



## SUBMISSION TO GENERATION ENERGY

**Submitted to:** The Honourable Jim Carr,  
Minister of Natural Resources, Government of Canada

**By:** Chad Park,  
Chief Innovation Officer, The Natural Step Canada

September 20, 2017

September 20, 2017

The Honourable Jim Carr, Minister of Natural Resources  
Government of Canada  
House of Commons  
Ottawa, Ontario K1A 0A6

**RE: Energy Futures Lab submission to Generation Energy**

Dear Minister Carr,

On behalf of the Fellows and partners of the [Energy Futures Lab](#) (EFL), I am pleased to make this submission to the Generation Energy process. It is the collective response of several dozen innovators and influencers from across the energy system. It draws on our experience working together over the past 3 years to understand the energy system from different perspectives, build a shared vision of the future, and launch collaborative initiatives among diverse and uncommon partners.

We recognize that a major transition in the global energy system is underway. Clean technology, renewable energy, and sustainable mobility are all necessary to achieve the targets of the Paris Agreement. We also recognize that Canada has the opportunity to play a unique role in this transition. An inadequate response would risk our future prosperity, particularly given the importance of the energy sector and resource development to our national economy.

We also know that issues of energy and environmental protection are highly polarized and polarizing. Finding common ground and navigating through these complex issues is of utmost importance for Canada.

With all of this in mind, we have come together in the [Energy Futures Lab](#) to explore the question "*how can our strengths in today's energy system serve as a platform for leadership in the transition to the energy system that the future requires of us?*" The Energy Futures Lab Fellows (listed in Appendix A) include oil and gas executives, clean tech entrepreneurs, renewable energy business leaders, environmental champions, Indigenous leaders, municipal government officials, economic development and public engagement experts, and more.

The Energy Futures Lab was convened because we believe that how we tackle the interconnected issues of climate change, energy security and sustainable development today is key to our future prosperity. The issues are so complex that addressing them is not possible unless we work across traditional organizational and sectoral boundaries.

We know that we are not alone. Individuals and organizations all across our country want to step beyond polarized debates and be a part of a constructive process to prepare for and shape the future. Though technology is of vital importance, the challenge of building a low carbon economy and the energy system the future requires of us is not *just* a technical challenge. It also requires innovative approaches to how we relate to and interact with one another, how we engage the public, how we develop policy, and so on. We refer to these as “social innovation.” We hope that the Generation Energy effort will help elevate the importance of social innovation alongside technological innovation.

Each region of the country will have to contribute to making Canada a global leader in the transition to an energy system that helps meet Canada’s climate goals, creates jobs and keeps energy affordable. The focus of the Energy Futures Lab’s work to date has been on Alberta because of Alberta’s unique position and role in Canada’s energy system. This perspective has offered us useful insights about potential innovation pathways, about overcoming polarization and about how Canadians make, move and use energy, which we share in this submission.

As interest in this unique social innovation model spreads in other parts of Canada, we suggest that the expansion of the Energy Futures Lab to a national scale presents a tremendous opportunity for Canada. We would be pleased to work with you and your colleagues to explore this possibility as part of the next steps in the Generation Energy process, and also to share our insights on how social innovation can promote an open dialogue with Canadians.

Sincerely,



Chad Park  
Chief Innovation Officer & Director, Energy Futures Lab  
The Natural Step Canada

## Background and Context

The global energy system is changing rapidly. We recognize the world needs to find a way to provide energy for its citizens and economies without exceeding two degrees of global warming. We also recognize there is unprecedented global agreement with commitment to transitioning the global economy to achieve this target.

The interdependence of the energy system with other systems means that change present big challenges and new opportunities across Canada. As an energy provider and exporter, we face a new set of competitive factors. As energy users, Canadians are some of the biggest per-capita energy consumers in the world. Addressing energy challenges and seizing new opportunities is vital to the social, environmental and economic well-being of Canadians overall.

The development and export of oil and gas have helped create a prosperous industrial sector and economy for Canada. We cannot expect that prosperity today lies in the same path it did in the past. Nor can we abandon the resources and assets that have made us prosperous until now. Our prosperity challenge lies in developing and leveraging the strengths of today and yesterday to build the energy system the future requires of us. This means investing in low/no-carbon energy opportunities while reducing the footprint of higher-carbon energy products that are currently a major contributor to our economy. Canada can lead the world by showing how this can be done.

