

Jonathan: Welcome to CCEMC Grand Challenge Innovative Uses for Carbon. My name is Jonathan Jakischa and I will be your host and moderator for this webinar. Please note that this webinar is being recorded and will be transcribed for viewing on NineSights at a later date. To start off, I'll briefly go through the agenda for this webinar. First, I'll provide the speaker introductions. Then our speakers will provide an overview of both the CCEMC and the challenge itself. Next, we'll present the frequently asked questions for this challenge and then work through a live question and answer session. To participate in the live Q&A, please submit your questions at any time through the Q&A chat box. We will collect and present these questions during the live session. If, however, we don't answer your question live, please note that we will be transcribing and answering all the questions asked during this session and posting them on the CCEMC Grand Challenge forum for viewing at a later date.

Finally, we'll wrap up with information on what you can do today for the CCEMC Grand Challenge, including where to register, how to stay connected and how to submit your proposal. Now, I'm pleased to welcome our following speakers to our webinar this morning. From CCEMC, we have Kirk Andrews, Managing Director. We also have Mark Summers, PhD, professional engineer, technical advisor CCEMC and from NineSigma, we have Eloise Young, PhD, Senior Program Manager. Now, we'll hear from Kirk as he presents an overview of CCEMC. Kirk?

Kirk: Thank you and good morning. The Climate Change and Emissions Management Corporation is an Alberta-based not-for-profit with a mandate to reduce greenhouse gas emissions and help Alberta adapt to climate change and we do that through the discovery, development, and deployment of technology. We've been in operation now for a little more than 6 years and we have well over 100 active projects that we have invested. To put it into context, the CCEMC exists for a reason and that is that Alberta, if not Canada, are contributing to the global source of emission that are simulating further climate change and it's our responsibility to contribute to the reduction of those emissions. Alberta itself is a province that is built on the development of natural resources. We are a natural resource-based economy and energy production in Alberta is a primary source of revenue for the economy of Alberta. That energy source here includes everything from conventional oil and gas, unconventional, oil sands, coal-fire power generation and so forth.

To put a finer point on it, we're about 10% of Canada's population, but we're responsible for about 40% of its emissions. The public policy in Alberta is to reduce our emissions by 50 megatons in the year 2020 and by 200 megatons in the year 2050. It's our job to assist the government of Alberta in achieving those reductions in carbons. Next slide please. CCEMC is not the government of Alberta. We actually operate independently of government and we do so for a reason, again and that is to ensure that the best technical and business acumen is applied to the selection of technology. We are what's called a delegated administrative organization. We have a bundle of responsibilities that have been delegated to us by the Minister of Environment. Those responsibilities are to invest financial resources wisely in the selection of the very best technologies.

CCEMC gets its money from the government of Alberta and the government of Alberta sources those funds from what's called Alberta's large final emitters. Those are any facility in Alberta that exceeds 100,000 tons of greenhouse gas emissions on an annual basis. Through law, each of those facilities has a regulated requirement to reduce their greenhouse gas emissions by 12% against the baseline of 2005. For every ton that they exceed their emission reduction, they are required to pay \$15 a ton into a fund. That, by the way, those basic provisions have now been updated by the new government of Alberta and they will be climbing from the current 12% reduction and \$15 a ton to a 20% reduction and \$30 per ton by the year 2017. The government collects the funds and they provide it to us in the form of a grant. That money is dedicated to meeting our mandate. Those funds cannot be spent for any other reason than to reduce greenhouse gas emissions.

To date, we have received well over \$400 million, about \$425 million and on an annual basis, our revenue approximates \$70 to \$80 million. However, that could climb substantially under the new \$30 per ton regulation and it could exceed more than \$225 million. To learn more about us, you can have a look at our website which is CCEMC.ca. Next slide, please. This slide just really just speaks a little bit to our performance over the years. We do have 109 technology projects. The total value of those projects: we have contributed or invested \$350 million. The total value of those projects is \$2.2 billion. Our investment leverage is well over 5 to 1. Most importantly is what is the anticipated greenhouse gas reduction? It's 11.8 megatons of CO2 equivalents by the year 2020.

In addition to that, we have a biological program, we expect to achieve nearly a megaton through that program. We also evaluate the market potential of our technologies for broader application here in Alberta and we think the market potential is approximately 9 megatons as well. I will point out that what's important here is that we invest in a broad range of technologies that reduce greenhouse gas emissions. They include carbon-captured storage, carbon utilization, energy efficiency, renewable energy development, biological forms of reduction, and cleaner energy production and we invest in all stages of development, everything from early stage work right out to deployment. We have both large companies in our portfolio as well as small companies, in fact, about 40% of our portfolio is small and medium enterprises.

