think the only real way to understand why we feel this project has so much potential is to recognize that we're of the opinion that climate change is a tremendously significant challenge to our

species, and that everybody who works in the energy sector has got to start thinking a lot more seriously about how we're going to step up to offer low emissions alternatives. So I think about the province of Quebec for example, I don't expect Quebec or Manitoba or British Columbia, or Newfoundland and Labrador to get excited about modular reactors. Simply because they are blessed with hydroelectric resources that are so tremendous that they can likely supply all of their energy needs for the foreseeable future, and so what this is really about is those jurisdictions that don't have those hydro assets. What can they do to move off fossil fuels? And we have no illusions about the idea that there won't be competition from renewables.

I fully expect our colleagues in the solar and wind and energy storage and micro hydro industries to be working as hard as they can to provide great competitors for our technology, and to be talking to some of the same customers that we're going to go to. But where I think that it really is justified that we're all doing this is climate changes is an all hands on deck kind of emergency, and we should compete different technologies in the market and if solar and wind and battery storage provide a better solution to individual customer than our Micro Modular Reactor then absolutely that's who they should do business with.

Likewise there might be some jurisdictions, some climates for example where they would give an arm and a leg to get hydro but since they can't, nuclear is the next best thing for base load and there is some good load falling characteristics that I think make Micro Modular Reactors really attractive to integrate with renewables and use, for example to charge up the batteries when the wind isn't blowing or the sun isn't shining if you're using a renewable storage system, but for the technical side I'm going to turn that over to Neil Kemp.

**Neal Kelly:**

Okay, Neil Kemp do you want to-

**Neil Kemp:**

Thank you Eric.

**Neal Kelly:**

Yeah, go ahead.

**Neil Kemp:**

Yeah, okay. So I think in terms of the question of how long does it take two to start up the reactor if the client was out for an extended maintenance outage for example, after that it would probably take approximately six hours to start up the plant and achieve full power. The plant itself can load follow at approximately 10% per minute relatively easily, and we've also gotten intermediate molten salt lube which is something that we've taken from the concentrated solar type plants operating in a manner in which we can store thermal energy, and therefore it's also very ideal for providing peak power during certain periods. We have looked at the possibility of combining these reactors with wind and solar, and in certain areas that would be very beneficial. For large portions of... Let's say in the Arctic, in Canada I think that it is not ideally suited for solar specifically and even for wind is problematic in a lot of areas. But where it is potentially possible we would combine it in order to basically provide the most cost optimal solution for the power generation side. Back to you Neal.



**Neal Kelly:**

Okay, thank you Neil and thank you Eric for the answer, and Ian thank you for the question. I want to go to another caller Mark in Deep River. Mark, you're live on the air Please ask your question.

**Mark:**

Thank you. Yeah, I'm calling from Deep River my question was about the environmental assessment. There's a major assessment ongoing towards the end for the near surface disposal facility at the CNL site in Chalk River. I was wondering if the scope of that environmental assessment covers off the SMR project, or will you have to do an environmental assessment from scratch to cover off the safety concerns and safety reports for the SMRs? That's my question.

**Neal Kelly:**

Okay, thank you Mark. I'm going to ask Rose Ahlan to answer that.

**Rose Ahlan:**

Thanks Mark. So this project will undergo a separate EA probe, it will not fall under the NSPS environmental assessment. Our environmental assessments commenced in July of 2019, and we'll be conducting it under Canadian Environmental Assessment Act, 2012. We'll do a full environmental assessment to meet the regulatory requirements, so we'll be separate.

**Neal Kelly:**

Okay, thanks very much Rose and thanks very much for the question Mark. I just want to go back to our poll question and give you some results. So just a reminder the poll question was before tonight's Town Hall, had you heard of Global First Power and the proposed project? So the... if you press one on your phone it was for is this the first time you've heard about the proposed project? And 48% of you said yes, this is the first time I've heard of the project. 34% of you said that you know a little bit about the project and would like to know more, and 18% of you said you already know about the project and have specific questions. So thank you very much and we had a lot of questions. So, I want to now go to an online question and it's an indigenous question, so I'm going to ask Eric to take it and Eric here's the question, will indigenous communities get the opportunity to approve or endorse the project? What if they do not support it will you still go forward? Eric.

