

August 2021

Climate Preparedness and Adaptation Strategy

Public Engagement



Resource Municipalities
COALITION

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Introduction

The Resource Municipalities Coalition (RMC) is a collaborative initiative of the Northern Rockies Regional Municipality, City of Fort St John, District of Taylor, District of Tumbler Ridge, and the District of Mackenzie. The shared objective of the RMC is to promote responsible resource development that sustains communities by addressing impacts on ecosystems, cumulative impacts to a healthy natural environments and supports citizens by ensuring the provision of effective social services that improve quality of life while building a sustainable future.

The RMC recognizes the overwhelming evidence that the planet has warmed during the Industrial Era and that human activities have been a contributing influencer. While historical data demonstrates that the planet has previously gone through warming and cooling cycles, human influence has accelerated these natural occurrences exponentially.

The Industrial Era has shaped human lives and its impacts have shaped the future wellbeing of our planet. We recognize that the impacts of climate change are global and require a global response. And, it is our responsibility as human beings to respond individually, as communities, and as nations. The RMC applauds the Government of British Columbia for acting to anticipate, respond to, and recover from extreme weather events and emergencies, and for planning for future impacts such as water shortages, food security concerns, and rising sea levels.

At the Climate Adaptation Summit 2021, world leaders agreed that climate change will only be stopped through mitigation, but surviving climate change depends on adaptation.

It is from this perspective that the RMC submits its input to the Government of British Columbia's request for public input on the Climate Preparedness and Adaptation Strategy, Phase 2, 2022 -25 (Strategy), and has provided comment on the four (4) pathways identified within the draft document.

- Strengthen foundations for success, including expanding data, monitoring, education, and partnerships.
- Enhance community climate resilience.
- Foster resilience of species and ecosystems in a changing climate; and
- Advance a climate-ready economy and infrastructure.

Our hope is that the Government of British Columbia will review and provide feedback to British Columbians on what they heard through this process and offer additional opportunities for meaningful engagement. The strategies and actions that result from this process will have generational impacts on the quality of life for all British Columbians. The impacts of climate change are generational and as stewards of our future, government and community must be committed to ensuring the path forward is effective and sustainable.

Identified Pathways

Pathway 1: Strengthen Foundations – Data, Monitoring, Education, and Partnerships

Climate adaptation is the responsibility of government, community, organizations, and the public, and requires collaboration and cooperation from all parties to face the challenges of climate change together.

The leadership of Provincial and Local Government is critical to the success of adaptation. This robust strategy, supported by work previously done by the RMC (“British Columbia’s Energy Roadmap”, Appendix I, in 2018), identifies a need for developing scientific based metrics and a platform of measuring change. Establishing a foundation of strong credible scientific data, effective monitoring systems that are user friendly, education systems that provide a holistic approach, and meaningful partnerships will help to advance the strategies of the province in an effective and beneficial way, and will help to prepare British Columbians for the future.

The strategy is built on the fundamental premise that geographical differences and diverse ecosystems within the province will result in disproportionate effects and therefore will require varying adaptation plans to address climate change. The diversity of impact amplifies the need for credible scientific data that is accessible to all British Columbians for their use and so that they can contribute to the shared knowledge base.

Continuous collection of data will ensure climate risk information is current and relevant, locally, and provincially. Active updating and monitoring of data will improve community-based plan management and provide for predictive modeling, trend analysis, and long-term planning. Access to local data, as well as regional, and provincial data, will help communities to understand influences outside of each individual jurisdiction and provide predictive planning tools for mutual aid, emergency planning and other shared supports.

Being able to recognize and understand the impact of climate change on a community does not presuppose that all communities will be able to adapt on their own. The leadership and support of the Provincial Government and surrounding municipalities will be a critical requirement for the safety and security of some small communities. Provision of resources, education, and the establishment of partnerships, shared service agreements and mutual aid agreements will ensure effective adaptation plans for of climate change impacts and foster community-based climate resilience.

The adoption of a framework for community-based climate resilience planning will provide an opportunity for Indigenous Nations, Municipalities, and regional districts to develop, monitor, and manage adaptation plans collaboratively and will offset the impacts of climate change from a local perspective - through proactive leadership.

Local leadership allows an active response to infrastructure needs of the future, allowing for early adaptation and dialogue on infrastructure needs, and the support required to facilitate these needs.

Adaptation to climate change strategies will have the greatest impact through the engagement of future generations. Early education at school and in communities will build a generation who understand the impact that adaptive strategy can have on resilience, sustainability, and quality of life. They will be the next influencers.

Pathway 2: Enhance Community Climate Resilience

Climate change and climate impact significantly affect public health and social service programs in community. Adaptation and mitigation planning for social and health services are integral to long term community climate resilience. The provision and resourcing of these services is the responsibility of the Provincial Government, but local governments are best suited to understand their local impact.

