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Sustainable Energy Innovations

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Series II of The Solutions Agenda
A research/practitioner partnership between Professor Ann Dale and Sustainability Solutions Group

Participants

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Roger Peters, President, Ottawa Renewable Energy Cooperative (OREC)
Tarah Strafford, Community Organizer, Eagle Island, West Vancouver
Dawn Smith, Environment and Sustainability Coordinator, Town of Okotoks
Rob Singlehurst , Project Engineer, Science Applications International Corporation (SAIC) Canada
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Dialogue

Ann Dale

Welcome to our second e-Dialogue of the Solutions Agenda research project. Every two months, we are leading a real-time online conversation around 11 critical sustainable development issues, each of which features leading innovations happening across the country. This is the second, on sustainable energy, and welcome to our e-panelists. Before we move to our first question, could I ask each of you to introduce yourself?

Roger Peters

I am currently president of the Ottawa Renewable Energy Cooperative (OREC) and volunteer with the Canadian Renewable Energy Alliance and Ecology Ottawa.

Previously, I was Director of Renewable Energy and Efficiency with the Pembina Institute from 2000 - 2008.

Before joining Pembina, I worked as an international consultant in energy efficiency and rural energy. I was Director of Technical Services for the Saskatchewan Energy Conservation Authority from 1993-1996.

I was a founding partner in Marbek Resource Consultants (now ICF – Marbek) in 1983 until 1993

Roger Peters

Welcome, Roger, thanks so much for participating.

Tonja Leach

I am the Director of Communications and Engagement for QUEST (Quality Urban Energy Systems of Tomorrow). My responsibilities include government relations, communications, coordination of national and regional efforts, event planning, fundraising and financial management. I have been with QUEST since January of 2009.

Previously, I was in communications with the Canadian Gas Association from 2003 - 2009. During that time, I acted as the secretariat for a coalition of 19 energy industry associations known as the Energy Dialogue Group, who came together to encourage the establishment of a national energy framework for Canada.

Dawn Smith

I am the Environment and Sustainability Coordinator with the Town of Okotoks. I have been with the Town since 2008, working on various projects ranging from energy and water conservation strategies to waste reduction programs. In addition, I work with our planning department on our community's long term Sustainability Plans. I also provide tours of the Drake Landing Solar Community throughout the year. Prior to working with the Town of Okotoks, I practiced as a

landscape planner in the United Kingdom and New Zealand, with focus on land reclamation.

Ann Dale

Welcome, Tonja and Dawn.

Rob Singlehurst

I am a Project Engineer with the Renewable Energy and Climate Change Program at SAIC Canada (Science Applications International Corporation). SAIC Canada was project manager district energy implementation for the Okotoks Drake Landing Solar Community.

My past studies focused on solar energy in the built environment. My work experience is in solar thermal, PV, earth energy and energy efficiency. I have worked closely with the Canadian Solar Industries Association, with CSA and with provincial ministries in standards and codes development.

Rebecca Foon

Hello, everyone.

My name is Rebecca Foon and I am a Director with Sustainability Solutions Group. We are a National Worker's Cooperative and work in different areas including Community Planning, Sustainability Management Systems and Green Building. I am really looking forward to this dialogue!

Robert Newell

My name is Rob Newell. I am a Research Associate in Ann's CRC in Sustainable Community Development program. I do a lot of work researching online community dynamics and social media, as well as work in our other research projects including this project, the Solutions Agenda. I also have been involved in one our partnership projects, the Meeting the Climate Change Challenge (MC^3) project, which looks at climate innovations in BC, and many of these innovations involve energy.

I am looking forward to this conversation and to sharing insights.

Ann Dale

We are still waiting for the full group to arrive, but let's start with our first question. Can you briefly describe your project?

Tonja Leach
QUEST Description

QUEST is a national non-profit organization advocating for Integrated Community Energy Solutions (ICES).

ICES involve the planning, design, implementation, and governance of integrated energy systems at the community level in a way that maximizes energy performance while cutting costs and reducing environmental impacts.

QUEST undertakes applied research, policy development, engagement, and capacity building for all levels of government, utilities, the energy industry, the real-estate sector, economic regulators, and the professional service sector to transform Canada's 5,400 communities into smart energy communities using ICES.

Dawn Smith
Drake Landing Solar Community

I will try to keep this brief!

