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Chair

Mr. James Maloney

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● (1610)

[*English*]

The Chair (Mr. James Maloney (Etobicoke—Lakeshore, Lib.)): Order. I apologize for the delay. Sometimes we have very important things to vote on that cause us to get delayed. This was not one of those occasions.

Voices: Oh, oh!

The Chair: Nonetheless, here we are. Thank you for your patience. We'll have about an hour, I think, because I anticipate that we'll have to leave here at 5:15 again.

I'll give each of you up to 10 minutes for your presentation, and then we'll open the floor to questions from around the table. I encourage you to speak in either official language. You'll be getting questions in both French and English. You have headpieces available to you for translation, should you need them.

Ms. Tuerk, I understand that you are under some time constraints as well, so why don't we start with you.

Ms. Miriam Tuerk (Co-Founder and Chief Executive Officer, Clear Blue Technologies Inc.): Thank you very much.

Good afternoon, everyone. I'd like to thank you very much for allowing me to present to the committee. It's great to see there's interest not only in supporting clean tech but also in trying to figure out the more technically complex and business-complex aspects of policy to make things work.

To give you just a little bit of background, my name is Miriam Tuerk. I am an electrical engineer from the University of Waterloo and a serial entrepreneur. Clear Blue Technologies is a small tech start-up company in Toronto, with two other co-founders. What we make is a small box, the size of a Kleenex box, that acts as the brains of an off-grid street light, an off-grid security camera, an off-grid oil and gas pipeline sensor—any sort of device that is managing and controlling mission-critical infrastructure that needs power.

If you think back to 30 years ago, every one of us had a phone line into our house, and maybe even into our bedroom, if we needed phone service. Today, even though we all use a lot of telecom, the last mile of telecom is now mostly wireless. Power systems are doing the same. With the drop in power consumption by going to LED lights or going to digital systems, you can now have a security camera that only needs seven watts continuous, or an oil and gas pipeline sensor to make pipelines secure drawing only three or four or five watts. But it's really key to have those three or four or five watts, and doing it with solar or off-grid instead of all of that cabling and distribution is the technology we're building to enable.

Clear Blue is an early-stage start-up. We're doing about a few million dollars in revenue. We've hired about 30 people in Toronto. We're very pleased and honoured, only two years into the revenue phase of our business, to have customers in 29 countries around the world.

The committee has asked us to talk about the risks to clean-tech adoption, and I have basically three key points I'd like to talk about.

First, we have now moved into what I'll call “wave two” of clean-tech adoption, which means that what's being put out there is more innovative technology. It's not just saying that we're going to have a solar panel or a wind turbine. It's more asking how we can use innovative technologies and new technologies to get clean-tech adoption and to use clean tech everywhere.

The second piece is that you're getting more pervasive adoption. It's not just a project by Ontario Hydro. Every business at every level, every government at every level, is doing clean tech and integrating it. It's covering the entire economy.

Those two things, innovation and pervasive adoption, are a challenge. As with everything, technology change is happening faster and faster. We have a situation where Canada's personality trait in both government and business is that we tend to be very risk-averse to the adoption of new technology. Because we're conservative late adopters, that mentality had less of an impact during wave one of clean tech, but now that we're in wave two, where there is more innovation and things are moving more quickly, the fact that we are late adopters and we're slow adopters starts to really show the difference between how Canada can move forward in the marketplace versus how other countries and other sectors in other regions of the world can move forward. For example, Germany and China are moving much more quickly than we are in wave two of clean tech, in innovation and in adoption.

The last point I would make is that the clean-tech marketplace is happening more out of Europe and in emerging and remote markets, mostly because a lot of the infrastructure is being built in emerging and remote markets. The good news is that Canada has lots and lots of remote markets, so we have expertise and experience that we can share with the world. I think it's key for the government and industry to keep our eye on Europe and emerging markets and less so on the U.S., because the U.S. does not have remote markets that other territories have and they're not focused internationally.

● (1615)

The question that was asked is how we can de-risk what we're trying to do in that market. I think there are three key risks that are the challenge for this committee.

Risk number one is the financial risk that companies and governments face. Risk number two is the performance risk. The third risk, which I think can sometimes be forgotten, is the time risk.

Businesses and municipalities that are very risk-averse tend to ask themselves what will happen if it doesn't work or what will happen if they have to replace it. Keeping this slightly confidential, because I don't want to shoot those people who are trying to move forward, I'll give you an example. The City of Mississauga is currently looking at putting solar off-grid street lights throughout a lot of their parks areas because they don't have cabling entrenching, they are remote, and their power companies are starting to charge for all of that distribution and infrastructure. As they are doing the business case internally, some people want them to include the entire cost of replacing the off-grid solar street lights with grid-tied street lights just in case they don't work. The fear of financial risk—it has to be cheaper, and double-count the cost—and the fear of performance risk are two key examples that we see there.

Another example is that of a first nation in northern Ontario that wants to put street lights across its entire area. It wants them to be solar and off-grid, but the Ministry of Transportation doesn't want to approve this new technology that it doesn't really want to try out.

I will point out to you that by 2020 between 10% and 15% of the world's street lights will be solar powered. If you go to the Middle East, whether it be Saudi Arabia or Qatar, or into Rwanda or Southeast Asia, they're going 100% solar street lights, and yet we would have jurisdictions that say they're not sure they could even do a few on a first nation's area.

The last risk is anything that you bring forward from a policy perspective that adds time to the process because of extra application processes or extra approval processes. Risk to the approval actually slows things down.