While some communities are equipped to manage and develop such strategies, others have limited resources and will depend upon the province to provide leadership in these areas. The provinces development of accessible data, guidance materials, and the necessary tools will provide community and community organizations an opportunity to develop and implement plans that are specific to their community or region.

Working with the province, communities should lead the development of adaptation plans, utilizing cultural knowledge that addresses specific challenges impacted by climate change, while recognizing the implication of such changes to community health and wellness.

A health care system that recognizes the individual challenges of rural and remote communities, supports health care professionals, improves access, and provides supports for community-based programs associated to mental health and end of life care creates strong and resilient communities. These communities are capable of executing robust adaptation plans, and in turn support the success of communities throughout the province.

Developing an in depth understanding of the impacts of climate change on the health of British Columbians must be about more than infrastructure. We need to focus on the professionals who are meeting the needs of British Columbians. The current framework of regional health authorities is challenged to provide health care for rural and remote communities. Migration of populations to urban centers resulting from climate induced lifestyle changes will compound the challenges to the delivery of quality health care in smaller urban centers.

As well, community climate resilience must consider the implications of population shifts to urban centers and the impacts that this will have on food security and social frameworks. While recent global health concerns may have seen a temporary shift of urban residents to rural areas, this migration represents less than 2% of the global population and is countered by forecasts of 40% growth in the global population residing in urban centers by 2050, IEA report “Empowering Cities for a Net Zero Future”, July 2021.

Again, regional engagement on the impact of population shifts, on food security and social frameworks, will ensure that residents of both rural and urban centers have continued physical and economic access to adequate amounts of nutritious, safe, and culturally appropriate foods.

And again, the leadership of the senior level of government with collaboration from local governments is critical to effective and sustainable adaptation strategy.

Pathway 3: Foster Resilient Species and Ecosystems in a Changing Climate

Industrial Era induced climate change and ecosystem degradation has led to complex species management concerns within the diverse ecosystems and unique landscapes of British Columbia. Climate change, coupled with a growing and increasingly urbanized population, will continue to influence ecosystems, leaving lasting impacts that will affect generations to come.

Climate changes impacts are causing land and water species to shift their migration patterns, some species are in decline while sleeper species like the Pine Beetle or Spruce Beetle have become more prominent, as a result of changing ecosystems. Stewardship activities and supporting policy needs to adapt to protect and restore habitat where possible and strengthen ecosystem resilience through collaboration with communities.

Nature-based solutions developed through partnerships with Indigenous communities offer relevant and effective adaptation strategies. Combined with other strategies, nature-based solutions can help to address postfire ecosystem restoration, water supply challenges, habitat preservation, rising sea levels, and food security. These changes will also influence local economies and the impacts of nature-based solutions, or any solution must consider the economic impact to community and British Columbians.

The positive impact of local knowledge and cultural values help to ensure community-based adaptation plans reflect the diverse and unique ecosystems within British Columbia, while enhancing economic opportunity, improving education, and building stronger relationships between communities.

Pathway 4: Advance a Climate-Ready Economy and Infrastructure

Natural resources influence a healthy, innovative, and resilient economy that brings value to all British Columbians. This value helps to fund effective health care, education opportunities, infrastructure development and maintenance, and social frameworks that improve the quality of life for all British Columbians.

Impacts of climate change to the economic framework of the province will have long-term implications and solutions must be a collaboration of government, community, and business/industry sectors. Our goal is to build a resilient economy that is adaptive to the impacts of climate change supports a resilient workforce and food security.

Transportation infrastructure is critical to the movement of goods and services. Transportation is a primary component of our economy; nationally, provincially and locally and therefore, this critical network of roads, bridges, pipelines, and rail must continually be enhanced to withstand the impacts and effects of weather-related incidents. Planning must include scheduled improvements and overbuilt infrastructure which have been designed based on local knowledge, which utilize nature-based or innovative solutions, and which are intended to withstand extreme weather events. Effective support of transportation infrastructure is a critical component of economic development for business, industry and community and supports the safe and efficient transportation of British Columbians.

Policy that supports infrastructure adaptation and addresses the impact of changes in weather patterns influenced by climate change should be developed and implemented utilizing Building Codes, Zoning Bylaw, Official Community Plans, Fire and Emergency plans, and established best practices. And, this policy should be applicable to public and private sector facilities inclusive of agricultural holdings and should be enforceable through provincial and municipal agencies. Financial support for the creation of this robust policy and enforcement framework must be made available to organizations who bear the responsibility for policy creation.