Drake Landing Solar Community (DLSC) is a pure solar thermal research and development project created by Natural Resources Canada (NRCan). The development and operation of the project is a unique private-public partnership between NRCan, the Town of Okotoks (Municipality), United Communities (Developer), Stirling Homes (Home Builder) and ATCO Gas (Utility Operator).

The purpose of the research project is to be an energy showcase, modeling how an environmentally conscious residential community can be accomplished in a cold climate. The goal of the project is a significant reduction in green house gas emissions.

The project consists of an enclave of 52 R-2000 rated single-detached homes located within the greater community of Drake Landing within the Town of Okotoks. The space heating for these homes is provided through a solar thermal district heating system with individual solar domestic hot water systems for each of the 52 homes.

The research and development phase of the project was designed over a five-

year window (2007-2011). At year five, the system was modeled to reach a solar fraction of 90% (90% of the home's space heating needs provided trough solar thermal energy and 10% natural gas). The project reached its goal of 90% by 2011 and in the winter of 2012 achieved a solar fraction of 95%.

DLSC also achieved it main intent of significantly reducing GHG emissions. In Okotoks, a typical home constructed in 2007 produces approx. 6.4 tonnes of GHG/year where a DLSC home only produces 0.75 tonnes/year. The 52 solar homes have the same impact as 6.5 baseline homes of the same size and age. The project has been a huge success for the project partners. It continues to set the global example for a solar thermal district heating system.

Roger Peters
Ottawa Renewable Energy Co-op

OREC was incorporated in 2010 as a Renewable Energy Co-op under the Ontario Co-op Corporations Act. A Renewable Energy Co-op is a new category of co-op created by the Ontario Green Energy and Economy Act that generates electricity from renewable energy projects and sells it to the grid (previously only worker coops could sell to non-members)

OREC currently has 150 members in Ottawa (membership share $100). We raised almost $1 million in capital in 2012 through a provincially approved preference share offering to members. This capital has been invested in 7 solar energy projects in Ottawa that have Feed-in Tariff (FIT) contracts.

OREC will pay its first dividend on preference shares at the end of 2013 and return capital starting in 2018. OREC has submitted 4 additional projects for FIT contracts and will raise capital for these projects through a second preference share offering in 2013.

Our experience to date shows that there is a huge potential for the mobilizing of community (social) capital into sustainable energy projects owned by the community. OREC plans to expand its scope beyond electricity to raise social capital for other community owned renewable energy projects and to improve the energy efficiency of housing, businesses, and community infrastructure in Ottawa.

Tarah Strafford

My name is Tarah Stafford. I am a resident of the District of West Vancouver. I started a neighbourhood program in my neighbourhood to reduce home energy usage. The program has grown from one neighbourhood to 15 neighbourhoods across 4 municipalities. It is called "Cool Neighbourhoods". We create situations

through neighbourhood engagement that eliminate the barriers to home energy reduction working with municipal staff, fire departments, politicians, financial institutions and energy and supply companies. It is a lot of fun, which is why people are engaged.

Ann Dale

What diverse expertise we have. Welcome, Tarah. Next question, what do you think are the critical factors for the success of your innovation?

And then, what do you think are the critical features of a sustainable energy system?

I suggest you answer the first question, while thinking about the second.

Tonja Leach

I'll spin that question a bit as I wouldn't characterize us an innovation but rather an organization...

Our success is tied directly into the success of ICES in Canada. Our network is our strength and the more we can influence policy, organizations and governments to explore better ways of delivering and utilizing energy in Canada, the more success we will have.

In answer to your second question, Ann, our vision of a sustainable energy system is one that links energy across land use, buildings, transportation, water, waste and related infrastructure. We can make great strides in reducing energy consumption, consuming energy appropriately (right fuel for the right application) and consequently mitigating GHG's by addressing how energy is consumed in our communities.

QUEST has developed a number of technical & policy principles, which have been endorsed by the federal and provincial governments that, when applied at the community level, deliver energy economically, environmentally and sustainably. They can be found on our website.

Dawn Smith

The main critical factor for the success of the Drake Landing Solar Community was the active participation of the differing project partners. It was important having all three levels of government involved as well as a forward thinking community developer, home builder and utility operator. Of course, many other

experts in the field were critical in the design and installation of the system. The residents of Okotoks were also very supportive of an innovative alternative energy neighbourhood.

Another critical requirement was geography! Okotoks is ideally located in one of the sunniest locations in Canada.