There have been many good attempts at putting in place policies that are meant to help, but sometimes they make it more difficult. I will give you the example of the government's process for tenders for demonstration projects. It's such a complicated, long process without a high chance of success that it's not worth the time, and we, as a company, can say just forget it and we'll move forward without it.

Another example is STDC. It's a fantastic avenue, but it is set up for large physical installation demonstration projects. Now that we have wave two of clean tech, in which we're doing innovation on a small level, we don't fit that program.

What are my ideas? First of all, I will say that there is 10,000 times more expertise in the room than what I have about policy or what you should do, so I will defer to the committee on those things. But the key thing is to figure out how you de-risk the financial risk, how you de-risk the performance risk, and how you de-risk the time risk.

I would recommend putting in place simple financial incentives that work in both the public and private sectors. For example, tax credits don't help municipalities or government agencies or first nations or groups like that. Try to do it in a way that involves very simple math. In other words, I either qualify for it and I apply for it and I know I'm going to get it, as I would with SR and ED, for example, versus my having to do an application and not knowing whether I will get it. If I know the formula and I know I'm going to get the tax credit or the financial incentive or the benefit, then I can just move ahead with the project.

● (1620)

Make the definition of a successful project less restrictive. I'll give you an example. In the province of Ontario, Ontario Hydro has a program under which it will pay an incentive for replacing street lights with LED street lights. This is to promote the adoption of clean technology, but they will only pay that back if it's connected to the grid, which has all kinds of non-green energy aspects. If it's replaced with a solar street light that's off-grid, they won't pay the tax benefit.

This is an example of wave one; we're just going to go to LED. Yes, the financial benefit works, but with wave two, where we have more innovative technologies that we want—I encourage it for jobs and new industry and entrepreneurship in the country—the model doesn't fit. Try to create a non-restrictive policy that can be used for future innovations that none of us have even thought about.

In terms of the vehicles for this—and I'm almost done—EDC would be a fantastic vehicle. They provide performance bond guarantees and financial risk guarantees, so you could put it through that process. But make sure you solve the banking problem first. With the banking problem we have, even when you have full EDC support, which we, for example, get for many projects, the banks don't take that into consideration. There's a banking issue with it.

My last recommendation is to make it a simple calculation or qualification, or make it a pre-qualification. If you're going to do a demonstration project, allow the vendor to apply, get approval before they bring the customer to the table, and if they have the approved project, then they can go and find a customer. It's very embarrassing to bring a customer to the table and then not get approved. You're better off not to even bring the customer to the table.

Those are my comments. Hopefully that was not too much information in seven minutes.

I thank you very much, and I have a documentation of what I said which will be forwarded to you.

The Chair: Thank you very much.

Mr. Carter or Mr. Fraser, it's up to you.

Mr. Michael Carter (Business Development Manager, Canadian Solar Solutions Inc.): Good afternoon, Mr. Chairman and honourable committee members.

Thank you for letting Canadian Solar participate in today's committee meeting. My name is Michael Carter. I'm the manager of business development for Canadian Solar's energy group. I'm going to speak about solar energy projects and how we can support increased adoption in the natural resources sector.

Canadian Solar was founded in 2001. We are a global energy provider with successful business subsidiaries in 20 countries and over 9,000 employees worldwide. We were a number one ranked global module supplier in 2016. We have a dedicated Canadian-based project team with development experience in northen Canada and remote communities. We employ the latest solar module inverter and storage technologies in our projects, and integrate with existing infrastructure, such as backup generators and remote diesel systems. We are a leading manufacture of solar PV modules and other solar energy solutions, with over 70 million PV modules shipped to date. We have a nine gigawatt global pipeline of utility-scale projects that we are in the process of developing as well.

Today I want to quickly run through how we look at the questions that were sent to us.

Canadian Solar believes that renewable energy provides environmentally and economically viable energy but is yet to be utilized to its potential in the Canadian natural resources industry. We're working with international mining companies on project development opportunities that include solar and storage technologies.

From our experience, there are various risk components that we see as issues, which hopefully the Government of Canada can assist with. We've broken it down into four major risk areas: project, financial, operational, and environmental. Project risk is the risk to the renewable energy developer. Financial risk is the risk to the lender, which includes the Government of Canada. Operational risk is the risk to the end-user, the actual mining developer or mining resource developer. Environmental risk is obviously the risk to the local environment.

We see the natural resource industry as a commodity-driven business, with success based on variable forward pricing, exploration, operational costs, access to capital, and competition. The renewable energy project risks are partially tied to the success of the natural resource facility. These risks can be minimized through government intervention and support, which can include facilitating offtake agreements with the local utility for generation over the original contract, and the acquisition of the mining or resource product at a price that allows for payment of the electricity PPAs that we might be looking to secure.

The government could also support funding renewable projects for natural resource facilities that are at a late stage, with a visible cash-flow stream and an identified post-production energy need. These could be a community need or end-of-mine-life obligation, such as environmental obligations. We see as being a good fit. Lastly, the government could support the energy projects by backstopping long-term contracts through an insurance or guaranteed-type product, which I'll get to a bit later.

In addition, there's an opportunity where we could take the mining industry and the renewable developers and pair them together. Mines have upfront bonding requirements. Any new mine that's going to be opened up has a closure agreement, which is typically in the form of a bond. It could be upwards of $100 million. In some cases, we're talking hundreds of millions of dollars. We think that maybe there's a way we can tie low-cost, long-term renewable energy electricity sources to ensure that the perpetual obligations of a mine closure are not impacted by the external risks associated with cost increases in fuel and complex equipment, as well as the environmental risks associated with trucking and shipping fuel to these remote sites.