Jonathan: Great. Thank you very much, Kirk. At this time, Mark will now share with us some information on the details of this particular Grand Challenge. Mark?

Mark: Thanks, Jonathan. Thanks, Kirk, for the introduction to CCEMC. In addition to the background that Kirk laid out and the investments that CCEMC has made to date, in 2013 the organization launched a \$35 million CCEMC Grand Challenge seeking out innovative uses for carbon dioxide or carbon emissions. From the outset, this initiative was designed to be a 3-phase or a 3-stage initiative that ultimately culminates in one promising technology being selected as a winner to receive a \$10 million commercialization award to implement the technology in the province of Alberta. The first round in this competition is completed now and 24 groups were selected to receive seed grants of \$500,000 each to develop their promising carbon dioxide utilization

ideas. These projects are now underway. We are now in the midst of round 2, which is open for submissions, both to those that were successful in round 1 of the competition, but it's also open globally to new applicants and new entrants. This process, as I said, has been launched and is what we're here to discuss in a little bit more detail today and will result in the 5 groups being selected to receive a grant of \$3 million to scale up, and to further develop and prove out the technologies that are being developed in this area.

As I said, after the conclusion of round 2 of the Grand Challenge, ultimately one winner will be selected to commercialize the technology in the province of Alberta. Next slide, please. As I said, the ultimate goal of the CCEMC Grant Challenge one is to seek out and to award one promising technology that will deliver significant greenhouse gas emissions reductions in the province of Alberta through commercialization. In addition to that, by undertaking this process we anticipate and we seek through this process to attract new, and novel, and bright ideas, not just from within Canada, but also from around the world. We know that good ideas can come from anywhere. Through the process, the way that the Grand Challenge has been structured, we seek to encourage technical solution providers, technology developers, other solution providers in the innovation ecosystem to work together in a collaborative sense to develop breakthrough technologies.

Throughout the process as well through the 3-stage process that was designed in a very strategically-minded approach, we hope to advance these transformative technologies as well and to accelerate commercialization, ultimately within the province of Alberta, but as well as outside of the province of Alberta and globally. With a new idea and a new approach to closing the carbon cycle and to utilizing carbon emissions to develop novel carbon-based products, the hope for this Grand Challenge, in part, is that we can develop new economic sectors that can help the province of Alberta to thrive in a low-carbon future. Next slide, please. Just to paint a little bit of a profile or picture of, not just the ultimate winner of the Grand Challenge, but the technologies that we're seeking here, as I said. As the participants of this webinar are very familiar with, we're looking for technologies that can transform carbon emissions, particularly carbon dioxide, from a liability to an asset.

Rather than simply emit carbon dioxide emissions into the atmosphere, the question that we posed here is, is there an opportunity to utilize those emissions to generate new carbon-based products that will add value and provide valuable products to the market? The goal or the target for this initiative is a significant greenhouse emissions. We're ultimately targeting, on an annual basis, 1 net megaton of greenhouse gas emissions, as I said, on an annual basis. This is a very ambitious target. In order to be able to reach this target, it's important that the technologies that we seek out and the technologies that are involved here need to be creating products that are valuable and products that have value in the market, both in the province of Alberta as well as elsewhere, and also that not only the technology, but also the market for these products are scalable.

The technology needs to be scalable. The market needs to be scalable in order to ultimately achieve 1 net megaton reductions on an annual basis. That provides a very quick overview of the Grand Challenge process and the types of technologies that we're

seeking through this process. With that, I think I'll pass the time or pass the microphone back over to Kirk to go into a little bit more detail in terms of the process.

Jonathan: Great. Thank you very much, Mark. Before we proceed, I just want to remind everyone that if you have any questions at any time in the webinar, please feel free to use the Q&A chat box, we'll answer the questions towards the end of the webinar. Kirk, could you please give us an overview of the structure of this Grand Challenge with the CCEMC?

Kirk: You bet. Thank you very much. I want to reflect on the design of the Grand Challenge. I'll go back several years now when we were conceptualizing what it is that we wanted to accomplish. Given our mandate in the reduction of greenhouse gas emissions, it was important that we pursue a transformative technology and we landed on the idea of conversion of CO₂ to highly-valued products. Given that Alberta is producing a large volume of CO₂, we wanted to look at CO₂ as a resource and to basically exploit that resource and there's a process of doing that consumes CO₂ in reduced emissions. At the time when we scanned the world to look at how advanced it was at the time, we concluded and expected that we would see early stage technologies come our way. In round 1, we ran our competition and we received 344 submissions from 37 different countries. We ended up picking 24 that we supported with a half million dollar grants.