Tonja Leach

Just wanted to echo Dawn's comments. Critical to any successful sustainable energy system development is early engagement of all the players at the table prior to the completion of the plan. For instance, our experience is that many communities create a sustainable community plan without first engaging with their local or regional energy utility provider.

Rob Singlehurst

The district energy system at Drake Landing uses approximately 840 solar thermal collectors to capture the sun's energy. In summer, there is of course a huge amount of heat collected and a heat transfer fluid is used to transfer the heat into a Borehole Thermal Energy Storage field. The boreholes are approximately 35 m deep and the field is about 35 m in diameter. The ground is heated to approximately 80°C. Come winter, the heat stored in the ground can be reclaimed and pumped through the district energy system to heat the community.

SAIC Canada is involved in the feasibility study of a potentially larger system in the City of Whitehorse. The number of solar collectors could be as much as 3000 and it could serve 850 housing units!

Ann Dale

Rob, what were the costs and who financed the project?

Rob Singlehurst

Local stakeholders included the land developer, United Communities, the builder, Stirling Homes, the utility, ATCO Gas, and the Town of Okotoks. Additional stakeholders and supporters included Natural Resources Canada, the Federation of Canadian Municipalities' Green Municipal Fund, the Province of Alberta and SAIC Canada that was able to secure a financial contribution from Sustainable Development Technology Canada.

Bill Wong, Manager of the Renewable Energy and Climate Change Program here at SAIC Canada dialed in by phone, and I am also relaying some of his thoughts and comments. He indicates that the cost of implementing such a project today would be in the order of $4M.

At the time of construction though, the costs were higher as the building code was not as stringent as it is today and the homes needed to be upgraded to an R-2000 standard, over and above the Energuide 76 that was mandated at that time. The City of Whitehorse now requires Energuide 82 of new homes, which is essentially better than R-2000, such that efficiency upgrades to the homes would not be in the overall budget of a District Energy system.

Robert Newell

Drake Landing has been a remarkable example of being able to use a solar energy system to successfully service a community. Correct me if I'm wrong, but I believe this last year was at 95% solar power fraction? So, I am wondering, as far as applicability to Whitehorse, is there a level of community buy-in required in terms of getting people to live there and have it function as a community? Does this solar aspect attract people?

Dawn, maybe you could share insights on this?

Dawn Smith

Rob, you are correct that the Drake Landing Solar Community did achieve a solar fraction of 95% last winter. The reports have not yet been produced for this winter; however, the project is aimed to achieve this again for 2013.

Regarding buy-in, Drake Landing is interesting. In the beginning (2007), a lot of the people who purchased the homes were not in the market for this project. They came to the open houses and were amazed by the opportunity and took the chance to live in an active experiment (although the financial risks of the project not working were to be mitigated for the home buyer, so the risk was low). Now, these homes are extremely popular and difficult to get. They do not come onto the market frequently and are sold quickly. The homes also have kept a higher market value than homes of the same size and age in the area.

To also answer your question, Ann. The project cost approximately $7 million and was funded through NRCan. If one was to do the math, the cost per home is not economical. One must remember that this is a research and development project and a large majority of those funds was for the development of the technology, not necessarily hard construction costs.

Rob Singlehurst

One of the most critical factors in the success of Drake Landing was to introduce the discussion of implementing energy efficiency and renewable energy at the very earliest stage of conception. The physical layout of the community was very important for passive solar gains to the homes and to have the solar collectors installed at the optimum angle and facing due south.

These criteria could not be met with an existing community. Though the development in Whitehorse has not broke ground, a significant amount of planning has happened of the streets and infrastructure and so we have to explore off-site locations for a field of ground-mounted solar collectors.

A benefit of solar energy and of borehole thermal energy storage is that it is local, renewable and sustainable. The money for fossil fuels is paid by a community and the economic benefits travel farther than the fuel does - away and out of the community, to Calgary and on to shareholders. The sunshine and the ground are outside and underfoot and utilizing these resources keeps the economic benefits within the community.

One of the reasons why Whitehorse is feasible for such a system is that the price of gas is not as cheap up there. The Yukon is also not part of the North American electricity grid. Fossil fuels must be transported by truck and can be very expensive. Implementing a larger District Energy system that serves many more clients than the system at Drake Landing will also realize significant savings and a lower price for consumers.

Robert Newell

This is interesting that once again the 'energy is cheap' issue shows up as a potential barrier for gaining momentum on a renewable energy initiative. In the case of Whitehorse here, the higher prices have contributed to overcoming that barrier.