We think that mining companies investing in long-life renewable electricity assets should not only reap the benefits of the long-term secure energy that they're offsetting, but also be rewarded through offsetting the upfront costs associated with bonding requirements for these mines. We think that maybe there's a win-win associated with the potential of encouraging renewable energy developments with new mines.

● (1625)

The risk to the lender, the Canadian government, is in part based on the success of the renewable energy project, but it is also tied to the health of the resource company, the resource itself, and the economic viability of the renewable energy projects.

We think the government can support de-risking by funding these projects directly, especially with resource projects that are at a later stage with a visible cash flow stream and identified post-production energy needs. Those include local community needs, end-of-life operational requirements, and potentially science—i.e., weather stations and other kinds of monitoring facilities—and military interests. So it would be basically having energy centres potentially throughout rural areas. We also think we would recommend the potential reintroduction of ecoENERGY for Renewable Power, a program that was successful in supporting 4,500 megawatts of renewable development in Canada.

Separately, with regard to the financial risk, we think that the government can support or encourage favourable streamlined permitting processes to decrease the high-risk upfront costs and time associated with building both mines and renewable energy projects. We believe that the government can support streamlining interconnection and electrical permitting processes, and decrease the cost of interconnection, to assist with improving project viability. We look at this as maybe coordinating with the various provincial safety authorities as well as engaging local utilities and provincial regulatory bodies to support the goal of adopting more renewables.

With regard to the end-user, national resource companies need to ensure that they have a reliable, firm energy source for continued operations. Historically the intermittent nature of renewable energy dissuaded the utilization of renewable generation as a primary, stand-alone energy source. We see that advancements in technology and decreases in installed costs are allowing for the development of resilient renewable energy systems that enable end-users to meet their normal operational needs even during grid outages.

We believe that the Canadian government can assist in de-risking the operational risk by incentivizing the further development of resilient energy systems. We've had some support for the development of a micro-grid test facility, which we've recently commissioned in Guelph, Ontario. It's one example where that has worked for us. We are actively developing projects in the north and investigating other opportunities to develop the remote micro-grid type of facilities.

For the environment, we see that solar and other renewable energy resources can mitigate the environmental risks and help meet the statutory requirements under the sustainable development act. We believe that solar's locational versatility can allow it to be located in every jurisdiction in Canada. It can be deployed in and around tailings infrastructure and on brownfield lands. It can be easily relocated. Previously developed lands can be remediated to their prior state, if that is so chosen. The components can be recycled and are also permitted for landfill use. That's not the plan, but they are inert and can be put in landfill. However, we feel there's a long-term potential to incorporate reuse programs for renewable components due to their long, useful life. This would be after their contract life.

We see modules still on display in Toronto that are generating power with over 70% efficiency after 40 years. A lot of people look at solar as a 20-year product, but it has value far beyond that life. As a result, we describe it as a societal heritage asset with an ongoing positive terminal value. We believe that the repurposing programs can be incorporated into end-of-life programs to relocate our projects if there's a relocating plan to support local indigenous communities and other communities in the areas.

Turning to my last page, the impact mitigation includes the siting of projects on impacted lands, as I've already said. Separately, we think incorporating renewable energy into existing natural resource projects supports the cumulative environmental net benefit, or is a cumulative environmental net benefit, to a natural resource project.

● (1630)

We believe that solar as well as other technologies improve the environmental footprint from an emissions and polluting offset perspective. They offset costly and potentially disastrous remote fuel transport, which is becoming a larger and larger concern in the north with ice roads not necessarily having the amount of time they need to supply fuel to operations, and supporting electricity needs for long-term water monitoring, treatment, and other compliance-related obligations associated with end-of-life mine closure commitments.

We believe that these potential environmental benefits need to be recognized as positive adders in the natural resource permitting process early on.

How is my time? I've probably run my course.

The Chair: You have, unfortunately.

Mr. Michael Carter: I'll leave it there.

Thank you.

The Chair: Thank you very much.

Mr. Fraser, over to you.

Mr. Gordon Fraser (President and Chief Executive Officer, Responsible Energy Inc.): Good afternoon, Mr. Chairman and honourable committee members. I appreciate this opportunity to add my voice to this very important topic on how to de-risk the adoption of clean technology in Canada's natural resource sector.

After looking at the very impressive list of your witnesses, including those speaking today, I feel that I might be able to provide an alternate view by offering a glimpse into the trenches of the clean technology world. I'm not an academic, but a person who has served his country in our navy, loves to work with his hands, and thrives on incremental changes that improve operations and lives.

I've been immersed in the clean technology world for almost 10 years now. Even though over this period many struggles have occurred, both with family and my company Responsible Energy, the underlying reason for why I keep going has not been affected, which is a desire to protect our environment and our future.

I'll give you a bit of background on Responsible Energy. I founded Responsible Energy in 2007. Since then, we have raised over $3.1 million from the founder, friends, family, angel investors, and grants. With regard to the grants that we've received over this period of time, of course, there's SR and ED, the scientific research and experimental development tax incentive program; IRAP, the industrial research assistance program; and EODP, which is the eastern Ontario development program provided by FedDev. With these funds, we've been able successfully to prove our concept, the scalability of our technology, and multi-patent our clean technology both in Canada and the U.S. We believe that we've created a solution for both the waste management and energy sectors, and we are ready to be commercialized.

As a company, Responsible Energy has worked very hard, with every penny it has received from both investors and government grants. Success is not just about properly managing those funds, but also maximizing every available resource, for example, building our proof of concept in a friend's garage; since 2012, finding a location where we have not had to pay for rent or power; or using materials and equipment from a mothballed facility. I do not exaggerate when I say that we have saved millions in developing our clean technology.