This will require the deployment of new and proven models, collaborations, technologies and a big focus on innovation. Canada has a long history of innovation to build on. The capabilities and know-how Canadians have developed as a global energy leader can serve as a platform for the innovation required to address our current challenges and position us competitively in a changing global energy system. Doing so will create new opportunities to renew our economic vitality and diversify the sources of our shared prosperity.

### Question 1: What does our energy future look like in the long-term?

We envision an energy system that is fit for the future. Production and consumption in our energy system are guided by science and align with the [principles of sustainability](#).

In this vision, Canada continues to provide products and innovations to meet the world's changing needs for heating, electricity, and mobility. We have simultaneously pioneered the development and deployment of alternative energy technologies, energy efficiency, and energy conservation. We have lowered the footprint of hydrocarbon resource production to

the point that Canada's energy products and knowhow are considered key enablers of the transition to a low-carbon global energy system.

Canada is home to the world's most innovative, entrepreneurial and responsible energy citizens. We have become a global leader, magnet for energy talent, and role model for other resource-based economies and established sustainable prosperity.

### **Question 2: What generational goals should we strive to achieve and what values should guide us?**

To thrive in that future and to continue to be a global energy leader, we believe Canada should strive to achieve the following generational goals:

1. Net carbon-neutral for electricity, heat and mobility
2. The world's leading source of future-fit hydrocarbons<sup>1</sup>
3. A leader in energy-based partnership and reconciliation with Indigenous peoples

Achieving these generational goals would mean that by 2050 Canada has an energy system that:

- **Contributes to reconciliation between Canada's Indigenous and non-Indigenous peoples.** Our energy system fosters engagement with and development in Indigenous communities, while fully respecting aboriginal and Treaty rights, traditional knowledge, values, perspectives, and honouring the UN Declaration on the Rights of Indigenous Peoples. It includes Indigenous peoples, and enhances their environmental and social prosperity and personal well-being.
- **Is inclusive, accessible, and equitable to current and future generations.** Canada's energy system supports the well-being of Canadian communities, recognizes its responsibility to global communities, ensures all voices and perspectives are included in how decisions are made, and that all Canadians can share in its benefits. Special consideration is given to youth and marginalized populations, including their energy needs.

---

<sup>1</sup> We believe Canada should strive to be the hydrocarbon producer of choice in and for the transition to a low-carbon global economy. This means pursuing innovation to dramatically reduce emissions (and costs) in production, finding alternative uses for hydrocarbons beyond combustion, and capturing and utilizing carbon dioxide for materials.

- **Enhances the health of our natural environment and the health of Canadians.** Canada's energy system contributes to positive long-term impacts on ecosystems, including air, water, land, and biodiversity, and is restorative to ecosystems and natural capital. Energy production and usage is designed in a manner that enables and encourages Canadians to live a healthy life.
- **Is net carbon-neutral for the production and consumption of energy in Canada.** Policies, technologies, and processes are in place that have resulted in carbon neutral emissions and fostered innovation to expand non-combustive utilization for carbon and carbon dioxide. There is no net accumulation of carbon in the atmosphere as a result of Canada's energy system.
- **Is a continued source of economic prosperity for the country and its provinces.** The energy system continues to provide significant short and long-term economic benefits and jobs for Canada and its regions. It fosters an attractive investment environment for energy producers, energy users, and entrepreneurs.
- **Is diverse, resilient, and adaptable.** A diversity of energy sources, strong and flexible connections between energy sources and uses, and a distributed network help ensure Canada's energy system is resilient and adaptable to changing circumstances.

The Generation Energy Context Paper states a desire for our energy future to be shaped by the core values of Canadians. The Context Paper further states that among many other things, Canadians expect that energy will be developed safely and sustainably, that it will remain affordable and accessible, that Indigenous peoples' rights will be respected in energy decision making, and that energy industries will continue to be a source of jobs and growth across Canada. The EFL agrees enthusiastically with all of this.

### **Question 3: What are the pathways and guide-posts along the way?**

We recognize that our energy system underpins and depends upon all other systems that shape our society and that we will not achieve a "fit for the future" energy system overnight. We will need to invest strategically to enable this transition. We need to mitigate risks and capture opportunity in the short-term *and* enable the transformational initiatives that will shape the future.

The transition from today's energy system to the one the future requires of us calls for a sustained commitment to innovation and collaboration that involves people and

organizations across the country. It will also require continuous evaluation and adaptation given the dynamic and evolving nature of social, cultural, economic, and environmental factors.