Those projects are currently underway, but what it did do is it confirmed to us that these projects were at early stages and, thus, the design of this process. This process is multi-year and it's the multi-round program. What we intended to do was find the very best technologies and then to support them through the development phases as they advance their technology. What we wanted to do was to try to accelerate that development through both financial support, but also through support of innovation ecosystem. Rounds 1, 2 and 3 in the CCEMC Grand Challenge, I'll simplify it by saying round 1 was about the idea and we have received 24 of those ideas that we've funded. We're quite encouraged by the progress being made there now, but we have every intention of ratcheting up or setting the standards. For the successful applicant, those standards are getting higher and tougher as the competition proceeds.

Round 2, which is what we've just launched, is it's not about the idea so much anymore, it's about advanced development of that technology at the same time as you're taking into consideration the development of the business. Round 3, the eventual selection of the winner, will have had significantly de-risked the technology and will have significantly advanced the notion of the business so that we can achieve to the greatest extent possible the commercial deployment of this technology in Alberta. That will occur over a period of time. As I say, we're supporting that with time to allow the project technologies to mature and secondly, the financial resources help to make that happen. Next slide please. Round 2 is different than round 1 and I'll just expand on that a little bit. I'll remind everybody that the goal that we have set for the entire program is to find a technology that will result in the 1 net megaton of CO₂ consumption on an annual basis in Alberta. That is a fairly significant target.

The technology that we're interested in will have to have that outcome in mind. Any stage of technology maturity was in scope in round 1. The emphasis was on technical capability, but in round 2, as I say, the standard, if you will, has increased quite significantly. We're more narrowly focused in round 2 on more mature technologies and the emphasis is on the demonstration of a CO2 utilization technology at scale. In round 2, we will have up to 5 winners and each of those will be supported financially with a \$3 million development grant and another 2 years to allow that technology to mature even further. I do want to point out, again, that the support that CCEMC is providing is not just financial resources, but also an introduction into Alberta's innovation ecosystem. There are a variety of other supports that will be made available to you in the event that you are the chosen technology that will receive the grants.

Jonathan: All right. Thank you once again, Kirk. I just want to reiterate for all of our attendees, this webinar is being recorded and a transcript and the video of this webinar will be available for review at a later date. Changing gears slightly, Eloise Young from NineSigma will now share with us the process of responding to this Grand Challenge. Eloise?

Eloise: Thanks very much, Jonathan. We've heard a lot of background for the goals of the Grand Challenge, the structure. We are in round 2 and like round 1, round 2 is comprised of 2 phases. We're currently in phase 1, submissions. Non-confidential submissions, to phase 1 are going to be accepted through January 18, 2016. The CCEMC is going to evaluate those phase 1 submissions and they will select the top ranked proposal and invite those groups to submit a comprehensive and full project proposal. The deadline for those proposals, which are phase 2 proposals is July 26, 2016. Again, I want to emphasize that right now in phase 1, anyone is welcome to submit a proposal. If you have carbon utilization technology that is developed enough to the point where you feel that it can be prototyped within the next 2 to 3 years and you feel can actually achieve 1 net megaton of CO2 reductions when it's implemented at scale, the CCEMC would want to hear from you. They would love to hear from you, so please submit.

Now again, phase 2 is only open by invitation. The CCEMC will select up to 5 round 2 winners from the phase 2 submission and those winners will be publicly announced at an event in March of 2017. The 5 winners or up to 5 winners will each receive \$3 million Canadian in development funds to bring that technology to something that is either a prototype or field-readiness stage. If we could advance to the next slide. The criteria by which these proposals are going to be evaluated really range across these bullets of GHG reductions, opportunity, potential, time frame, business feasibility and appropriateness. GHG reductions, as Kirk said at the offset, Alberta has some pretty strong mandates in place in terms of achieving GHG reductions in the next 15 to 30 years. One of the criteria that technologies will be judged by is how good is the potential for achieving 1 net megaton of emissions reductions annually?

This challenge is helping to identify things that can help Alberta make its goal. What is the implementability of that technology in Alberta? You might have great technology that has to do with raising seaweed in the ocean. That's probably not going to be implementable in Canada. That's what we mean when we talk about appropriate

technology. In terms of technical maturity, as I said in an earlier slide, we're looking for technologies that have advanced beyond the bright idea stage. We're looking for things for which the proof of concept has already occurred and that the reduction practice is well under way. We would expect that if you were to win funding that within the next 2 years or so you will be able to pilot this technology and show the clear advancements toward 1 net megaton of GHG reduction. Of course, as we advance from idea to implementation, business feasibility is an important thing. The technology has to be there, it has to be something that is going to work, but equally important, there needs to be a strong business implementation plan and demonstration of how this can be a commercial success in Alberta.