**Eric McGoey:**

Thanks Neil. That is a really good question and I think the... to answer it honestly you kind of need to break it up into component parts, and it's to acknowledge that first there's the commercial demonstration project that we're trying to do at Chalk River, and there's a regulatory process around that in terms of the licenses and in terms of the environmental assessment. Then there's the question of, "Well, how do you actually make a business out of this?" If you get one reactor up and running at Chalk River, and then you have the opportunity to take potential customers to come see the reactor and look at the maintenance logs and ask questions about the technology and look at the business model. Are you going to get support there from indigenous communities where you might be deploying reactors number two three four five, six and so on. I think in both of those examples that there is a real question of what is the comfort level that the local and affected indigenous communities have?

The regulatory environment requires consultation and accommodation as necessary. It requires engagement and Global First Power is determined to meet not just the regulatory requirements, but indeed I think the spirit of being good neighbors and building trust, building a relationship, listening to each other honestly and understanding each other's concerns and ambitions and aspirations. So, all of that is to say there is not an explicit veto that indigenous communities have under the regulations for either the demonstration project, or for future deployment in remote areas. That being said I think we need to be really honest with ourselves and recognize that indigenous communities in the past have not benefited from nuclear in the same way that municipalities, and for example the Durham region or the [Tankard 00:34:44] and Bruce region have, where they've been the beneficiaries of a lot of really good jobs, and property taxes and all sorts of things that go along with that.

That's not been true for indigenous communities. Outside of the uranium mines in northern Saskatchewan, there's been very few indigenous communities that have benefited from nuclear and that means we've got a lot of work ahead of us to actually have those honest conversations, talk about priorities, talk about must haves, talk about issues like energy sovereignty and talk about issues like environmental protection, and try to make the case as best we can that this is a good technology worth pursuing and worth considering having in your traditional territory, or your treaty territory and those are going to be long, hard, very valuable discussion that we intend to have respectfully.

**Neal Kelly:**

Okay, thank you Eric appreciate that answer. Okay, we're going to go back to our callers I'd like to call on Gordon in Montreal. Gordon I believe you have a question about natural uranium, you're on live on the air Gordon.

**Gordon:**

Yes, hi there. All of the OPG reactors run on natural uranium which comes from Canada and which it doesn't have to be processed outside of the country. But I believe if I'm not mistaken that this reactor would use enriched uranium, which you would have to purchase from outside the country. I wanted to know how high the enrichment is, natural uranium is less than 1% but I suspect that this is much higher than that and I'd like to know just how high it is, and why the choice to go for enriched uranium instead of using natural uranium as all the previous reactors have used?

**Neal Kelly:**

Okay, thanks very much for the question Gordon. Neil can I call on you to answer that?

**Neil Kemp:**

Yes, I think that's an excellent question regarding the uranium. In terms of the enrichment that we're using it is low level, low enriched uranium which is below 20% enrichment. So it is not of any use for weapons and yes it is different from the reactors that OPG uses. However, it is similar to a lot of other reactors currently operating in the world with low enriched uranium. The fuel that we're using is in FCM fuel, Fully Encapsulated TRISO Fuel which is extremely safe and basically contains all the radio nucleotides, and importantly in terms of the fuel as well is our reactor is filled for a 20 year period.

So basically for the full life of the reactor we do not require refueling which makes it ideally suited for remote areas, and that is partially the reason why we selected using higher than natural uranium in the reactor. In order to ensure that we do not have to have stained fuel, used fuel or fresh

fuel on site during operation. All the fuel that is on the site is in the reactor at all times and the reactor never gets refilled. So I hope that helps answering the question. Back to you Neal.

**Neal Kelly:**

Thanks very much Neil and thanks very much for the question Gordon. Okay, I'd like to keep going with callers, and I believe we have a caller from Renfrew. Allan, you're on the air do you want to ask your question please?