Collaboration between Business, Industry, Communities and the Province will ensure robust policy and implementation and enforcement strategy. We recognize that the connections between business and community are the foundational fabric of a community's character, and this relationship should include planning to mitigate climate risk from an operational and social perspective. And ongoing data collection and assessment is required to ensure continuous adaptation and improvement.

Summary

Building a climate-ready economy requires climate ready communities, businesses, and industries; and the creation of robust, effective, and sustainable plans will require the full cooperation, collaboration and engagement of those same communities, businesses, and industries.

Therefore, the RMC would like to strongly encourage a follow-up engagement strategy “What we Heard”, with feedback opportunities, in addition to the current public “Share your Thoughts” process, as part of the creation of the Climate Preparedness and Adaptation Strategy which is scheduled for release in the Spring of 2022.

Recognizing that the continued and rapid changes in climate mean that time is of the essence; and that the work completed through the Strategic Climate Risk Assessment and the CleanBC plan, have seen significant engagement. We encourage government to honor its mandate for putting people first and building a strong, sustainable economy that works for everyone, as the strategies developed within the Climate Preparedness and Adaption Strategies will be generational.

By putting British Columbians first we will create informed and effective adaption strategies that develop resilient and healthy economies in communities where British Columbians live and thrive now and into the future.

Sincerely,



Mike Whalley

Executive Director

Resource Municipalities Coalition

Appendix I



British Columbia's Energy Roadmap

White Paper Submitted to Energy, Mines and Petroleum Resources

Resource Municipalities Coalition

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Introduction

The Resource Municipalities Coalition (the Coalition) is an organization composed of municipal governments, Chambers of Commerce, business and service providers that are focused on all aspects of resource development in British Columbia. It began as a series of regional collaborations and now provides a unified voice and ensures that they are involved and engaged in resource development decisions that impact them directly or indirectly. Dr. Charles Jago described the Coalition in a 2015 speech at the Upstream Update Forum - as an organization that seeks to tackle issues which require striking a balance between preserving British Columbia's unique and exceptional natural environment while at the same time exploiting the immense natural resources that this environment has to offer a global economy (Jago, 2015). Furthermore, the Coalition believes that British Columbia has a role to play in ensuring that energy resources from other provinces are able to reach their destination. Given recent major announcements regarding LNG Canada, the Coalition continues to seek the balance between environment and economy today and into the future.

The intent of this paper is to inform the Province of the discussions, themes, and insights that arose from an Energy Symposium that was hosted by the Coalition on February 28, 2018 in Fort St. John. At this symposium, over 120 energy industry leaders and stakeholders came together to provide input and guidance regarding the Energy Roadmap that is being created by the provincial government. Both summary and detailed notes of the information provided at the Energy Symposium can be found in Appendices A and B. It is understood that the development of an Energy Roadmap is one of the goals set out in the Ministry of Energy, Mines and Petroleum Resource 2018/19 – 2020/21 Service Plan (Government of British Columbia, 2018) and is a key step in carrying out the provincial government's commitment to building a strong, sustainable economy.

Throughout this paper, the term *energy* is used extensively and for the purposes herein, energy is defined as including those resources, both non-renewable and renewable, that are extracted, exported and/or used in British Columbia. While not an exhaustive list, common forms of non-renewable energy include natural gas, oil, coal and nuclear, although it is recognized that the government will not allow the production of nuclear power in British Columbia (Government of British Columbia, 2007). Common forms of renewable energy – although not a complete list – include hydropower, biofuels, solar (photo-voltaic and thermal), wind, tidal and geothermal (high temperature and low temperature). In this white paper, the focus will be on natural gas and oil non-renewables, and on hydropower, biofuels, solar and wind renewables.

Furthermore, the term *responsible* is also used extensively in conjunction with development related to the energy industry. The Coalition defines *responsible* in the following manner:

Responsible – establishing science-based precautionary limits of a projects impact on ecosystems, addressing cumulative impact on climate, air, water, land and wildlife, focuses on improving the quality of life, ensuring social services and infrastructure keep pace, taking into consideration that public interest comes first, and building a sustainable yet, diversified future.

Northern British Columbia's Expertise and Passion for Energy – The 2018 Energy Symposium

An Introduction to the 2018 Energy Symposium

On February 28, 2018, the Resource Municipalities Coalition, then the NEBC Resource Municipalities Coalition, held the *Developing British Columbia's Energy Roadmap* symposium in Fort St. John. The symposium was intended to be an opportunity for various leaders and stakeholders directly involved in the energy industry within northeastern British Columbia to meet and share ideas with the purpose of providing insight for the Province as it seeks to develop its Energy Roadmap. With over 120 attendees participating in this symposium, much passion and experience was captured in the discussions held and themes that arose, with hopes that they would be reflected in the Energy Roadmap for British Columbia.