These are the criteria by which proposals will be evaluated. The CCEMC has an internal technical panel that will be evaluating these. Those evaluations will be augmented by the assessments from a panel of judges. On the next slide, please. Thanks. This executive advisory panel is composed of leaders in various fields and their role here is to bring a different point of view. They bring not just the technical know-how, but they bring business, they bring economic insights. Their advice will help to broaden the perspective by which final funding decisions are made and they serve as ambassadors for this initiative. That's the role of the executive advisory panel. They are there to advise the CCEMC board in terms of making the final decision although, of course, the CCEMC board does bear the actual responsibility in terms of the selection. On the next slide, we'll see the schedule. Kirk has already alluded to the fact that this is 3 rounds. Then round 1, as Mark said, we gave out 24 awards of \$500,000 Canadian each. This was a terrific success.

The CCEMC was originally only planning to give out 20 awards, but they were so overwhelmed by the quality of the submissions that they gave out additional funding to try to nurture a wider range of possible technology. Now in round 1, again in phase 1, this is open ... In round 2, phase 1. I apologize for that misstatement. In round 2, phase 1, again, this is open to everybody around the world. If you have technology that is more advanced than what we were looking for in round 1, we'd like to hear from you. The best will be invited to submit a comprehensive project proposal and those will be due on July 26, 2016, if you're invited to that next stage. Then in 2017, the CCEMC will make up to 5 awards of \$3 million Canadian each for the development of these technologies.

I'd like to point out that this is the last opportunity for the general public to be part of this Grand Challenge. Round 3 is closed. Round 3 is only open to the 5 round 2 winners because at that stage, the CCEMC strongly believes that the technology that can be successful will be one of those up to 5 technologies. If you have something that you think is interesting, this is the moment to act and we hope you will. The next thing, of course, is to talk about why should you act? Oh, I'm sorry. I've leapt ahead to the next slide. My bad, Jonathan.

Jonathan: Not a problem.

Eloise: Why should solution providers be interested? There are a number of reasons why. The CCEMC, their mandate is to advance technologies that deal with emissions management, climate change. They aren't interested in owning intellectual property, so this is an opportunity for you to get assistance in commercialization of your technology while maintaining your intellectual property rights. As Kirk said, this isn't just financial support, this also represents an introduction to the Alberta ecosystem for venture capital, for regulatory advice, for other partners that can help you be successful. Beyond just the monetary value of the award, the other incentives for participation are high. We hope that they are appealing to you and that you understand that it's not just the money. There are a number of reasons why you should participate and if you have questions, we definitely encourage you to type them into the Q&A chat box.

Jonathan: Great. Thank you, Eloise. At this time, we'll address some of the frequently asked questions for this challenge. These are questions about projects in general with NineSigma or have already been submitted by the CCEMC forum or to the NineSigma provider help desk. First off, and I think you may have addressed this a little bit, Eloise, "Do I have to be Canadian or in collaboration with a Canadian in order to be eligible to participate?"

Eloise: This is definitely a frequently asked question. It was asked a lot during round 1 and we're happy to answer it again in round 2. The answer is no. The CCEMC is looking for great ideas, great technologies, no matter where they come from. Being Canadian does not offer you an advantage. Collaborating with a Canadian will not offer you an advantage. This is really about the technology.

Jonathan: Okay, great. Thank you. "Now, suppose I submitted a proposal to round 1, am I still eligible to participate in round 2?"

Eloise: Absolutely. There were a number of really fine technologies that were submitted to round 1 and not all of them were awarded funding, but we fully expect that many of these other deserving technologies have continued to advance over the past 2 years, maybe receiving funding from other sectors. We would love to hear from you. We would love to read about the advances that you've made and see whether or not this is something that is of interest. Definitely, if you submitted to round 1 and you were not successful, please do consider submitting to round 2.

Jonathan: Great. Thanks. "Now, suppose I am a round 2 winner, do I have to perform the development work in Alberta?"

Eloise: If you are 1 of the 5 winners for round 2, the answer is that you do not have to perform the development work in Alberta, but you do have to demonstrate that the result of your development work can be implemented in Alberta.

Jonathan: Okay, great. Thanks. "Now, can I submit proposals to both this particular Grand Challenge and to the Carbon X prize?"

Eloise: Absolutely. These 2 challenges are complimentary in nature and we strongly encourage you to submit proposals to wherever you believe is going to offer you good opportunity.

Jonathan: Okay. "Now, if I already received funding from CCEMC, can I still participate in this Grand Challenge?"

Eloise: The answer to that is yes, but it's a qualified yes. The CCEMC will provide funding for a given project, but there's no double dipping in the sense that if you've applied for this project through a different CCEMC funding mechanism for this same project you cannot receive funding through this mechanism for the same project. However, if this is an advancement of an existing project then you can. I'm actually going to throw this over to Kirk, so that Kirk can augment my comments with perhaps a little bit more detail. Kirk?