I also wonder about other economic benefits that a northern (and isolated) community could receive from a project such as this. I am thinking in terms of local training and development of skills. In the case of the T'Sou-ke (a community on Vancouver Island near Victoria) Solar Community Program, the solar system was installed by trained local members of the community.

Rob, have these sort of social and economic benefits been considered in your feasibility study?

Rob Singlehurst

Certainly, the regular operation and maintenance of a District Energy system can only come from the community.

Early discussions with some manufacturers of solar thermal collectors indicate that there may be a possibility of developing production and manufacturing capacity in the local community.

And as the solar collector field will most-likely have to be ground-mounted as opposed to roof-mounted, a local First Nations community may be engaged as a partner with the City of Whitehorse in a long-term lease arrangement of land for the solar field.

Tonja Leach

I think the opportunities in the north extend beyond just the large communities. Almost all rural, remote and northern communities (including mining communities) rely on trucked or flown in diesel, the economics are significantly in favor of moving to renewables, CHP, in some cases DE and other innovations. In a report produced by Aboriginal Affairs and Northern Development Canada - Status of Remote / Off-Grid Communities (2011) the main barriers to change happening in the north is the lack of metrics and reporting and the complexity of the current financial support mechanisms in place today. It is a large problem to overcome, but the economics are very much in support.

Roger Peters

The factors critical to OREC's success have been,

1) legislation that provides the incentive to invest in renewable power (Feed in Tariff),

2) a strong team of volunteers with variety of business, technical, and social expertise.

3) an emphasis on local ownership and projects,

4) eager residents who have been waiting a long time for this type of opportunity

Ann Dale

Roger, do you know of any other such co-operatives in the country?

Roger Peters

There are about 20 coops like ours across Ontario working within the Feed in Tariff program (we are all part of a new Federation of Community Power Coops) and also some developing in Nova Scotia to work under the COMFIT program there - I do not have any details though.

Tarah Strafford

The factors critical to "Cool Neighbourhoods" success have mostly centered on home owners willingness to participate because we always address the barriers that stop them from doing things that they actually want to do but oftentimes find boring, time consuming, intimidating or costly. We make sure it is none of those things by basing the program in 'parties with a purpose' thrown by keeners (Neighbourhood leaders) in each neighbourhood that are willing to schedule everything, serve good food and drinks, provide expertise, and allow the people in our program to help with any problems that home owners encounter.

Rebecca Foon

Hi Tarah - this sounds like a lot of fun! Can you tell us more about the ways the neighborhoods are engaged that help to eliminate the barriers to home energy reduction? We do a lot of work around community engagement, so am always interested to hear about innovative community engagement techniques...

Tarah Strafford

We first identify someone in each neighbourhood that is already engaged and interested in doing energy reductions. That person then contacts their neighbours; sometimes because they already know them, sometimes through a community association and other times by just walking around and delivering invitations to a party to talk about neighbourhood sustainability and resilience. People tend to come because of the non-threatening, friendly nature of the invitation and because they want to interact with neighbours but also because they want to 'do something for the environment' or 'save money'.

Rebecca Foon

Parties with a Purpose - Great idea...

Robert Newell

This opens up an interesting idea around community engagement. I know from other communities we've researched, there have had some difficulties getting retrofits out the door because just selling the "save money on energy" aspect simply wasn't enough. Energy is inexpensive, and the effort in putting in the retrofits doesn't grab everyone. However, the idea, then, of engaging people in programs through fun initiatives and appealing to them on a personal level opens up a whole new avenue for collecting buy-in. It seems, from this case, a necessary component.

Roger Peters

Tarah, what kinds of housing retrofits do you carry out?

Tarah Strafford

We start with having an energy audit on each home (we have a group deal on them so that save money and the neighbourhood leader schedules everyone's times: as many as 59 houses in a neighbourhood) then the fire departments in each city/district come in and do thermal imaging so the homeowners can see the energy leakage in from their homes - that makes a huge difference - being able to see it. Again this is all scheduled by the leader and the service is free. We then do sealing, caulking and weather stripping. Local utility has provided caulking and we get discounts from local contractors. Next are the big ticket items - high efficiency furnaces, heat pumps, insulation, windows, solar hot water etc. We have some group buying deals and have 'wine and window' parties and 'sealing socials' etc.: Obviously, we came up with many of these things over several glasses of wine ;) If it isn't fun...no one comes back. People have busy lives...