More specifically around de-risking in regard to the federal government, I believe that the federal government does an amazing job of de-risking clean technology ideas, but it falls short on de-risking the implementation. In my terminology, I call it commercialization of clean technology ideas. In order to de-risk the commercialization of clean technology ideas, pre-commercial technologies require capital—bottom line.

To add to that statement, the federal government has been right alongside us every step of the way, ever since I came up with the idea to develop our waste energy solution. From the first time I reached out to IRAP, the federal government has been an amazing partner. With you, we were able to develop quickly and efficiently. Everything seemed to be falling into place, or so it seemed, but as soon as we were ready to commercialize, that is when we hit the commercialization wall hard. We are now currently in the chicken or egg syndrome. Who would be the first to commit funds, even conditional funds? Anyone? The answer that keeps coming back is that it is no one at this point in time.

Our first obvious step was SDTC, because the investment community raves about them. I heard loud and clear from the investment community, “If you can get them onboard, then we will follow.” However, once we had approached SDTC, our first applications were rejected. We received a few comments, such as, “it's too small of a project”, “you're not requesting enough money”, “we're heavily invested in that space”, “it's too early for you—you need to build a larger unit first”.

● (1635)

On our fifth try, our statement of interest was accepted, which made it to the investment committee round, but in the end we got rejected because our funding was not secured.

In parallel during the same period, we talked with BDC's ventures fund. My initial approach four years ago received the response that I should seek out capital in the U.K. To add insult to injury, their clean-tech representative told me last fall that they're no longer investing in clean-tech infrastructure, but are focusing on the IoT, the Internet of things.

I have a wonderful graph here that I unfortunately was not able to get to the committee in time for translation, but it shows the gap, the “commercialization gap”, as I call it. We have friends, family, angels, IRAP, FedDev, SR and ED all on one side, and everything works perfectly right up to when you're ready to commercialize the technology. Unfortunately, the funds are limited on that side of the commercialization gap.

As you move along the commercialization gap, there is a big space, and then, tipping into the commercialization gap, you have SDTC and the BDC ventures fund, which is why I mentioned them previously. They are attempting to help in that gap, but they're not far enough into it.

Then you have industry. Industry has more than enough money to fund this gap. How do we get industry into that gap? Everybody else on the other side seems to be tapped out and taking huge risks.

The graph leads into the next phase, which is how I see clean tech. You have all these industries, but currently clean tech is considered a single sector for all key industries. Clean tech is considered a one-stop shop in the same way that the IT sector was in the late nineties and early 2000s.

For a lot of people, clean tech was considered the second generation of that type of investment. They thought clean tech would do the same sort of thing that the IT world did. Unfortunately, each key industry has unique needs and environmental challenges, and that one language does not work for all. They all have their own individual challenges. Here, I have another pretty picture that you guys didn't get to see, but I've been informed that you'll see it later on this week.

I've come up with a few recommendations that I believe show how to de-risk clean technology investment, because that's my pain right now: the investment side of clean tech.

We need to place the responsibility of protecting our environment where it belongs. We need to require each key industry to be responsible for investing in its own sector's pre-commercial clean technologies. The success or failure of each industry to invest should be a simple thing to monitor and report.

We need to offer a reduction in the required carbon tax payable—of course, once fully implemented—or a tax incentive that is directly related to a company's investment in pre-commercial clean technology. Eligible pre-commercial clean technologies must have previously received funding from a federal, provincial, or municipal government, or an approved agency. You can have some conditions on that money, that incentive.

Also, there is an opportunity to provide additional incentives for private investors in clean technology in focusing on the commercialization gap, such as increased capital gains tax exemptions or providing an easy-to-follow set of rules for flow-through shares. It's worked very well for the mining industry, but everybody's very confused about it when it comes to clean tech.

● (1640)

In conclusion, when it comes to de-risking, I believe the federal government should follow NRC Canada's IRAP model. They are about helping start-ups accelerate the growth of their business through innovation and technology.

Stay on the upfront side. Stay on the idea side.

It is acceptable within IRAP's model that many businesses will not succeed past their funding, but some will carry on to do great things for Canada.

The Chair: Thank you very much.

Mr. Lemieux, you're first up.

[*Translation*]

Mr. Denis Lemieux (Chicoutimi—Le Fjord, Lib.): Thank you, Mr. Chair.

I also want to thank the three witnesses for their excellent presentations.

I've looked with great interest at Canadian Solar's work.

Mr. Carter, your business operates in over 24 countries. In the solar energy field, it's one of the largest businesses in the world.

How is the Canadian solar industry faring when it comes to developing and deploying new solar technologies, in comparison with the industry in the other countries that signed the Paris agreement?

Mr. Michael Carter: Thank you for the question.

[*English*]

I'll have to respond in English.

[*Translation*]

If I respond in French, it will take too long.

[*English*]

From a solar perspective, I feel that we are a little stalled right now. We don't have a lot of new development going on in Canada right now. I know that our microgrid test facility, which we have developed in partnership with Guelph Hydro, as well as with support from the Ontario government, is meant to support projects that we're looking at, and we see a lot of opportunity.

The federal government has announced some programs that are looking for development of northern Quebec communities, in Nunavik. We're seeing programs that are trying to understand.... With these microgrid facilities, as it has been explained to me—and I've been fortunate to have recently had a tour of a test centre—every small community really has a lot of intricacies that we have to address. When we have a differing mix and differing supply and load mixtures, there are a lot of technicalities that need to be overcome, addressed, and contemplated, such as when we're adding renewable, intermittent technology to a diesel system.