Kirk: Sure. Thank you, Eloise. Yes, CCEMC runs a number of different processes. Under normal business-as-usual, we run competitions called requests for proposals. In addition to that, we have the Grand Challenge. The Grand Challenge is a unique process through the lens of CCEMC. If you receive money through the Grand Challenge, then yes, we'd like you to continue to apply because we want to assist you in accelerating the development of your technology. In the event that you're unsuccessful through the Grand Challenge, we also run normal RFP processes and we would still encourage you to submit through the normal RFP process. Now, we don't have any of those open at this time, but we will expect to have a couple of those open early in the new year.

Jonathan: Great. Thank you very much, Kirk. We have one last frequently asked question before we proceed to the live Q&A session. We've got a number of questions already submitted. If you have any questions, now would be an excellent opportunity to take advantage of the valuable resources that we have in the representatives from CCEMC and in Eloise from NineSigma. The last question is, "Do I give up my intellectual property by accepting CCEMC funding?" Eloise?

Eloise: Thanks Jonathan. I think we've answered this question, but we do get asked it a lot and it's worth just emphasizing it again. The answer is no, you are not giving up intellectual property rights by accepting CCEMC funding. This is, in fact, one of the benefits of working with the CCEMC and so you absolutely get to retain your IP rights.

Jonathan: Great. We'll move on then. Oh. Yes, go ahead.

Kirk: This is Kirk. I just wanted to add a little bit to that. Our interest is, again, is to achieve the greenhouse gas reduction. We're not interested in taking an equity position in the companies. We're not interested in owning the intellectual property, in fact, our interest is to help you be successful and we want the technologies and the companies behind the technologies to be able to stand on their own 2 feet. They need to be sustainable, meaning that there needs to be a market and there needs to be a technology that is aligned with that market so that a legitimate business can be established and that it can be sustainable. That is the driver for us, we want market pull to occur through the advancing of these carbon use technologies.

Jonathan: Great, thank you very much Kirk for that addition. As I said, we'll now move to our live question and answer session. If you have any questions, please use the chat box to submit the questions. I'd like to reiterate that if we don't get to your questions during this webinar all of the questions and the answers will be posted on the CCEMC forum at a later date. Additionally, this webinar is being recorded and you'll be able to view that online as well. We'll begin with this question: "How should I be estimating greenhouse gas reductions for my technology?"

Eloise: Great question and the easiest way to answer this is to point people to the series of webinar recording at the CCEMC website. If you go to CCEMC.ca and then go to Expressions of Interest, which is on the left hand side, you can click on the button on the left hand side, you'll scroll half way down to the pre-recorded webinar sessions. There's a series of maybe 6 or 8 pre-recorded webinars and they all deal with GHG accounting, calculations, all sorts of things about how the CCEMC deals with GHG calculations. Thanks very much for that question. This information is also posted at the forum.

Kirk: It's Kirk again. I will supplement this. From the CCEMCs perspective, this is a very important part of your submission to us and given our mandate to reduce greenhouse gas emission, this would be a dominate criteria for us in the decision making process. I highly recommend that you don't take this lightly and that you do your homework, and that in terms of your submission, we're interested in what we would call your assertion. What is it that you believe you can accomplish through the deployment of your technology in so far as it relates to an emission? That emission can occur both at a project level, and then secondly is that assuming that your technology will prove itself that it will have broad applicability, then we can also look at what the potential is in the market called Alberta. The combination of those two things ought to be attractive.

Jonathan: Great. Thank you very much Kirk. Our next question has come in a number of times so it seems like the attendees have some really interesting ideas. "Can a business submit multiple phase 1 proposals?" I think this one might be a little bit for Eloise and a little bit for, maybe you Kirk.

Eloise: Let me take the first crack at it and then I'll throw it over to Kirk. The answer is yes. If a company or a group has several different ideas in which they can achieve carbon utilization at the scale in which we're interested in, then yes you absolutely can submit each one. Each one should be submitted as a separate entry. This occurred during round 1 where we had a handful of groups submit 2 or 3 different approaches and we encourage you to do this. Kirk, do you have anything you want to add to that.

Kirk: No, I would just agree. Yes, you can submit multiple applications, in fact, we encourage it.

Jonathan: Great, thank you Kirk. Our next question, "Can a round 1 awardee expand on its existing proposed scope for submittal in round 2, phase 1 due in January as a modified expanded technology and business plans for reducing greenhouse gas admission and reusing the captured carbon?" Sounds like maybe a question for you Kirk.

Kirk: I'm wondering if could restate it. I wasn't sure that I quite understood the question.