Energy Symposium Discussion Topics

There were 10 topics of focus at the round table discussions:

- 1) Climate/Environmental/Social Responsibility;
- 2) Electricity/Demand Side Management;
- 3) Natural Gas;
- 4) Renewables;
- 5) Innovative Clean Energy Fund (for research & development)/Remaining Competitive;
- 6) Green Building;
- 7) Transportation;
- 8) Carbon Policy;
- 9) Relationships with First Nations and Landowners; and,
- 10) Emerging Opportunities/Adaptation/Adoption of New Technology.

The overarching themes that emerged from these discussions are discussed in the remainder of this section.

Theme 1 - Engagement

A significant overarching theme of the symposium was the need for improved engagement by the Province with First Nations, industry, stakeholders, local governments and the general public. Engagement needs to be timely, effective and transparent, while providing ample opportunities for education and learning, consultation and communication. The Province is encouraged to follow the International Association of Public Participation core values and code of ethics and use the spectrum to determine the appropriate style of engagement for each opportunity.

Early and Transparent Education

It is imperative for all members of a community, not just those directly involved in the energy industry, to be educated on energy, economics, sustainability, and the climate of the industry from credible resources that communicate all aspects of the industry in a transparent and factual manner. It is recognized that there is a clear lack of understanding regarding the use of energy resources in everyday life and how changes to the industry impact individuals on a personal scale. This lack of understanding has significant impacts on the ability of British Columbians to have a respectful, factual dialogue based on credible information.

Ensuring that a comprehensive, factual understanding of the energy industry is available and received by community members will assist in ensuring that people are informed and educated. This then reduces the occurrence of misunderstanding and a disenfranchised public.

One of the most effective ways to increase the knowledge base associated with the energy industry is to engage and involve future generations in conversations surrounding the energy industry today. Early education in schools surrounding the topics of science, energy, resource generation and sustainability is essential for a well-rounded understanding of the energy industry and how the industry operates, while instilling the desire to seek new and innovative ways to improve industry operations.

In addition to increasing the knowledge base associated with the energy industry is the need to ensure that the information being presented conveys all aspects of the topic, including associated benefits and drawbacks of various aspects of the field. This increases the credibility of the information being presented, reduces misunderstanding and mis-communication, and enables the recipient of the information to make an informed decision. This is essential to making sound decisions regarding the energy industry in British Columbia and sharing the innovations and learnings of northeastern British Columbia.

Engagement and Participation

A second critical element that arose under the theme of engagement is the need to develop partnerships and ensure that engagement is early, often and occurring throughout a project. Partnerships must encompass early involvement in the process, even developing the process collaboratively. This is essential in establishing a true partnership from the very onset of an energy industry project. A true partnership combined with successful engagement will ensure that all stakeholders are heard from the onset of a project and ideas and feedback can be incorporated into the process in an organic and meaningful way.

Communication

Effective communication is the responsibility of all stakeholders – industry, all levels of government and public. It is vital for communication to be transparent and open in reporting statistics, marketing, future innovations and presenting all aspects of a given project. Furthermore, effective communication must be established around the basics of trust, respect, and effective listening. Communication methods must be comprehensive and multi-pronged in order to reach the widest audience possible, and messaging must be clear, factual and in simple language. Thoughtful, approachable, and transparent communications will increase awareness of the current energy industry, support key messages and minimize misinformation. It is essential that the public can trust the message that they are receiving from the energy industry; transparency should be the cornerstone in building credibility and trust.

Theme 2 – Developing Metrics and Measuring Changes

Another significant theme that emerged from the Energy Symposium was the need for clearly defined targets, established metrics and reliable, scientifically accurate measurements for social, economic, and environmental impacts. Targets communicate what the Provincial government is aiming for through its energy industry and are essential when measuring change in order to evaluate how British Columbia is doing. However, in order to measure changes associated with the energy industry, whether from renewable or non-renewable energy, it is imperative that an accurate and credible baseline is established early in the process with clear metrics that will be measured. This will enable changes to be more accurately measurable in the future.

Establishment of a Targets

A critical component of measuring changes is to have a clear target established. The *Pathways to Deep Decarbonization in Canada* report published by the Sustainable Development Solutions Network and the Institute for Sustainable Development and International Relations noted that in May of 2015, Canada pledged a 30% reduction in greenhouse gas emissions from 2005 levels by 2030. This reduction target is considered ambitious given current emission trends and both federal and provincial policies. It appears that the only way to achieve this is through a suite of aggressive provincial policies and new federal policies that must be implemented and acted upon immediately.