Tonja Leach

Tarah could you also comment on the energy literacy of your target audience. We often hear that energy literacy is the greatest barrier to any type of sustainable energy program uptake.

Tarah Strafford

It varies greatly - but like any neighbourhood there will be engineers and artists - (not saying that the engineers have higher literacy on the subject!) but that is one of the barriers for sure. Our job is to educate them in a friendly accessible way. Have a coffee and chat stuff...and make it simple and straightforward.

Tonja Leach

Tarah, you certainly have a wonderful project on the go! I'd love to find a way to replicate it Nationally!

Rebecca Foon

I love this idea of bringing together the diversity of people living within the neighborhood - including engineers and artists - together in a dialogue (with good food) around energy and home energy reduction. I imagine this must also build social capital and more resilient and healthier communities as a result?

Tonja Leach

This is in a nutshell what QUEST does - we bring people together who typically wouldn't talk to each other, provide them a safe space for conversation and help them identify why working together is beneficial. We have had great success with this through our annual conferences - this year's is in Markham, ON, November 12 - 14, 2013, if anyone is interested. So, we are doing it at an organizational level rather than at the individual level, as Tarah is.

Ann Dale

Strategic partnerships, peer group support, discussion, early engagement of all players, parties with a purpose (social capital), integration of energy across land use, buildings, transportation, water, waste and related infrastructure. Our MC^3 research project also revealed how critically important integration across those sectors is for the implementation of climate change adaptation and mitigation.

Roger, what role can energy co-operatives play in energy literacy?

Roger Peters

They can play a large role. By definition, our first members are very energy literate and quickly spread the word to their friends and neighbours. Because we offer financial return, community ownership, RRPS eligibility, and green investment we attract a lot of additional people. There is an incentive for them to learn about sustainable energy when they are going to invest in it and own it. We have had a lot of interest from the media too which has helped with the understanding of renewable energy.

Robert Newell

Roger, I imagine that many of the investors you have would be very forward thinking, as this is a long-term investment (20 years, I believe?). Typically, the majority of humans are often set in the short-term, more immediate gains mindset. Has this been a challenge in terms of attracting people and receiving buy-in?

Roger Peters

We were surprised at the number of people looking for long-term investment opportunities. Offering RRSP eligibility helped attract long-term interest, but these only represented about 20% of our share sales. There are very few other options out there that offer 4%+ over such a long term. This is very good news for anyone interested in seeing more social capital going into a community owned and run economy - not just for energy.

Ann Dale

Roger, can you explain the RRSP eligibility a little more, please?

Roger Peters

OREC has set up a service for our members so that when they purchase a preference share it can count towards their annual RRSP "room" and be held in a special self directed RRSP.

Ann Dale

Our next question--What other energy innovations do you know of, and what are their critical success factors?

Tonja Leach

It seems that the energy innovations are almost endless. Beside traditional renewables there is combined heat and power (CHP) partnership, district energy (DE), waste-heat capture, renewable gas, tidal power, to mention a few. And, similarly, there are a number of barriers, in some cases unique and some are universal, to their success.

A key barrier is fear of the unknown or an unwillingness to try something different – although all of these systems are well utilized outside of Canada. Education through improved energy literacy would be helpful in overcoming this barrier.

Understanding how to make the business case for alternative innovative technologies is critical. In our experience, service providers who try to incorporate one technology into traditional systems planning routinely discover that the business case isn't there. That being said, there is strong evidence that taking an integrated approach works financially, it drives economic development and as a by-product community GHG goals (or provincial targets) are reached.

Financing mechanisms are another critical element. Increasingly new and innovative financing mechanisms are coming to the forefront such as Local Improvement Charges or property based liens, but there is an increasing need for innovative financing mechanisms to be developed to support energy innovation implementation.

Robert Newell

The fear of the unknown is a definite barrier in the implementation of many innovations for many different types of community systems. I believe that networks and knowledge sharing can shed potential light on these unknowns...making the innovations seem more possible. In fact, part of the idea of these Solutions Agenda dialogues is to shed light on the 'unknowns'. Tonja, I imagine QUEST can also do such by connecting people of different ideas and expertise?

Rebecca Foon

I agree that fear of the unknown is key - even though there are so many examples of best practices internationally. For example, Copenhagen has a 100% Renewable Energy Goal to be Carbon Neutral Capital by 2025, which can be found here.