Jonathan: The question is whether or not someone who won an award for round 1 could expand upon their proposal from round 1 during this second round.

Eloise: In phase 1. Kirk, I'm just going to hop in here and say something and then let you correct me. I think the answer is that the round 1 winners are exempt from participation in phase 1. One of the bonuses in being a round 1 winner is that you don't have to submit anything in round 2, phase 1. You get an automatic pass to become part of the invitation only group in phase 2. That's one of the perks in addition to having won the funding in round 1. Kirk, do you want to correct me or augment my comments?

Kirk: No, just to say that yes, that you're quite right Eloise, that is the intention, but more specifically is that round 1 winner gets an exemption from phase 1 of round 2. I will point out that a round 1 winner, in order to be eligible in round 2 needs to be able to demonstrate to us that they've made significant progress. For a round 2 entry into a full project proposal, what we're looking for is we supported you in round 1, you've had some money, you've had some time and you need to come back to us to demonstrate that progress has been made. I think I will state the obvious here, but in the event that no progress has been made or the technology has proven not to be particularly productive than it's highly unlikely you're going to advance in round 2.

Mark: Maybe I can, if it's all right, I'll add to that quickly. To both, I certainly agree with what Kirk and Eloise said. In addition to that, it might be worth pointing out that the round 1 winners, as was stated, get effectively a bypass to the detailed proposal phase of round 2 for the continued development or expansion, scale up, what have you of the technology that was under development in round 1. If those applicants have new ideas or spin off ideas and would like to apply additionally for a new project that's not necessarily a continuation of their round 1 project, they're very much welcome to do that, but they would have to do so along with all new entrants in the January time frame.

Jonathan: Great, thanks Mark. Our next question is, "Will round 2, phase 2 full proposal be held as confidential?"

Eloise: Let me just hop in here for a moment and talk about confidentiality in general. All submissions, whether they are to say it's one or to say it's two are only visible to the CCEMC and their advisors. When we say that it's non-confidential, what we mean is we don't want you as the submitter to provide confidential information. However, the CCEMC does not intend to take your submissions and distribute them widely with the rest of the world. That being said, the level of information that will be requested if you advance to phase 2 is more detailed and may require you to share information that falls outside of a non-confidential realm and CCEMC will treat that information with the care and respect that it needs. I will say that and then I'm going to throw it over to Kirk to let him augment my observation.

Kirk: Thanks Eloise. Again, you're quite right, that's exactly how we work. It is important to know that we maintain all of the information in a confidential form, whether you supply to us confidential or non-confidential information. We treat it as confidential, i.e. the information is provided to us for us to execute the business that we run. We have, in terms of the proposals and so forth, the online systems that will be deployed at phase 2 of round 2 have banking level security attached to them and our commitment to you that all of that information will be retained and managed in a confidential fashion.

Jonathan: Great, thank you Kirk. Our next question asks if there is any TRL limit to this round? Kirk? Mark?

Kirk: I'll offer a perspective and I think Mark can add to this as well. The short answer would be no. Having said that, you heard me talk about the 3 rounds that round 1 was the idea, round 2 is the advancing the technology along with starting to think about the business and round 3 is really focused on the business. In round 2, it's a combination of technology and business. In round 2, if you came to us with a TRL 3 project, it's not likely that you're going to advance because it's pretty early stage. What we're not wanting to do is to box things in to a TRL level, so I'm not going to tell you that it's a 4 or a 5, or a 7, or whatever. It's not like that, but I will tell you on a point of principle that it needs to be more advanced than an early stage technology. Mark, you want to add to that?

Mark: Yeah, thanks Kirk. I completely agree. I think what's also important to mention here is the line of site. As Kirk said, this is an evolution from the idea to the technology development, improving the technology, out to the business. What's very important for this round is to, first of all, to know that the ultimate winner of the Grand Challenge is selected from the 5 winners of round 2 of the Grand Challenge. At this point in time it's important for you to consider not only what is the immediate next step in terms of a \$3 million potential development grant from CCEMC, but what is the end goal. We want to see the line of sight from where you're at now, ultimately, to commercial deployment and commercial adoption in the province of Alberta. Yes, as Kirk said, there's no hard limit in terms of the TRL number, but at the same time, it's important to consider where you're at now, where you plan to be in the next 3-4 years, however many years, and the pathway to get there and the work that needs to be done and what you would do utilizing the CCEMC grant money, not only for round 2, but also, ultimately, the \$10 million commercialization grant. You need to be thinking now about the end goal and where you plan to go.

Jonathan: Great, thank you Mark. Thank you Kirk. We now have a process question that I will address to Eloise. "Where can I find the application form, is there any direct link to it?"