The Coalition asks the Province to determine if a desired future target for greenhouse gas emission reduction will be a component of the energy roadmap. If so, will the Province be striving to be in alignment with Canada's national target? Is this reasonable for an energy-rich province such as ours? Will this impact the Province's own greenhouse gas emission targets as set out in the *Greenhouse Gas Reduction Targets Act* and its implementation? Will the target reflect cumulative impacts as they relate to climate, air, water and/or wildlife? Having a clearly defined target(s) for the Energy Roadmap will enable the Province to measure its strides towards that target.

Establishment of a Key Indicators Dashboard

Significant conversation occurred at the Energy Symposium with respect to having a consistent, reliable and credible source for a host of statistics, or a key indicators dashboard, that would be used to measure British Columbia's progress towards the target(s) it identifies in its Energy Roadmap. It is felt that such a resource would serve many purposes for industry, the public and the provincial government. It is recognized that many resources already exist relating to the energy industry. These resources include the National Energy Board, Canadian Association of Petroleum Producers, Energy BC, Statistics Canada, Natural Resources Canada, Energy Council of Canada, Petroleum Services Association of Canada, Government of Canada and the Government of British Columbia, in addition to national and provincial organizations related to the various forms of energy. In order to obtain information on the vast energy industry within British Columbia and Canada, various sources must be researched in order to obtain clear, credible, current information.

In order to improve the energy literacy of citizens and to address the education objectives of section 2.3.1 above, industry, local governments and attendees of the Energy Symposium support the idea of a credible, central resource for statistics, reports and other relevant information related to the energy industry. It was suggested that the provincial government initiate the development of such a resource, recognizing that at this time, it could be a compilation of existing information. Over time, new statistics and information may be developed.

Establishment of Metrics

Through the compilation of a key indicators dashboard, a host of metrics will be assembled. These metrics will likely be primarily quantitative, however qualitative metrics are also vital to measuring change and investigating how the Province is moving towards the targets and objectives of its Energy Roadmap. In addition, establishing metrics and measuring changes will enable British Columbia to distinguish itself and its energy industry from that in North America and globally.

In order to determine trends, much reliance is placed on quantitative data, or data that can be directly measured. Much of this type of data is already collected by industry, government and various other organizations across the country – often difficult to obtain due to the diversity of organizations gathering the data. Ensuring that accurate quantitative data is collected regularly and consistently by a single entity, enables trend analyses to occur more easily. As noted by participants at the Energy Symposium, the Coalition anticipates that new quantitative data will be required in order to fully understand the impacts of the energy industry.

Clarity of energy use, no distinction is made between energy used as an energy source - energy used to produce goods - energy used to transport goods.

In addition to quantitative data, qualitative data, or data that is more descriptive in nature and cannot be measured numerically, is also critical to evaluating change. Qualitative data is much more about what is seen, heard and felt versus tangible, documentable numerical data, however; qualitative data is often supported with quantitative data. It is important that both metrics not only provide information on how the energy industry is doing, but also measure how the industry is doing with regards to the Sustainable Development Goals established by the United Nations, of which Canada is a signatory to (United Nations Foundation, 2015). In order to measure industry impacts on the Sustainable Development Goals, metrics that measure changes in the five pillars of sustainability are used. These five pillars include – environmental, economic, social, cultural and health (Government of Canada, 2017). At the Energy Symposium, much conversation revolved around sustainability, specifically with respect to participants not wanting to work, live and play in a community that isn't sustainable in all five pillars. In addition to their need for sustainable community, industry members also articulated how important sustainability on all fronts is.

The Coalition believes that there is an opportunity for the Provincial government to use these five pillars of sustainability, coupled with qualitative and quantitative metrics, to evaluate the level of change that has occurred as a result of energy industry activity. In addition, by using the five pillars of sustainability, a direct correlation can be made back to the United Nations Sustainable Development Goals and evaluating how British Columbia is doing in striving towards those global goals.

Theme 3 – Spheres of Consideration

At the Energy Symposium, a theme that was repeatedly commented on was that there are many unique aspects to the energy industry in northeastern British Columbia that must be taken into consideration when educating citizens, communicating with other levels of government, compiling statistics, developing messages around British Columbia's energy industry, and developing the province's Energy Roadmap.

Identifying our Energy Mix

One topic of conversation that arose at the Energy Symposium is that there is a need to identify British Columbia's current energy mix, and its desired energy mix in the future. It is recognized by participants at the Energy Symposium that the local energy mix may be different than the provincial energy mix, given our unique circumstances, such as longer, darker winters, increased transportation needs and a focus on the natural gas and hydroelectric industries, to name just a few. Identifying the energy mix for British Columbia will address many of the points already articulated, such as the need to develop a baseline assessment, provide quantitative data, measure change and to use this information as an educational tool.