Combined heat and power systems; biogas systems (providing natural gas from anaerobic digestion) and, as discussed, district heating systems are all great examples of innovation.

Also, here is an interesting example of community financing in Nova Scotia.

Ann Dale

Tonja, do you know of any references on innovative financing mechanisms? Any ideas on how to engage the banks?

Tonja Leach

I know of examples - SolarCity in Halifax, for one. QUEST will be publishing a document on this in Q3. But, I will look into it for you Ann.

Roger Peters

An important Ontario initiative on financing can be found here.

Ontario recently amended the Municipal Act to allow municipalities to use Local Improvement Chargers for energy retrofit financing

BC and Manitoba both have new legislation requiring utilities to offer on-bill financing that transfers to new owners so that payments are less than savings. See BC Hydro and Manitoba hydro.

I also think that property secured or on-bill financing is an important innovation– allowing loans for sustainable energy (renewable energy and energy efficiency) to transferred from one owner to the next over a term sufficient to make annual loan payments less than annual revenue or savings

Other innovations include:

- Complete Streets – all new and redesigned streets give priority to transit, cycling and walking

- Power storage – the key to high deployment of renewable power sources and smart grids

Tonja Leach

Another that has just come to mind are Clean-Tech Funds - they currently exist Federally and in Alberta for Large Scale Emitters but QUEST is encouraging expansion to include Downstream.

Dawn Smith

In response to the question: What other energy innovations do you know of, and what are their critical success factors?

In general, with the Town's experience, one of the critical success factors for alternative energy systems is the cost of energy. In Alberta, over the past few years, the cost of natural gas has been low therefore there have been times where the residents of the solar community are paying the same or more for their solar thermal space heating (approx. $64/month for the operation of the system) compared to a standard home in the neighbourhood paying for their natural gas.

An additional barrier for the Drake Landing residents is utility delivery costs. Even though the majority of their energy needs for space heating and hot water are provided through their solar system, they must pay the standard utility delivery costs for their remaining small amount of natural gas consumption. Therefore, these residents are paying a heating bill for their solar domestic space heating system (which covers the 95% solar and additional 5% natural gas (provided to all 52 homes through a high efficiency furnace located in the energy centre) and for the additional natural gas they consume for the remaining 40% of the domestic hot water needs, fireplace, cooking etc. Some residents are only consuming around $5/month in natural gas for hot water and cooking however must pay the standard flat rate delivery charge from their utility provider.

Rebecca Foon

The Hestia project is also very interesting. It basically creates the groundwork for a Carbon Monitoring System - creating a tool to help communities and government to design carbon management strategies. The first project is in Indianapolis and they are looking at creating a project for the Los Angeles Basin.

Ann Dale
A Question from our Audience

I am going to interject with a question from our e-audience to be answered.

I wondered if there are any good examples of major urban projects that are taking the kinds of system-level ideas being deployed in Okotoks (district energy systems), but which also include the kind of citizen engagement that is being talked about in Vancouver? With the support of a Live Green Toronto grant, I lead neighbourhood project that explored the feasibility of retrofitting a street full of Victorian homes in downtown Toronto with geothermal systems. Because of lack of private property, the only place for the bore field was under the street. The results were clear about the advantages of geothermal, but the City (or at least one department within the City) was a major impediment. We also learned that the only way to do this in a feasible way was through a district system - not one private home retrofit at a time.

Tarah Strafford

I have just started a project working with the Tsleil-Waututh First Nations that will hopefully incorporate district energy but will also engage the community. They are in an urban setting and wish to retrofit their homes so that they can "walk the walk" as they are opposing pipelines and oil tankers in their territory. It is a fantastic project but will have many challenges.

Dawn Smith

Regarding the audience question, implementing district energy systems in established communities can be extremely difficult. Drake Landing had the benefit of being designed greenfield, the homes, streets and garages could be ideally oriented for optimal solar collection and the borehole located under a municipal reserve which is now an open park space.

The working environment in a smaller municipality such as Okotoks usually allows for more flexibility due to smaller numbers of departments involved in the decision-making and necessary modifications of building requirements and bylaws.

Tonja Leach

QUESTs website has a National ICES Map which currently showcases 10 Integrated Community Energy Solutions projects (including background information, contact information etc.) and will soon (by the end of April) have 50 projects listed. The map is a live project and will be updated on an ongoing basis with the addition of policies and other useful information.

Rebecca Foon

Wow - I look forward to checking this out!