I believe that we are advancing. We're seeing a lot of advancements in that, but I have to say, from my perspective we are a little bit stalled. While we're seeing a lot of development on the solar elsewhere, a lot of new, innovative ways to develop new projects and to continue to drop the costs for the development of utility-grade solar programs, we're not seeing those lessons in Canada. We're using numbers and information from other countries to try to develop plans for what we can do in Canada. We don't have a lot of our own lessons learned.

We developed a number of projects under the feed-in tariff in Ontario that saw a great degree of growth and expansion. The costs have dropped. Many of my coworkers talk about a $6 or $7 per watt module before my time. That's how we measure it. Now we're hearing future projected costs of 35¢ per watt. These are huge advancements in the cost, getting that cost down and competing on a cost basis with the conventional sources of energy.

Alberta has some programs coming about. It would be nice to participate in the 2025 federal electricity targets and the 2030 targets, to see more opportunity for us to innovate and continue to drive the costs down. Module costs have really come down, and now the question is how we can do the installation more effectively and innovate on those fronts. That's now the low-hanging fruit on the cost side of the equation. That's how I would describe the innovative....

Did I answer your question appropriately?

● (1645)

[*Translation*]

Mr. Denis Lemieux: Yes.

I want to ask you another question, also in French.

Mr. Michael Carter: I can understand a bit.

Mr. Denis Lemieux: Okay.

Given what you just said, do you think the carbon pricing regulations implemented recently will help you develop the solar industry in Canada?

[*English*]

Mr. Michael Carter: I do believe that supports our business. We've run the numbers, based on carbon mixtures in certain provinces, and we see that it supports us. We believe there's probably an opportunity, not directly, in terms of how we're offsetting.... For example, Ontario has a very clean energy mix; Quebec has a very clean energy mix; and British Columbia already has, so when you're talking about a carbon displacement from a purely renewable source, we don't actually have that great an impact from that perspective. When we quantify it, we're looking at fractions of a penny. Alberta currently has some of the largest carbon mix within its energy production, but we're modelling maybe potentially a one-cent or two-cent future offset value. I think where we're going to see a benefit is with the government's being able to collect the funds and redistribute those for further and further investment into renewable energy adoption.

It supports us, and we're for it, but it doesn't add a lot to our delivered cost, especially in jurisdictions where there's already a clean energy mix.

[*Translation*]

Mr. Denis Lemieux: Mr. Fraser, can you briefly explain the nature of the new technology that you've developed? You've piqued my interest, and I want a better understanding of what you're doing on a technical level.

[*English*]

Mr. Gordon Fraser: We've developed a waste-to-energy technology. It's advanced thermal. We call it plasma arc technology. We operate at 5,000 degrees Celsius plus. Any carbon-based material that we put into our system gets converted into a gas. We are actually focused on industrial liquid waste at this point in time, mainly because that's the way policy in Ontario has directed us to go. Originally we were focused on municipal solid waste, but since I started, policy after policy has pushed us into this market.

We take any type of waste, solid or liquid, and convert it into a gas that can subsequently be converted into methane, electricity, and ultimately fertilizer. We produce a lot of heat, so we can partner with a large manufacturer that requires heat.

● (1650)

[*Translation*]

Mr. Denis Lemieux: Thank you, Mr. Fraser.

[*English*]

The Chair: Thank you.

Mr. Strahl.

Mr. Mark Strahl (Chilliwack—Hope, CPC): Thank you very much. If there's any time left, I'll share it with Mr. Barlow.

We've had several meetings already, and one of the witnesses we heard from was Dr. Pierre Desrochers from the University of Toronto at Mississauga, who said:

> Government has subsidized so many things that of course a few things will have succeeded...if new technologies look more efficient and have a reasonable promise of earning you a return on your investment, private investors will risk their own money and fund them.

I guess the question, based on that testimony is, why would the government risk taxpayer money to de-risk private business if private investors won't risk their own capital?

Maybe each of you could address what Dr. Desrochers said. If it's a good idea, the private sector will be there; if not, the government will subsidize it, and it may not succeed. Maybe each of you could take a run at that.

Mr. Michael Carter: I'll take that first.

Certainly in general I do agree with Dr. Desrochers' thought process. Not having been a solar guy my entire life, I certainly have had different perspectives on things. That said, as I mentioned earlier, in the last four or five years we've been talking about the drop in the costs of solar technologies, which continue to come down. Solar is actually competitive with traditional and even non-renewable mixes.

We're talking about various jurisdictions around the world where solar is the lowest-cost energy source. This came from significant government investment, in Europe first, and Ontario was a big supporter of driving those costs down. There is a lot of competition. As it has grown, the market has driven competition. The module prices are continuing to drop from, as I said, $6 a watt down to 35¢ a watt. We are seeing situations here in Canada where we believe we are now the lowest-cost provider in certain circumstances.

I believe when the Government of Ontario first initiated the Ontario Green Energy Act, part of that was to incentivize and create an economy, recognizing that it wasn't a cost-competitive technology. Most quote the 80¢ rates, but there were 40¢ rates for the large industrial projects. Those continued to drop to where now, before the cancellation of the last large renewable procurement program, the prices ran around 15¢, or in that range. That's a very significant drop.

Those are private companies bidding those programs. Those are long-term contracts with an end of life. The government is going to realize, at the end of the 20-year contracts, that they are sitting on an asset that will likely run for another 20 years after that. The government, when going to recontract, can make the case to say, “Look, you have a sunk investment. There is a real value there. We'll give you 5¢ or 10¢ or 15¢ in 20 years' time for another long-term contract.”

I believe it is needed, in the case of solar and other technologies, to get there if we have a goal, which was cleaning the environment and developing a clean, renewable resource. And we did it.