Another element related to British Columbia's energy mix is identifying what proportion of that energy mix is used within British Columbia versus what is exported. It is recognized that British Columbia has an abundant energy industry that encompasses a range of energy types, some of which are more pronounced than others. From an educational perspective, communicating what proportion of our energy is:

- 1) Consumed as a true energy source;
- 2) Used to produce goods;
- 3) Used as a transportation source within the Province; and,
- 4) Exported abroad for a variety of purposes

will help educate the public on the many ways that British Columbia's energy is used, both within the province, country and marketed abroad. This information will also be critical in establishing a baseline energy mix to be used in the

Province's Energy Roadmap, and to evaluate British Columbia's energy mix movement in the future with respect to the desired changes in energy mix and exports. In addition, establishing a baseline energy mix will enable the Province to compare itself against Canada's energy mix, as presented in the National Energy Board's Energy Demand by Sector (National Energy Board, 2018).

Demand Management is Different Across British Columbia

British Columbia covers a vast geographic area. It spans from marine shoreline and river floodplain in the Lower Mainland to the Rocky Mountains along the east and prairie land in the northeast. Over 50% of British Columbia's population can be found living in urban centres in the southern part of the province (Welcome BC, 2018). Much of British Columbia is rugged and wild, connected only by the province's major highways and railways that wind through multiple mountain ranges.

With such a diverse geography come differences in energy demand. For example, northern communities require more electricity for lighting and more natural gas for heating buildings in the winters that are longer, colder and darker than found in southern communities. The Lower Mainland has more overcast days while northern inland communities have colder yet sunnier days. The differences in British Columbia's vast geography results in many implications on what tools are available to a property owner to reduce their energy demand. For example, using solar panels to provide energy to a home is more likely to be successful in areas of the province that have more days of sunshine than in areas with prolonged cloud cover.

Participants at the Energy Symposium noted that a critical element to be incorporated into the Energy Roadmap is strong direction regarding demand management. It is imperative that demand management policies, regulations and consumer tools address both the supply of energy resources as well as the demand for energy resources and is reflective of the unique differences that exist across British Columbia. Furthermore, demand management should be customized for different sectors to achieve specific energy demand management results. For example, for the residential sector, demand management should be made appealing to the consumer in order to influence change and be significant enough to have an impact on energy consumption in that sector. In the commercial and industrial sectors, demand management may need to have an increased focus on tools and techniques that benefit business owners in reducing overall energy demands.

Transportation Requirements

Participants at the Energy Symposium noted that transportation needs are different in northern British Columbia as compared to other areas of the province. The energy used for transportation purposes, whether of people or goods is greater in northern British Columbia as a result of the vast distances between communities and transportation hubs, infrastructure, temperature and environmental conditions and servicing, as compared to southern and more urban areas with greater access to transportation options, infrastructure, servicing, storage and milder environmental conditions. Public transportation systems in northern British Columbia have been severely reduced, if not eliminated altogether and major transportation corridors are felt to not be safe due to their age and condition.

The transportation and storage of resources is also an ongoing challenge in northern communities, as expressed by participants of the Energy Symposium. As a result of British Columbia's transportation infrastructure, the current mode of transporting resources from the north around the province is also seen as a tremendous user of energy resources. Discussions at the Energy Symposium articulated the need to investigate greener transportation options that make sense and work in the north.

With regards to transportation requirements, the Coalition would be very interested in learning what proportion of British Columbia's energy demand is as a result of transportation needs across the province. With the development

of the Energy Roadmap, the provincial government could identify its current energy consumption as it relates to transportation in the key indicators database mentioned in 2.4.2 above and identify targets for reducing energy consumption for transportation purposes.

Conservation as a Form of Energy

Another unique aspect that requires consideration is energy conservation. The Coalition recognizes that conservation is a form of energy, and that it greatly benefits from consumer education through demand management and from policy direction, regulatory changes and incentives to implement that direction.

As discussed above, demand management should be different both across British Columbia and across sectors. In conjunction with managing demand is the need to seek out alternative means of generating energy and reducing our reliance on non-renewable resources. Northeastern British Columbia, despite actively extracting non-renewable resources to drive the local economy, continues to seek out such opportunities. This contradiction reflects the region's investment and involvement in the energy industry, as it spans almost all sectors of the industry.

Opportunities to generate energy using alternative methods abound. These, coupled with understanding the local demand enables innovative and alternative forms of energy to be explored, developed and applied. Examples include the installation of a biomass generator to provide energy for community facilities on First Nations reserves, using solar cells to power municipal operations, passive house building development and installing turbines on wastewater systems to generate electricity that is then used to power infrastructure facilities. All these local considerations and innovations have enormous potential use as a learning tool. Participants at the Energy Symposium indicated a desire to share their unique and alternative energy generating projects and learn from each other on a larger scale.