We believe the following innovation pathways are the most promising, high leverage areas to focus our collective efforts. While we know they will evolve over time and that some pathways may advance more easily than others, we believe they all are important. It is also worth noting that there are many initiatives already under way across Canada to make progress on each of these pathways, including [initiatives](#) of the Energy Futures Lab. (Some of these are profiled in short videos [here](#).)

- **Radically increase carbon efficiency and lower environmental impact in energy production.** This means we need to increase the deployment of existing technologies that increase the energy efficiency of our energy production and seek breakthroughs that significantly improve energy efficiency in the extraction, production, transport, and transmission of all forms of energy in Canada. For example, it could include expanding the application of technologies to capture and store carbon.
- **Pioneer innovative, high-value uses for carbon and carbon dioxide beyond combustion.** This means placing a strong focus in our innovation system on developing and commercializing ways to use carbon as a material in various applications.
- **Make major advances on the development, manufacturing, and deployment of renewable energy in every region of Canada.** This means taking advantage of the potential for solar, wind, geothermal, and other forms of renewable energy by accelerating renewable energy development through innovative policies, financing schemes, partnerships, and business models. Attention should be placed on developing such opportunities in Indigenous communities.
- **Dramatically reduce energy use through the development of smart energy communities across Canada, including in Indigenous communities.** This means developing and implementing community initiatives that greatly increase energy efficiency, for example, through urban design that promotes active transport, and community energy plans that support district energy and net-zero building design. It also means making major advancements in energy efficiency in non-energy producing industries across Canada.