● (1655)

Mr. Mark Strahl: I don't want to get into a whole thing here, but I would say certainly that the Ontario ratepayers I have heard from would argue that while the costs have come down for solar, they have borne incredible increases in their own costs.

So there is no free money: somebody has to pay. I think it has created risk for the ratepayers, who have seen their hydro bills skyrocket under that policy.

Ms. Miriam Tuerk: Can I just jump in, if I may?

I have two comments. First, I have just one comment on a data point. We have great difficulty exporting solar panels out of Ontario. We buy solar panels in Ontario from Ontario manufacturers for the North American marketplace, but for the international marketplace the cost is 35% to 45% cheaper for solar sourced out of China for just as good quality, so we still have some struggles here.

I think your question is a very good one, Mark. There is no doubt that there are some technologies that are not going to be successful, but that's part of the statistics. There are some mortgages that are not going to get paid, which doesn't mean that we don't fund mortgages in this country, or provide guarantees from the government for mortgages. We just create a formula that helps us to be successful with it.

I think the important thing to realize is that the government is already funding the most risky stage of new technologies. Your funds into R and D through SR and ED, through IRAP, through a lot of the universities.... I was smiling when you said there was a university professor, and that they're all going after research grants. It has had an impact on our ability to be competitive. It is generally known that in early-stage technology, we are now a competitive marketplace. Toronto, as an example, and the southern Ontario area compete with Silicon Valley and rank in the top five globally on that.

But if you don't follow on with what Gordon talked about, the commercialization stage funding, then you get the great metric on the first phase, but you don't get it on the second. There's no question, how do you do it right? Sometimes no good deed goes unpunished. You establish a program like what the Ontario government has done. I'm sure there are parts that were right; I'm sure there are parts that were wrong, but at least they did something. Doing nothing is the kiss of death.

What I would say is that given where we are today, there has been and continues to be significant investment. There's no question that jobs are moving towards innovation, and we have to help that out. I think that what a lot of us are talking about, even the gentleman from Canadian Solar, Michael, is that everything we're pointing to concerns those commercialization and later-stage pieces, where the risk pieces have already been funded. If you don't fund that last piece, then you're losing the value of what you've got. I think we would suggest that if you can figure out some good policy strategies, you're going to get a triple whammy—not only unleashing the value of what is there today, but also unleashing the value of what's been spent over the last eight to 12 years that's just sitting there to be converted into jobs and other things because it's at that commercialization stage. It's less risky money now for some of those things at a later stage. But you're right that you have to figure it out, you've constantly got to adjust, and you've constantly got to change and be on top of it on a go-forward basis. There's no getting around that.

The Chair: Thank you.

Mr. Cannings.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you, and thank you all for being here today.

I'm just going to start with you, Ms. Tuerk. I ran into Clear Blue at the Clean Energy Ministerial meetings in San Francisco, so it's nice to see you represented here again.

You mentioned a situation, an example, in a northern Ontario community where you were stuck with provincial regulations, I believe they was. I'm just wondering if there's a role for the federal government in trying to harmonize those provincial and municipal regulations that might help the adoption of your kinds of technologies?

Ms. Miriam Tuerk: I think the short answer is no. The reason is that in order to put a regulation and a policy in place, one has to take time to be thoughtful about it first, because regulations can also kill business. We're talking about an innovation plan that is moving quickly.

In the particular case, you have the electrical department of the Ministry of Transportation saying that it really doesn't want to touch this because who knows whether solar is going to work?

Michael from Canadian Solar is flipping. I hope he's doing a little dance over there and saying, “What do you mean by, 'is solar going to work?”'

It's not just a regulatory thing that you can solve, because you can't force everything through. Somehow it has to be something that takes it over the line so that someone isn't going to get fired if he picks a solar project and it doesn't work. That's the issue, right? You were never fired for picking IBM and you never got fired for picking the grid or picking the technology that was proven 20 years ago. That's what we have to try to unlock. How do you de-risk it for that guy?

I have to say that “How do you de-risk it?” is the perfect question, because people want to do it if it's de-risked.

I'll go back to Mark's commentary. Private investors would like the due diligence, the checkup, the questions, the things that government investment brings. If you could just get the CPP to put a quarter of a per cent of its money in Canadian emerging technology —it doesn't do that now—to balance its portfolio.... I don't know how to do that. How do you get ahead of technology that's changing every five minutes, à la Uber?

● (1700)

Mr. Richard Cannings: Okay, thank you.

I will move to Mr. Carter.

I'll start with the situations you mentioned in British Columbia and Quebec, for instance, where you have very clean energy sources now, if you consider hydro to be really clean. I'm from British Columbia. People come to me and ask how the government can help them reduce carbon footprints. Is it getting that solar power into some storage battery on a wall in your house, and then plugging in your electric car and therefore reducing the carbon footprint through your transportation?

I just wonder how far we are from that vision.

Mr. Michael Carter: I would say that there is a reality to that vision now. It's a cost—

Mr. Richard Cannings: I mean in a widespread way.

Mr. Michael Carter: Certainly we are involved with battery-supported technologies, and we see a lot of that. It's a power-density issue and it's a cost-constraint issue. Tying solar to stored hydro, for example, is a good way to understand that you've incurred a footprint; you've had an impact. It's there. It's a legacy asset. Tying intermittent renewables to hydro storage, I believe, is a good way to offset.

Certainly for far remote communities, camps or whatnot, you can definitely tie it to batteries. There are lots of examples in B.C. with small completely cut-the-cord off-the-grid facilities. I think it's going to take an element of people just deciding how they want to use their energy, and whether they want to go that extra step. Maybe we don't use our power at night if we want to be solar-only and we augment that with a small amount through a smaller battery system. You can tie together used up car batteries now, put them on a shelf, and connect them to your solar panel. As solar modules are coming down in price, you can put more out there.