National and Global Considerations

On a national and global scale, consideration must be given to the ability of the energy industry to be responsive to forces outside of its control. The energy industry must be responsive to national and global forces and be able to adjust its course accordingly. This may include changes to how and with whom the industry conducts business, implementing innovations and improving its overall sustainability and working to develop new partnerships, to name just a few considerations. Energy Symposium participants noted the importance of national and global considerations and world markets but recognized that they are not necessarily able to influence these to a large extent.

Theme 4 – Incentives to Innovation

The final theme that arose repeatedly at the 2018 Energy Symposium relates to the need to develop incentives and foster a culture that embraces and supports innovation, in all energy sectors. There are many considerations to encourage the innovation and development of the energy industry, including who is being encouraged to be innovative and what mechanisms are used to encourage that innovation.

Creating a Culture of Innovation

An essential element that is critical to encourage innovation that was identified during the Energy Symposium is creating a culture of innovation. Participants at the Energy Symposium repeatedly expressed the desire to foster a culture of innovation from all sides – government, industry, First Nations, stakeholders, and the public. Many ideas of how to create a culture of innovation were discussed such as innovation awards, sharing successes and learning from failures, creating a policy and regulatory environment that encourages innovation (including at a local government level), financial incentives to innovate that benefit a company's bottom line while meeting provincial goals and objectives and being aware of research and development tax credits as soon as they are made available.

Incentives for Industry

Incentives to innovation can take many forms and target specific groups. From an industry perspective, the presence of policies at all levels of government that support innovation is essential. Policies that enable innovation rather than deter it, and regulations to implement those policies, are sought out by industry, as they have a keen desire to improve their performance. There was much dialogue at the Energy Symposium regarding carbon policies and taxes, and how these can be used to fund innovation. In addition, having clear targets that industry must not only achieve, but strive to improve upon, will also spur on innovation, particularly if there are tangible benefits to doing so, such as increased productivity, reduced downtime and a smaller environmental footprint. All of these translate into an increased profit for industry.

For the energy industry to seek out innovation to the highest extent possible and transform how it operates, industry requires a variety of supports to do so. Many of these supports ultimately are financial. An example of this is the carbon tax. Participants at the Energy Symposium spoke a great deal about how British Columbia's carbon tax should also be channeled into a fund for innovation, in addition to funding green infrastructure. Technological investments are often developed by industry because they result in a positive financial impact. At times, technological innovation is encouraged through financial investments by governments and other stakeholders.

Another mechanism for fostering innovation is by investing in workforce education. This has a tremendous potential to expand innovation in the energy industry. This style of incentive can be aligned with innovative research funding, both at a post-secondary level and within industry itself. Another investment form that can be used to encourage behaviors and explore new innovations are subsidies; however, these should only be an interim support of innovation. Reinvesting royalties from industry back into industry will also encourage an innovative approach and was articulated at the Energy Symposium.

Incentives for Individuals

Incentives for individuals are directly linked to managing the demand for energy resources, which was discussed in section 2.5.2, promoting conservation as a way of life, and providing individuals with the policies, regulations and tools that support the desired behaviors. Success is achieved when all are in place. Much of this support revolves around society's use of energy and the distribution of the energy mix. It is recognized by Energy Symposium participants that there is a desire from the general population to see a greater shift of the energy mix distribution from non-renewable forms of energy to renewable forms of energy. This shift must be developed in a strategic, long-term and sustainable manner. While renewable and non-renewable energy sources are necessary now and, in the future, in order to use both resources in an optimum way in the future energy mix, demand must be managed in a way that provides opportunities (and demand) for all sectors of the energy industry to innovate.

For individuals, policies and regulations are also sought to provide guidance on how an individual can make a positive impact and improve their environment. In general, individuals have a desire to reduce their environmental impact and having the tools to do so is necessary. Incentives that encourage behaviors that reduce environmental impacts benefit individuals on an emotional and financial front and are often easy to implement. For example, rebate programs for home essentials (light bulbs, toilets, appliances, hot water tanks, furnaces and windows and doors) can reduce energy consumption and environmental impacts and usually see excellent participation rates because individuals can see a nearly immediate benefit to them.

Tales of Innovation

Finally, a key element of supporting innovation is the need to accurately report back the results of innovative practices and sharing these practices and learnings beyond the local industry and community. This can be undertaken through establishing a sound baseline prior and then measuring the impacts that innovative practices have on the baseline

and ensuring that communications are clear and transparent. British Columbia has many successes that it can share and learn from.

A few highlights from Resource Municipality Coalition members, or communities within northern British Columbia are presented below. Many of these stories came up in conversation from participants at the Energy Symposium.