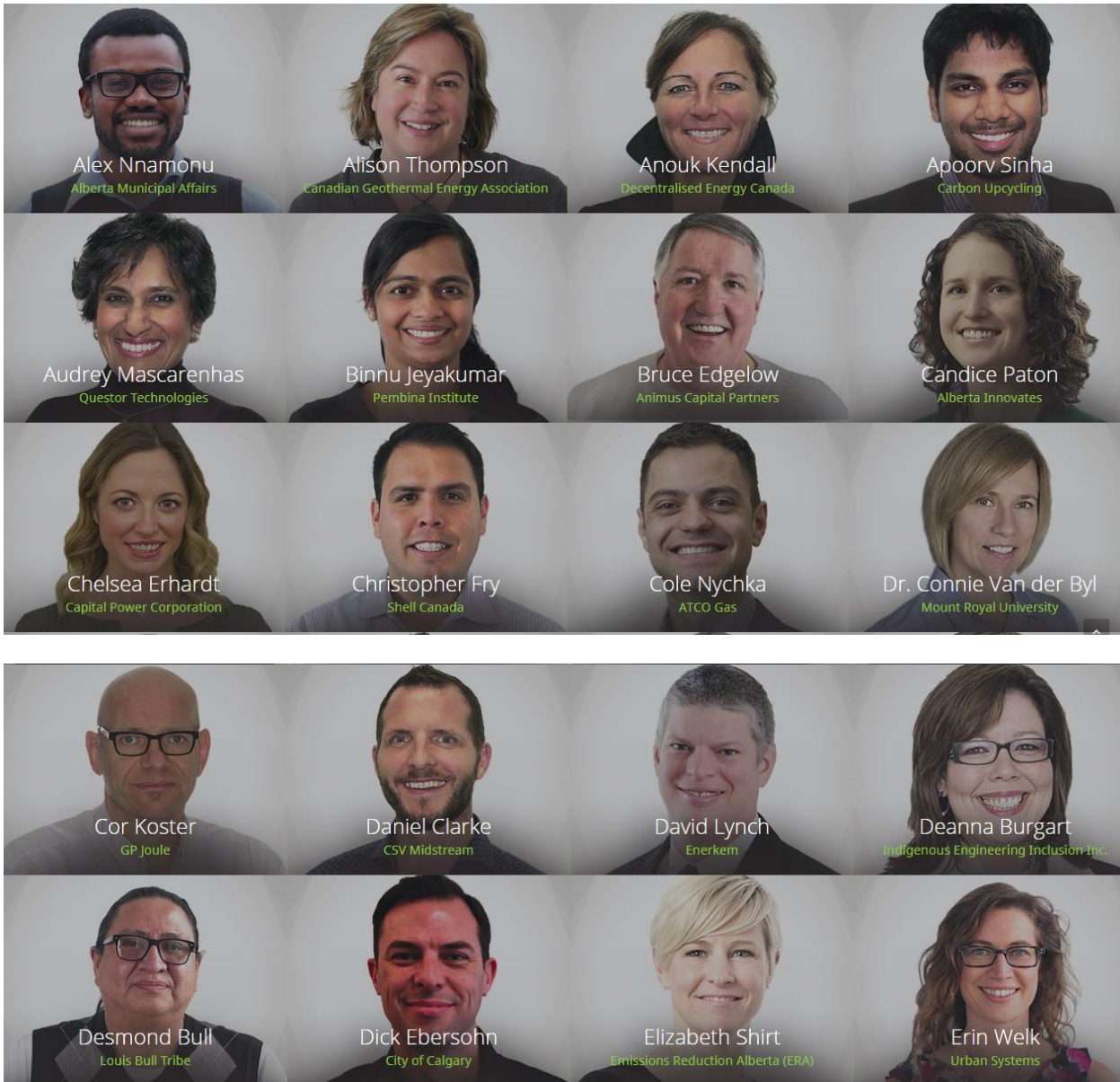


- **Empower Canadians to participate in more local and distributed sustainable alternative energy supply.** This means championing policies that remove barriers to a more distributed energy system and developing financial models that facilitate an increasing number of Canadians and Canadian organizations in becoming suppliers of energy.
- **Build awareness and literacy broadly across Canada about the full spectrum of energy choices and costs.** This means empowering citizens to make choices that reduce their energy consumption by providing them with information on options for more efficient energy use. It also includes building support for stronger policies to better recognize the full cost of energy in its price, in particular carbon pricing.
- **Pioneer transparent policy development processes and decision-making tools that reflect long-term thinking and integrated approaches.** This means modeling and sharing collaborative approaches on how we make decisions on energy that take an inter-generational, holistic, and systems-based perspective, including alignment with other governments (for example in a national energy strategy).
- **Engage the hearts and imaginations of Canadians in energy system transition.** This means involving artists and cultural communities to inspire and engage Canadians in the possibilities offered by an energy transition.
- **Support the transfer and development of new skills in Canada's labour force to help workers and communities thrive in a low-carbon economy.** This means working with businesses, labour organizations, as well as professional and educational institutions to help workers build new competencies and knowledge to take advantage of new employment opportunities offered by the energy transition.
- **Support initiatives where Indigenous peoples lead innovation in sustainable energy development.** This means enabling alternative energy development in Indigenous communities by contributing to capacity development and empowerment in a culturally and spiritually appropriate manner.
- **Dramatically reduce energy used for the transportation of people and goods.** This means developing and implementing initiatives that leverage new and transform existing infrastructure to reduce demand on transportation fuels and associated greenhouse gas emissions, in a way that meets Canadians' desire for safe and convenient mobility.