**Allan:**

Okay. Hi, I'm interested to know what the makeup of Global First Power is, nobody has explained that yet. Is it a private corporation, public, who's on the board of directors? My second question is who's going to own the patent when all this experimental work is finished? Is this privately owned or will be in the public sphere? I think those questions need to be answered before we progress very far with this, thank you.

**Neal Kelly:**

Okay, thanks very much Allan. Eric, can I call on you to answer that?

**Eric McGoey:**

Yeah, absolutely great question thank you very much Alan. So to answer the ownership question first, Global First Power is currently 100% owned by USNC but we have a term sheet in place which essentially allows OPG to buy in to Global First Power with a combination of money invested and also staff time that's being spent. So, for example the time that Rose and I as OPG employees and some of our colleagues are spending on this project will translate into shares in the company, and notionally what we expect is that it will be a joint venture, where each company will own approximately 50% of Global First Power. So, it might be 51% USNC, 49% OPG but it's going to be roughly equal over time as we earn in those shares.

In terms of the patents and the intellectual property the way that things are set up is, any intellectual property that was owned by either parties, so whether that's patents and technology owned by you USMC or whether it's regulatory proprietary information that OPG might have, whatever we brought into the partnership remains 100% ours, but anything that we build together in the project itself, in the partnership is jointly shared by the partners according to that ownership split based on [inaudible 00:41:38] many shares... again, roughly half and half that each of the two parties have. I hope that answers your question.

**Neal Kelly:**

Good, thanks very much Eric and Allan thank you very much for the question. I want to get to another caller but before we get there, I think we'll bring or introduce our second poll question of the evening and here's the question. So do you believe nuclear energy and Small Modular Reactors are an important part of providing a clean energy mix in Canada? So that's the question and please use your phone, press one if you think nuclear energy is a very important part of the energy mix, press two if you think nuclear energy is somewhat important, press three if you think it's not important at all, press four if you are not sure. So once again the question is, do you believe nuclear energy and Small Modular Reactors are an important part of providing a clean energy mix in Canada? Please press one if you think nuclear energy is



a very important part of the energy mix, press two if you think nuclear energy is somewhat important, press three if you think it's not important at all, and press four if you are not sure.

Thanks everyone for participating in that poll and we will have results of that a little later on our call. So I want to get back to another caller, John is on the line. John I believe you're in Calabogie and you're live on the air, please ask your question.

**John:**

Hi, basically my question was answered by a question from [inaudible 00:43:21] I was wondering about why you were building in Chalk River, but now that I know that it's a demonstration project, conceivably five years out you're going to have a bunch of these things all over the place. You really won't need a demonstration reactor in Chalk River anymore, what's going to happen to it? Are you going to move it someplace else or is it going to be mothballed there?

**Neal Kelly:**

Okay, that's a very good question John, Rose can I ask you to take that?

**Rose Ahlan:**

Sure, thanks John and yes it is a commercial demonstration, so what better place to do that than in Chalk River where not a lot of the intellectual capital right there at our fingertips. In terms of what happens at the end of the useful life of the reactor, as the future licensee of the facility and Global First Power will be responsible for decommissioning the site and [inaudible 00:44:22]

**Neal Kelly:**

Okay, good. Okay, thanks very much Rose and thanks very much for the question John. Rose stick with me because I have an online question I think you can answer and the question is who will take the power from this reactor? Does it go to the grid, town of Deep River, CNL sites who is taking the power from this reactor?

**Rose Ahlan:**

Thanks Neal. So it's a small commercial demonstration project, there's not a lot of power coming out of this reactor and that power can come in form heat, process heat or can be converted to electrical power. At this time we don't have an off take agreement with Chalk River or CNL or the provincial grid, and that's something we'll work through during our environmental assessments and project development, but this time there is no set off take for that power, heat or electricity but it's [inaudible 00:45:49] working on as we progressed to the project development phase.

**Neal Kelly:**

Okay, thanks very much Rose, thanks for the answer to that online question. I'd like to go back to our callers and I believe we have Mark in Deep River. Mark if you've got a question there, you're live on the air go ahead please.