Ann Dale

Tonja, how can we more rapidly scale this up? Roger, how do we scale up energy cooperatives? And the other initiatives?

Tonja Leach

Good question, Ann.

We are looking to our network (10,000+) to help us populate it. The intent is to allow (and we will encourage) people to submit projects for consideration. That functionality isn't there yet but will be soon. In addition, QUEST will be looking at and for other lists that are out there but not necessarily publicly available, which we can upload.

If anyone out there has a project they would like to see, please send it to us or email me: tleach@questcanada.org

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Roger Peters

In the short term, scale-up will depend on the future of the Ontario feed-in tariff program which in turn will depend on how fast the grid can be upgraded and 'smartened" and when the Wynne government raises the targets for renewable power (the current 2018 target has already been met!).

In the meantime we are looking at other opportunities where can use social capital from members to finance sustainable energy projects that do not depend on feed-in tariffs - like ICES, energy efficiency, and maybe renewable gas.

OREC is ready to scale up to several million dollars per year if the opportunity is there. The community interest and capital seem to be.

Robert Newell

I imagine through the coordination of a group like OREC, opportunities could be provided for people to invest in projects that might be far away from home (such as northern Ontario). And, speaking hypothetically, a national feed-in tariff program could allow people to invest in projects out of province. This could result

in some serious scaling up.

However, Roger, in your experiences do you think there would be issues in interesting people in projects that are out of their community and familiarity? Is the feeling of a project being local an attractor?

Ann Dale

Roger and Tonja, it seems to me like QUEST and energy co-operatives should partner in some ways?

Roger Peters

Yes - we are currently starting to research other options like ICES. The main barrier is that, as a renewable energy coop, we are currently restricted to the generation and sale of power to the grid in Ontario. But, there may be ways around this. I will be in touch, Tonya.

Tonja Leach

Excellent, Roger. I too think some collaboration could be useful.

Robert Newell

Tonja's earlier comments, "Tarah, you certainly have a wonderful project on the go! I'd love to find a way to replicate it Nationally!", relates to Ann's question on how can we scale up the initiatives.

This is an interesting area to explore. In terms of community engagement, Tarah's work is a great success, and I have seen very successful results with the community engagement work with T'Sou-ke's solar energy project. T'Sou-ke had 100% community engagement - very inclusive and definitely a way of crafting a unity of vision - but it is a small community.

So, how would we scale up here?

Tonja Leach

I'm interested to know if anyone thinks a public awareness campaign would work or not. It is something that QUEST is considering doing...

Robert Newell

This is not a specific initiative, however, it does relate to this idea of scaling up a public engagement campaign. We created a video for our Meeting the Climate Change Challenge project that features Dr. Azim Shariff from the Culture and Morality Lab in Oregon, and he discuss several reasons as to why climate change doesn't ring moral alarm bells. One of the major reasons being that it isn't an issue that connects personally, and, at the end of the video, Dr. Shariff suggests using communication strategies that 'speak' to the audience directly. It relates to what Tarah has done as far as effectively engaged the public on a personal level, but also provides insight on how to scale up to a mass communication level.

The video can be found here.

Roger Peters

Green Communities Canada is very interested in community scale retrofits like Tarah's and could help promote the idea.

Rob Singlehurst

The feasibility study of a larger solar thermal district energy system with borehole energy storage in Whitehorse indicates that the price per home would drop by 4X. Drake Landing was never designed to achieve a financial return on the investment. It essentially is a research and demonstration project that has provided proof of concept and helped us learn a great deal.

Here is a presentation for the District Energy feasibility plan for the community of Norman Wells...

Ann Dale

Thanks, Rob, and everyone for your 'food for thought' into The Solutions Agenda (our first e-Dialogue in this series was on sustainable food systems). Our next and final question.

What are your 3 top policy recommendations for governments to make Canada a leader in sustainable energy?

Rob Singlehurst

A NATIONAL ENERGY POLICY!

Tarah Strafford

I agree

Tonja Leach

Which includes how we use energy - not just how we produce it!

Tarah Strafford

- We need to create new memes through alternative energy visuals in the media so that people can see that a different future is possible (that is what I do in my real job as a screenwriter)
- National energy policy
- Identifying and dealing with the barriers from the ground up as well as the top down

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Rob Singlehurst

A NATIONAL CARBON TAX (yay, BC!).

Dawn Smith

Agree!