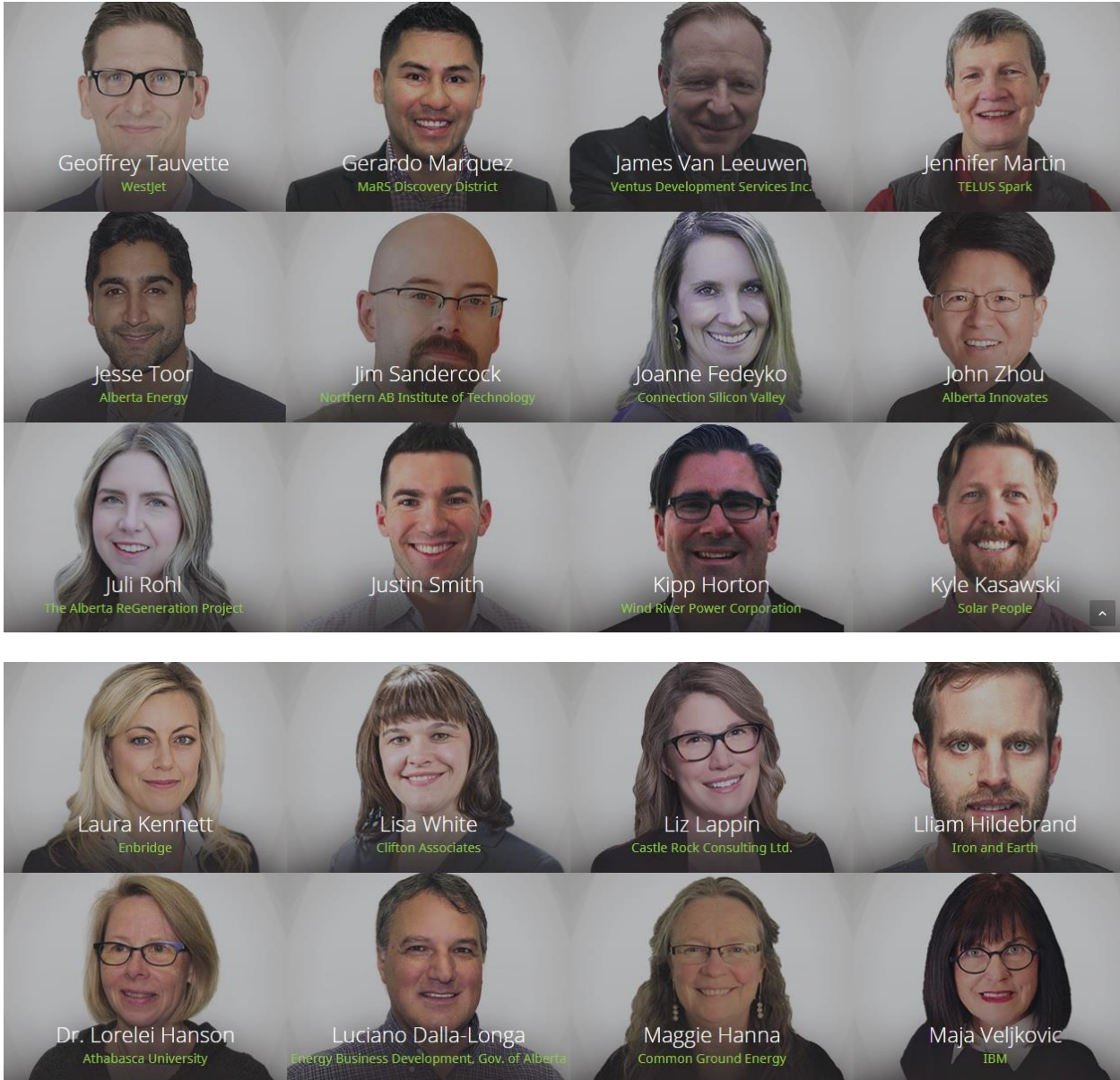


## Appendix A: The Energy Futures Lab Fellowship

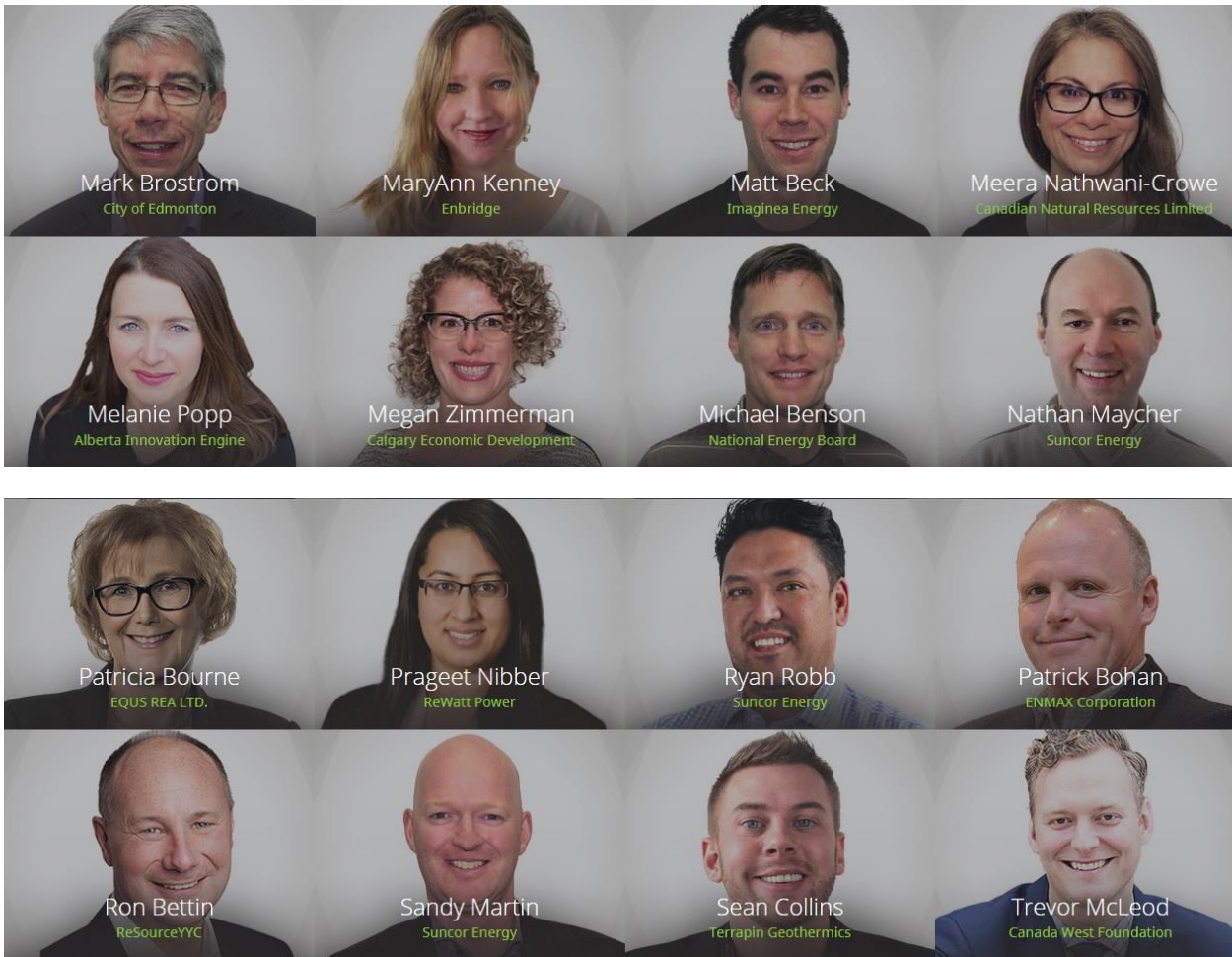
The Energy Futures Lab Fellows are a diverse group of innovators and influencers shaping the energy system the future requires of us. Their bios can be found at [energyfutureslab.com/fellows](http://energyfutureslab.com/fellows).



# ENERGY FUTURES LAB SUBMISSION TO GENERATION ENERGY



# ENERGY FUTURES LAB SUBMISSION TO GENERATION ENERGY





## **Appendix B: Who is The Natural Step Canada and what is a Sustainability Transition Lab?**

The Natural Step Canada is a national charity whose mission is to tackle climate change and accelerate the transition to a TRULY sustainable society that thrives within nature's limits. Through our academy, advisory services and Sustainability Transition Labs we use best-in-class science, systems-thinking and facilitation to help individuals and organizations collaborate, solve complex problems, foster innovation, optimize performance and drive systems change.

The organization was founded in 1996, is headquartered in Ottawa, Ontario, and has staff and associates across Canada. We are a member of The Natural Step International - a global network of individuals and organizations who have been at the forefront of sustainable development since 1989 - now operating in 12 countries on 4 continents.