Eloise: Ah, okay. If you visit the Grand Challenge page, the home page and any of the internal pages from the home page, in the upper left hand corner you'll see the CCEMC Grand Challenge logo and directly underneath that is a rectangular button that says, "Respond now." Clicking on that button will take you to our online response form. Now, you do have to be registered and signed in to be able to get to the online response form. Our NineSigma help desk is fully staffed and ready to help you if you're having problems with your NineSights account.

Jonathan: Great, thank you Eloise. This question is going to be addressed to either Mark or Kirk. "Can you please speak to what testing facilities could be made available to the winners?"

Kirk: Mark, you want to take that?

Mark: Sure. I can take a quick stab at that and Kirk, feel free to jump in or to add to my comments. Through the process itself CCEMC does not officially make a test facility available as part of the process, but having said that, as Kirk has alluded to and Eloise and myself have alluded to throughout the webinar, part of the initiative here is not only will you be awarded the financial support for carrying out the projects, but we fully anticipate that through the process and through introduction to the innovation ecosystem in Alberta and the potential partnerships that can come out of that, that there will be opportunities to partner with existing industrial operators in the province of Alberta and set up individual arrangements. We've some experiences along those lines already for the round 1 winners and I fully anticipate that that will continue and will escalate in round 2 and round 3.

Jonathan: Great, thanks Mark. Did you have anything that you wanted to add Kirk?

Kirk: Nope. I think that was a good answer.

Jonathan: Great, thank you. All right, next question. "It was mentioned that round 2 was focused on mature technologies that have an at scale demo, can you define what a minimal viable demo would be?" I think that would be more Kirk ...

Eloise: Kirk, that's probably you or Mark.

Kirk: I think that's a good one for Mark.

Mark: Yeah, it's a great question. I think the answer is similar to that of the technology readiness level question in that we don't have a defined scale in terms of minimum or maximum that the pilot project or demonstration project or even before that a prototype unit needs to be at. What's important here is the pathway from where you're at now to where you'll be in the 2019 time frame when the ultimate winner of the Grand Challenge is announced and then go forward there into commercial deployment in Alberta. Having said that, I think Kirk already mentioned that if the technology is still, at this stage, in the lab or still at a very small scale or the components haven't been integrated and the concept hasn't been proven in integrated fashion, it's going to be much more challenging. We're looking, at this point, for technologies that essentially the concept has been proven and now are at a phase where they're able to start scaling up. The short answer is there is no minimum. There is no maximum, but the important thing is where you're at now and where you can get to in the coming years. Did you want to add to that Kirk?

Kirk: I think that's a good summary. I think at the end of the day, the job ... and I'll talk about the winner now, not necessarily round 2 ... but the job at hand is to convince us that you

have, to a great extent, de-risked the technology and have built the business proposition. I think what we'll find is we'll have some technologies that are more advanced than others, but we're going to want to evaluate both types, some that may be deeper in the TRL scale, some that may be not quite as deep, but have terrific potential, the proponents have articulated very well commercialization pathway. Our job will be to evaluate all of those projects in relation to what the reduction potential is that's associated with that, what are the products that are being generated out of this, what are the value of those products and the economic impact that might happen here in Alberta and abroad.

I will point out that our while organization is Alberta based and our technology deployment, we're looking through the lens of Alberta and how Alberta can benefit from that, they're also looking at ... Alberta has a part of the global community that is committed to reducing greenhouse gas emissions. The sense to which the technology has broad scale deployment anywhere in Canada or around the world is also an advantage.

Jonathan: Great. Thank you Mark and Kirk. We have just a few moments here left in today's webinar. The next group of questions will be addressed to Eloise. At the conclusion of Eloise's discussion, we'll review briefly some of the key details for this webinar and for this project. We've got lots of questions, just want to reiterate that if we don't get to your questions live during today's webinar, the questions and answers will be posted in the CMC website later on. Eloise, could you please explain the relationship between CCEMC and NineSigma?

Eloise: Sure. CCEMC is the sponsor of this Grand Challenge, so this is their funding. This is their vision. NineSigma is a service provider. We administer this Grand Challenge on their behalf and we serve as the intermediary in working in phase 1 with the potential respondents.

Jonathan: Great, thank you. These next 2 questions could probably be answered in concert. "Has the executive advisory panel been selected, if not, when and how? Does that panel or will that panel include executives from the oil sands refineries in Alberta?"

Eloise: I really encourage everybody who is participating in today's webinar to go and visit the Grand Challenge website. We'll post that up on the next slide so you can see where to point your computer. There's a lot of great information there, and specifically under the 'About' section there is an 'About the Executive Advisory Panel' page which lists all of the members of the executive advisory panel. They have already been selected and they have committed their time and effort to this round 2 of the Grand Challenge. Can you scroll back up so I can see the ... I'm not exactly sure about whether or not there is a participant from oil sands refineries in Alberta, but I do encourage you to visit the page about the executive advisory panel.