**Mark:**

Thank you. I couldn't remember exactly from the report I saw whether we're talking about 50 megawatts thermal, or 50 megawatts electrical but assuming we're hooked up to a traditional turbine generator unit, there's roughly a 33% efficiency across from the thermal output of the reactor to the electrical output of the generator. With these turbine generator units from the first one goes into to production or at least to be tested, would you consider the Deep River site who's embraced and has been the champion of nuclear power in Canada for the last 80 years. Will the Deep River site be considered for an actual production SMR? Thank you.

**Neal Kelly:**

Okay, thanks very much for the question Mark. Neil, can I ask you to take that question?

**Neil Kemp:**

Yes, thank you. Thank you Mark. I mean just to clarify in terms of the power output it is 15 megawatts thermal, which is the reactor and that heat is transferred to a steam turbine which produces approximately five megawatts electrical, which can then be used in the area around the plant and the intention is to have a life expectancy of the plant of approximately 20 years. The potential is also there to test later on... other technologies for power generation using that thermal heat. However, for the first while and the first operation of the plant, it will be a steam turbine used to turn the heat into electricity. Back to you Neal.

**Neal Kelly:**

Okay, thanks very much Neil lets appreciate that answer and thanks very much for the question Mark. I want to give our listeners and our participants the poll results from our last question, and just to remind you what the question was, do you believe nuclear energy and Small Modular Reactors are an important part of providing a clean energy mix in Canada? And the answer 65% of you said nuclear energy is a very important part of the energy mix, 13% of you said nuclear energy is somewhat important, 11% nuclear energy is not important at all and 11% not sure. So thanks very much for participating in that poll question. I want to go back to another online question and Eric I'm going to ask you to take this one, and the question is how much will this cost? How much of the bill is the taxpayer paying for? Eric can you answer that please.

**Eric McGoey:**

Yeah, thanks Neal that's a great question. In terms of the overall project cost we're still in the early stages of the licensing process, the EA process and indeed some of the detailed design so I can't give you an exact number, but I think it's fair to say we... also going back to Neil's point, we are absolutely planning to build the nuclear components of this and to produce that high quality heat, and if CNL sees a use for converting that heat into electricity to power for example projects that they have at Chalk River or maybe to feed into the grid through a power purchase agreement, we're absolutely open to doing that but conversely if instead that heat is more valuable as heat because for example they want to produce hydrogen or there's some other process used for the heat, then we might not actually have to build those turbines to convert it to electricity at all.

So some of those questions give you big question marks in the budget process, but what I think it's fair to say is we expect that this project will cost probably at least 100 million dollars, and we would hope that at the high end it wouldn't cost more than \$200 million.



So those are certainly significant numbers for five megawatts worth a generation, but again we got questions about how small is small right? Are we talking about a kitchen table? Are we talking about a glove box? And no these are... these reactors aren't incredibly small compared to your kitchens and your microwave and your other appliances, nor are they cheap compared to anything in your house but compared to the multi-billion dollar gigawatt class reactors that we have at Pickering and Darlington and Bruce where you have thousands of people working on those units, and they're producing 20% of the provinces entire electricity demand then these are considerably smaller. So there's some comfort that also when you get beyond the first of a kind, you can start getting some savings from those factory construction so that your per unit cost is going down as you get to the second and third and fourth.

Now to the question though about who's paying for this and whether taxpayers are on the hook. The short answer is no, USNC is privately funded and OPG is owned by the province of Ontario and therefore receives most of our revenues from electricity grid customers. There isn't in explicit taxpayer subsidy for this project, rather OPG is taking some of the money that we make through our regulated rate of return from the Ontario Energy Board and using some of that money to reinvest in promising projects like this one. So it's not coming from the rate payer or the tax payer. Although if you follow the line of where the money ultimately came from, it would be the regulated rate of return that OPG was able to get from some of our other electric generation and that we were allowed to keep to reinvest.