The Natural Step's approach has been utilized by countless organizations worldwide including IKEA, Nike, Starbucks, Interface, Pratt and Whitney Canada, The Co-operators, the Landmark Group of Builders, countless universities, and many municipalities in Canada and around the world including the Resort Municipality of Whistler and the Town of Canmore, the Cities of Edmonton and Ottawa, and international municipalities such as Dublin, Ireland and dozens of municipalities in Sweden.

To learn more go to [naturalstep.ca](http://naturalstep.ca) and check out our current Sustainability Transition Labs at [energyfutureslab.com](http://energyfutureslab.com), [circulareconomylab.com](http://circulareconomylab.com) and [naturalcapitallab.com](http://naturalcapitallab.com).

### **Sustainability Transition Labs**

We live in a time of great uncertainty, complexity, and unprecedented systemic challenges. There is growing recognition that addressing complex sustainability challenges requires unprecedented collaboration and new ways of working across sectors and across scales. The Sustainability Transition Lab is an approach to tackling these complex social and environmental challenges.

It blends The Natural Step's expertise in designing and facilitating transformational change towards sustainability with leading approaches to multi-stakeholder collaboration. The process builds capacity in a group of diverse stakeholders to tackle "wicked" sustainability challenges and create breakthrough solutions by learning to think, work, and innovate together differently.