Jonathan: Great, thank you. One final question, "Where might I read a summary of round 1?"

Eloise: I'm not exactly sure what is really being asked here. Again, at our website there is a link that will take you to a page that tells you about all of the 24 round 1 winners, so you can see the diversity of technology that were awarded in round 1. If that's what you're interested in, then that is a great place to go. Additionally, at the CCEMC.ca website, there is another site that gives a brief overview of round 1. Our Grand Challenge page also provides an overview of round 1, so if you're looking to understand better what were the goals and objectives of round 1 you can probably see them both in the way of round 1 winners and also in the summaries that are the NineSigma Grand Challenge page and at the CCEMC.ca Grand Challenge page.

Jonathan: Great, thank you Eloise. I'm afraid that will be the end of the live question and answer session. Just to reiterate, if you submitted a question and we were not able to answer it live during today's webinar all of the questions and their associated answers will be made available on the CCEMC Grand Challenge page following today's webinar. Last question for the day is, "What can you do today?" First off, I would strongly encourage if you are interested in responding to this Grand Challenge that you visit NineSights.com and register with our service. You can visit CCEMC.GrandChallenge.com to visit the Grand Challenge page. You can stay connected by subscribing to and visiting the community forum. Should you need any assistance in preparing or submitting your response, you can reach the provider help desk either via email at PHD@NineSigma.com or at the phone number listed below.

Lastly, I'd like to reiterate that the Grand Challenge deadline is January 18, 2016 at 5:00pm eastern time. Thank you very much for attending today. We'd like to reiterate one last time that this webinar is being recorded and will be made available later on. We'll leave the webinar open for just another moment or so to get any last minute questions that you might wish to submit, so if you have any questions that you would like to have the panel answer, now would be an excellent opportunity to do so. Thank you very much for your time and good luck.

1. **Is there a way we can see what types of ideas were submitted in Round 1 Phase 1?** Yes, the 24 projects that are funded are all profiled on the CCEMC website at ccemc.ca. The projects generally fall into four broad categories including solid projects, chemical synthesis , fuels and solid products.
2. **What weights will be given GHG reduction vs. carbon reuse and business development?** The GHG reduction is the most important criteria and typically twice as much. To be considered you must be able to demonstrate that your technology has the potential to achieve a 1 net MT reduction in Alberta.
3. **Will a simply 'gut-felt' idea/concept be entertained, without any solid experimental evidence at this point?** No, not at this point in the process. However, your idea may be relevant to one of CCEMC's requests for Expression of Interest. Please register for our newsletter through the CCEMC [website](#).
4. **Does having round 1 funding count as having "other CCEMC funding", or can currently funded CCEMC round 1 projects apply for round 2?** Round 1 projects should apply provided they have made meaningful progress. Other funding should come from an additional source(s) that is new.
5. **Where can submitters get information on resources and capacity available in Alberta's innovation ecosystem?** There are publications available that identify Alberta's innovation ecosystem. These are helpful resources. See attached files.
6. **Will you share the slides?** Yes, see the webinar recording: <https://youtu.be/70TkELs2o1k>

7. Can we see a list of ALL of the ideas that were submitted in round 1 so we do not duplicate an idea you turned down already? That information is not available. More importantly, projects not selected in round 1 may be eligible in round 2 if the technology has been advanced. We are interested in all advancing technologies.

8. What is the limits of funding spending, e.g. instrument and research equipment purchase, attending meeting, support students? Eligible expenses are defined in the CCEMC guidance document on eligible expenses found at this page: <http://ccemc.ca/apply/expressions-of-interest/> . Please scroll down to the Resources section.

9. Question: Would an engine that uses flare gas to produce useful heat and power (rather than using other processed fuels e.g. CNG, LPG, diesel) be responsive to the Grand Challenge proposal solicitation? Even though it is not utilizing carbon, it can reduce carbon emissions by making use of gas that is currently wasted. Or is this grant focused exclusively on carbon utilization? Thank you very much for putting together this webinar. The Grand Challenge is focused on CO₂ utilization. The project you suggest would not be a good fit. However, it does fit into our standard process for soliciting other technologies that reduce GHG emissions. Please register at <http://ccemc.ca/> for our newsletter so you will be informed when we issue our next RFP.

10. Great structure and I am sure CCEMC would make a dent on reducing the emission not only in Alberta but elsewhere through their innovative project support interventions. Thanks you for the comment. While we are focused on helping Alberta reach its emission reduction targets we are also looking to have these technologies applied around the world which considerably extends the benefit.