If you have a low-efficiency regime—British Columbia isn't exactly the place where there is low-hanging fruit for the solar industry, which is why we don't have a lot of it there—as the cost of the module continues to drop, you just put more out there. You pick up what little you can and store it in a battery.

We're very keen. We're looking at various remote opportunities in B.C. in particular, but the storage is tough. The power density of a battery as compared to the amount of storage you can get from a reservoir or a pump storage facility is a tough one.

We can lock arms with those other industries and support that as we look to offset the burning sources of electricity.

● (1705)

Mr. Richard Cannings: Okay.

Mr. Fraser, I went online and looked at some of your pretty pictures that maybe we were meant to see, but you had energy going in and your high-temperature plasma procedure, and then one of the things was energy out.

I wonder what the ratio of that energy in to energy out is, say in typical industrial waste, or solid municipal waste, for that matter.

Mr. Gordon Fraser: The energy balance, basically, is that we produce about one and a half times more power out than we require. Depending on the jurisdiction, that one and a half could go to a grid if we're producing electricity. In Ontario, because of the pricing, it makes more sense that we offset our cost, because there is zero incentive to convert waste into electricity. We're basically left with about a half left over to sell to the grid. Unfortunately, that's also been cancelled in Ontario. Now we're moving more towards renewable natural gas. But the energy out versus energy in is that we produce about one and a half more.

Could I respond to Mr. Strahl's question?

The Chair: Very quickly.

Mr. Gordon Fraser: Very briefly, that alludes to one of my slides, which is that the clean-tech sector has many needs. There's small money, but there's very large money that's required. I find that narrows our sector very tightly. That's what I was alluding to, that each sector should be responsible for its own clean-tech portfolio.

There are quick things. VCs can just throw money in and get all of their money back in six months. But then there's solar and waste, which take 20- or 30-year investments. For them to step in, they need a little push. All I'd like to see is just a little push.

The Chair: Thank you.

Mr. Serré.

Mr. Marc Serré (Nickel Belt, Lib.): Thank you, Mr. Chair.

Thank you to the three witnesses for your presentations and the time you took to prepare yourselves for today.

Also, Mr. Fraser, thank you for your service in the navy. Thank you so much for that.

I want to ask Ms. Tuerk and Mr. Carter the first question.

Ms. Tuerk, you mentioned in your presentation that Canada was falling behind Germany and China. You also indicated that there was no question that a lot of the jobs in the industry are more on the clean-tech side.

Can you elaborate a bit on some recommendations on things that you feel the federal government could do, looking at China and Germany, to try get a competitive advantage here in Canada? Also, to a certain extent, we've heard from past witnesses that the U.S. is also emerging with a large clean-tech industry.

Ms. Miriam Tuerk: Well, action in regard to the EDC, the banks, and financial supports and guarantees, I think would be key things. I have had a number of projects in which I've had to take a deal that I'm winning or that I have in hand and push it to a Chinese company or a German company—I only take the subcontractor portion of it—because they bring in government relationships, finance, and performance guarantees.

I have to tell you that when I heard the phrase “trade with aid” and I read about the U.S. government helping—oh, God, why can't I remember the name of that country that had the big earthquake in the Caribbean...? When they gave a lot of aid and then they gave a lot of trade, I thought that was terrible. But social...is starting to integrate with our businesses, and a lot of the other countries are helping to build infrastructure. They are making sure their dollars are helping the countries in a good way by helping to fund clean tech. If we could take the money that we promised in Paris and put it towards infrastructure projects and other projects that by coincidence happen to benefit the destination country greatly but also bring our own technology and jobs, that would be great.

On the ability to get performance bonds and all of those things for clean tech for smaller early-stage companies, the Canadian banks won't do a deal even if EDC guarantees it. That's one thing that has to get fixed. It's ridiculous, and it doesn't happen in other countries.

I can tell you there are hundreds of thousands of solar street light systems being installed in Africa and the Middle East. I'm going to sell my controller because I'm the first technology in the world to have what I have, but I cannot bring Michael any solar panel business because I have to give it to China because they're providing the financing. We'll get 10¢ on the dollar in this country; the drag-along revenue won't be here.

● (1710)

Mr. Marc Serré: Do you have any comments on that, Mr. Carter?

Mr. Michael Carter: On my part, I'm with the project development division of our company and certainly understand the Chinese. Many of our projects are built with modules that are built overseas. We have a facility in Guelph, which is still manufacturing modules, but it's a very difficult market to compete in. Our cost of electricity in the provinces is higher, and we don't have the same supports that we are seeing overseas from China in particular.

From a development perspective and that of getting more projects, I do look at the loan guarantees, the partial risk-assuring mechanisms that we could deploy from the federal perspective, whether they be.... These are EDC-type programs, but are for developing markets. What we were talking about here was developing the natural resource sector. I look at that as greening it and getting more renewable adoption. I see that as a development sector. Let's use Business Development Canada or another mechanism to do those loan guarantees, using risk assuming programs, development risk credit products, innovative risk assurances, and other lending arrangements that I couldn't come up with. I'm sure there are many different mechanisms that can provide help.

With those programs we create jobs. As projects are getting built, we're not the only ones bidding. We're in some programs right now in Canada. There are 35 different applicants going for similar small projects. They are chasing everything they can possibly get because not a lot of projects are getting support and funding right now.

We're seeing that hurting our industry. People are putting their hands up and saying we're not going to.... This is a starvation situation right now where not a lot of big programs are being supported. We want to build.