Tonja Leach

Or a Cap & Trade System - this was quite the debate back at the beginning of Obama's first term - will be interesting to see if it comes up again once the US recovers.

Roger Peters

- A National housing retrofit and new efficient housing plan – part of a national “housing for all” strategy

- Innovative financing programs to mobilize community, government, and private capital – including on-bill and property secured financing

- Well-funded dedicated government institutions to oversee the transition to sustainable energy, and well-funded professional and trades training and education programs

- Plus, a national collaboration on smart grids - power storage, and feed-in tariffs

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Tonja Leach

Let's not lose site of the fact that the majority of energy consumed in Canada is thermal. Energy should include the whole value chain and all uses - heat, plug & mobility.

Dawn Smith

Agree, in Okotoks, the largest contributors to GHG emissions is residential space heating, citizen mobility and the transportation of goods. In Alberta, a lot of the consumer's focus tends to be on electricity due to its higher cost.

Tonja Leach

Our recommendations are as follows.

1. the federal government facilitate and contribute to community-scale home energy retrofit pilot programs

2. the federal government advance Integrated Community Energy Solutions as part of the new long-term municipal infrastructure investment plan to make Canada a global champion of smart energy communities

3. the federal government support energy affordability for seniors and grow the green economy of Canada by encouraging the adoption of Integrated Community Energy Solutions

Dawn Smith

Completely support the recommendations mentioned and echo the need for a strong National Energy Policy.

At the municipal policy level, we could look at new community development and new building construction requirements that support future micro-generation energy retrofits. With regard to solar energy, perhaps requirements for 'solar ready' homes that are optimally oriented for solar exposure and have pre-constructed solar chases.

To support micogeneration and community energy projects I also echo the comments on smart grids, power storage and feed-in tariffs.

Rebecca Foon

I agree with all of this - and it brings up the idea of the commons - what are people's rights to energy?

With regards to national/regional/municipal housing strategies, another interesting international best practice - City of London has a program entitled RE:NEW - aimed at retrofitting homes to reduce water and energy consumption - with the goal of retrofitting 1.2 million homes by 2030.

Ann Dale

Great dialogue, and Roger, a delight to talk online, and Tonja, to reconnect again, Tarah, Dawn and Rob Singleherst, a joy to moderate. We expect to publish the Solutions Agenda in two years, complimenting our Policy Agenda for Canadian Municipalities and our recent Action Agenda for Rethinking Growth and Prosperity. We will send you a copy prior to publication for your comments and ideas, again, your time and commitment to our research is very much appreciated, when we meet you in person, we owe each of you a fine glass of wine.

A last comment from an audience member.

> *Regarding the person who responded to my earlier question, stating that urban retrofits were difficult, I completely agree. And yet, the energy elephant in the room is cities. In the same way that transportation infrastructure will have to change dramatically if sustainability is to be achieved, so too (I believe) will energy infrastructure, as well as food infrastructure will have to be transformed. Smaller pilot projects is what can lead the way, while*

building a growing citizenry that believes that a sustainable future will require radical change on many fronts. It's these pilots that I want to learn about. Thanks... Douglas Worts.

Dawn Smith

Completely agree. While small demonstration projects can lead the way for innovation, overcoming the obstacles of alternative energy retrofits will be the solution to widely reducing GHG emissions.

Robert Newell

We are approaching the end of our dialogue, and I would like to thank our panelists for participating and our e-audience for tuning in. This has been a very interesting conversation on energy initiatives, and the diversity of skills, expertise and project types just goes to show the complexities involved in developing and fostering sustainable energy. The innovations discussed today have been very encouraging to hear.

One more final open-ended question before we wrap up, are there any more projects you would like to share, thoughts on future projects you would like to see, or any other comments?

Tonja Leach

I'll just sign off with QUESTs Vision:

By 2030, Integrated Community Energy Solutions will be present in every Canadian community.

Great to reconnect, Ann. Thanks for the invite and I look forward to that glass of wine. And, I'm looking forward to connecting with the other panelists following this conversation and seeing how we may be able to support each other.

Robert Newell

I would like to give my thanks to everyone for this conversation. It was wonderful to chat with such a diverse about this critical topic. I enjoyed our conversation greatly, and I hope you enjoy the rest of the afternoon!

Roger Peters

Thanks, Robert. I am signing off now and will look forward to seeing the transcript

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Rob Singlehurst

Thank you!

Rebecca Foon

Thanks so much everyone, it was a pleasure!