**Neal Kelly:**

Good. Thanks very much Eric and thanks for answering that online question. Now stick with me Eric we have Sandy on the line. I believe Sandy's in Renfrew and Sandy do you want to go ahead with your question?

**Sandy:**

Hi. Well, actually you've been talking about what I've been concerned about was the sort of the financial profile of this, and who are the actual owners and shareholders and you rattled off this USMC and I don't know even know what that stands for. Do they have 55% controlling interest? Is that right? How much does OPG come in on to the picture? It was the breakdown that I really need clarified, and I'd like to know what it stands for not just the initials please.

**Eric McGoey:**

Of course Sandy. [crosstalk 00:54:17]

**Neal Kelly:**

Eric go ahead.

**Eric McGoey:**

Yeah, thanks very much Sandy that's a great question. One of the terrible habits we have in the nuclear industry is speaking in acronyms and it feels like we have acronyms for everything. So I apologize for us slipping into some of that. So to be really clear, GFP Global First Power is the joint venture between two companies OPG, Ontario Power Generation which makes about half the electricity in the province of Ontario as one partner that will own about half of Global First Power, and the other partner is Ultra Safe Nuclear Corporation, USNC.



They are a company headquartered in Seattle but with a few offices around the world, including a lot of people in South Africa where Neil Kemp joining us from this evening, where it's very late for him and so yes the partners in this Global First Power project are Ontario Power Generation, which would own approximately half. That percentage might fluctuate in the 40s, mid 40s, high 40s, low 50s. Similarly, the other half would be owned by Ultra Safe Nuclear Corporation who are privately owned by investors, have been developing this technology for many years, and they would also own low 50s, high 40s percent of the project as well.

**Neal Kelly:**

Okay, thanks very much Eric and thanks very much for that question Sandy. We are coming to an end here so I want to make sure that we get to one more question. It's going to be an online question and I'm going to ask Neil to answer this, and Neil the question is how will they affect the Ottawa River and surrounding environment? So if you could answer that online question that would be great.

**Neil Kemp:**

Thank you Neal. Yes, I think that this is one of those questions that is always on people's minds in terms of emissions and releases from the reactor. Fortunately due to our fuel the reactor emissions is extremely small, and very importantly we do not make use of any of the water from the Ottawa River directly, nor do we put any runoff back into the river. So, in terms of the turbine itself we are making use of an air cooled condenser, and since there is no releases from the reactor to the river either there will be no contamination of the river of any form whatsoever, back to you.

**Neal Kelly:**

Okay, thanks very much Neil I appreciate that, and thanks very much for answering that question. Well, listen it looks like our time is coming to a close we have really only about two minutes left and the hour has gone by very quickly. I'd like to thank everybody for participating this evening, to our callers if you would like to leave a message for Global First Power you will be able to do so at the end of this call, or if you have a question that didn't get answered leave a message along with your callback number at the end of this call and Global First Power we'll get back to you. Eric before we go do you have any final comments? Can you let us know how many people or how people can get more information about Global First Power and the project at Chalk River?

**Eric McGoey:**

Absolutely, thanks so much Neal. Thanks my fellow panelists and most of all thanks to everyone who participated tonight. The folks who asked questions, the folks who listened and learnt more, who participated in our polls, we really hope that sooner rather than later we'll be able to meet with you in person. We're really excited about coming to see you in April before COVID, but for now please don't hesitate to reach out if you have any questions at all, for any of the Global First Power team. The easiest way to get more information and to get in touch with us is to go to our website at [www.globalfirstpower.com](http://www.globalfirstpower.com). We really appreciate your time, we're grateful for it and we look forward to continuing the conversation with you, thanks.

**Neal Kelly:**



Global First Power  
Micro Modular Reactor Project at Chalk River  
Community Telephone Town Hall  
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Okay, thank you Eric and thanks to Rose and to Neil who participated as well this evening with Eric and like Eric said, most of all we want to thank you for participating this evening. Again, if your question did not get answered stay on the line, leave your question for Global First Power and your callback number and somebody will get that question answered for you. Thank you very much for participating, enjoy the rest of your evening.