Mr. Marc Serré: My next question is for Mr. Fraser, and perhaps for the other witnesses afterwards.

You mentioned SR and ED, IRAP, FedDev, angel investment, and then the commercialization, the valley of death. We heard this in all sectors: mining, oil and gas. Oil and gas has COSIA. COSIA is a cluster of ecosystems, and the mining sector is also.

When you talk about the issues and challenges you have had with commercialization, can you make some recommendations? I ask because it's not just about your company. This is an issue across the board that we in Canada possibly don't commercialize our R and D and our research as well as we could, and we don't export it as well.

Mr. Gordon Fraser: Thank you very much for the question.

As a company once we got to that big drop, we're now looking for that first entity, whether it's VC or government, to be the first to commit to our moving forward, even with conditions. Nobody wants to be the first person in, and that's the chicken and egg syndrome I mentioned earlier.

Even if the government were to provide and say they will invest or will provide this or that incentive, we still have to do this, this, and this. That's a lot easier than having to go to the market and say, “I have all of this; now are you interested? I think I'll have a better chance of getting the funds I need to move forward.

That's not just within Canada. We are actively searching for funds in the U.S. and overseas. That's what they are looking for also. For us there are a couple of major items left; our permitting process has taken two years. That's Ontario-based, not federal. Usually working with supply agreements is dependent....

Unfortunately, there are a lot of things you would like to be able to do together, but certain things are linear, and financing, getting that first one in is the first step, and then you can branch out, but until you get that one person, you're still in the linear form.

● (1715)

The Chair: I'm going to have to stop you there. Thank you.

Mr. Barlow.

Mr. John Barlow (Foothills, CPC): Thank you very much, Mr. Chair.

I appreciate both of you being here with us today to offer some concrete recommendations for some things we can do.

Mr. Carter, I found it ironic when you said that you're trying to keep your Canadian operation going but it's difficult to keep a renewable energy company going in Ontario because of the high hydro costs. It was an interesting comment to make. I appreciate what you're having to face in Ontario.

You touched on the fact that some of your components are made in Canada but some you are having to do overseas. As a Canadian company, how much is done here in Canada and how much are you having to do overseas?

Mr. Michael Carter: I can't really comment entirely on the actual module manufacturing business, but in general for the solar cells, a typical module panel is made up of 72 cells now for an industrial project. Those are manufactured overseas and will be brought to our facility and assembled on our line. Unfortunately, I'm not a manufacturing—

Mr. John Barlow: That's okay.

Mr. Michael Carter: That component is put together and sealed together. We have four lines running in Guelph right now, but not full out. All of those cells are soldered together, put together, and shipped to projects.

Most of the Canadian-manufactured modules, to my understanding, have been supporting North American business, for the most part. Our founder, our Canadian company, and our name.... We obviously want to continue to support the Canadian brand and our Canadian customers. My understanding is that we find ways to make our modules work here in Canada as best we can and we try to continue to keep that operation and essentially keep the lights on.

I did mention the hydro rates. The irony is not lost on me. However, I don't necessarily agree with the general understanding that the costs are directly attributed to solar. Environmental Defence had a report out a short while ago, and I believe they estimated that $5 or $6 on an average $100 contract could be attributed to the solar industry. Those numbers decline over time as the contract lives go further out, but I do appreciate the sense of irony in that too.

Mr. John Barlow: I'm not trying to put this on the solar industry at all. I'm just saying that we have a provincial government that has a Green Energy Act that has been investing billions of dollars in subsidies for green energy projects, and maybe unknowingly is driving some of these green energy businesses out of Ontario, because they cannot or may have....

I'm not saying that's your fault, but that template is going to be used on the federal government scale as well, and I think this is something that we have to be very cognizant of. If we are driving up energy prices, are we going to be driving Canadian innovators and Canadian businesses to other jurisdictions because they simply can't afford it here? I think that's something we have to be thinking about.

Mr. Michael Carter: Absolutely. Do you want me to...?

Mr. John Barlow: No. I'm sorry. That's just a comment.

You also mentioned the costs of solar coming down from $6 to 35¢. I'm looking at a graph here that our library put together as an analysis for this study. Solar is still significantly higher than any other energy source at about 50¢ per kilowatt hour, compared to hydro at 13.5¢, gas at 11¢, and even wind, at 13.5¢.

In your estimation, when do you see solar technology being at the point where it's affordable, dependable, and no longer reliant on government subsidies to survive as an industry? I think all of us around this table would be more than willing to support this kind of technology if it were affordable, reliable, and not reliant on government subsidies. How far away from that do you think we are?

● (1720)

Mr. Michael Carter: Well, I—

Mr. John Barlow: I know it's a tough question.

The Chair: Yes, and in 30 seconds or less too.

Mr. Michael Carter: My understanding is that those are Ontario numbers.

Mr. John Barlow: Yes.

Mr. Michael Carter: Those figures reflect the contracted numbers going back to 2008 and then going forward, and thus incorporate the 80¢ rates.

Again, as I mentioned, the last LRP program, which is now slightly antiquated, was bid at 15¢ for solar. We're projecting forward —I can't get into the exact details of where we're at—to certainly be in the competitive range with wind, and continuing to decline. When we're making comparisons, we need to recognize that net metering was and still is a reality in Ontario that is offsetting the actual at-load demand. So we are there when you can cut out the associated distribution and transmission costs, the distributed generation components—

The Chair: I'm going to have to interrupt and stop you there, unfortunately.

We are going to adjourn abruptly here because we have to go back to the House and vote again.

Thank you very much, both of you, for attending today. Your evidence will be very helpful.

The meeting is adjourned.