Saulteau First Nations Biomass Boiler and Heating System

The Saulteau First Nations in Moberly Lake has set the goal of complete energy sustainability by 2020. In order to help achieve this, they built a biomass district energy system. The system is fueled by wood pellets from local and regional forestry, and youth in the Saulteau community helped build it.

Business case projections showed that this new system could reduce up to 115 tonnes of greenhouse gas emissions, displace 72,000 litres of propane and save up to \$26,000 in energy-related costs per year. As more funds become available, Saulteau First Nations plans to increase the scale of the heating system and connect it to more buildings to further reduce emissions and energy costs (Urban Systems Ltd., 2018).

Fort St. John Micro Hydro Project

The Fort St. John Micro Hydro facility uses a turbine to generate power from the gravity discharge of sewer effluent from one of the Fort St. John sewage treatment facilities. It was the first 100 KW net metering project in British Columbia and all of the energy that it produces is fed back into the BC Hydro power grid.

In 2016 the Fort St. John micro hydro project was recognized with an award of merit at the Association of Consulting Engineering awards for engineering excellence (ACEC-BC, n.d.).

City of Dawson Creek Reclaimed Water Project

In 2010, the City of Dawson Creek partnered with Shell Canada to launch a reclaimed water project that would provide treated effluent for use in the oil and gas industry and reduce the use of potable water for industrial purposes.

The reclaimed water system takes water from the existing aerated lagoon at the City's wastewater treatment plant and then treats it using Submerged Attached Growth Reactors (SAGR) that were installed next to the lagoon. The effluent is filtered again using coagulation and disc filtration and is then disinfected and stored in a wet well (City of Dawson Creek, n.d.).

Shell Canada provided \$10 million in funding to help build the reclaimed water facility and designed and constructed a high-pressure pump station to bring in treated water (Urban Systems Ltd., n.d.).

McMahon Cogeneration Plant

The McMahon Cogeneration Plant is a natural gas-fired plant in Taylor that produces power for the British Columbia electric grid. It is jointly owned by ATCO Power and Spectra Energy and consists of two gas turbines and two steam turbines. The waste heat from the gas turbines generates steam for the steam turbines that is used by a gas processing plant operated by Spectra Energy. The use of the waste heat increases efficiency and reduces emissions as waste gases from the facility are not being burnt in flare stacks (ATCO, n.d.).

Meikle Wind Power Facility

The Meikle Wind power facility near Tumbler Ridge was designed and planned with input from Tumbler Ridge, Chetwynd, First Nations and the provincial government. It consists of 61 GE wind turbines and has a long term 25 year energy purchase agreement with BC Hydro. It supplies enough energy to equal the needs of approximately 54,000 homes per year. Compared to coal-fired power generation, wind power reduces carbon dioxide emissions by 627,000 tonnes per year, sulfur dioxide and nitrogen oxide emissions by 1,800 and 1000 tonnes per year respectively and

mercury emissions by 11 kilograms per year. It is also estimated to conserve over 1.1 billion litres of water annually (Meikle Wind, n.d.).

Pattern Energy Group Inc. – the owner of the project – was the recipient of a Clean Energy BC Project Excellence Award for the Meikle Wind power facility (Newton, 2017).

Hudson's Hope Solar Initiative

The District of Hudson's Hope is one of the most solarized communities in British Columbia per capita due to ground-mounted solar arrays at the sewage treatment plant and District swimming pool that together with roof-mounted arrays on nine municipal buildings will produce 510 kW of power per year. Structural and electrical engineering for the project was provided by the Peace Energy Co-op and Moch Electric Ltd. throughout 2017 and 2018. The arrays are grid-tied and the power produced is fed back into BC Hydro's power grid (Hudson's Hope, 2018).

Several homeowners have also installed solar arrays on their residential properties and local high school students were hired for the installation of the District arrays. Educational opportunities have been provided throughout the course of the project, leading the entire community to embrace the solar energy initiative.

Mackenzie's Biomass Power Plant

Completed in May 2015, Conifex Power's 36 MW biomass power plant is located near Conifex's Mackenzie sawmill site and will produce 230 gigawatt (GWh) hours of net energy per year to over 20,000 British Columbia homes throughout the life-span of the agreement established with British Columbia Hydro and Power Authority.

When building Conifex Power, Conifex uniquely integrated existing infrastructure from an idled newsprint facility with new equipment, including a Dresser Rand steam turbine generator system and a best-in-class fuel storage facility. In doing so, the community was able to substantially reduce building costs with a total investment of just CAD\$103.5 million. Biofuel will be provided by Mackenzie Forest Products (FP), a Conifex company responsible for sourcing, processing, and delivering approximately 172,000 oven dry tons (ODT) per year over a 20 year period (Conifex, n.d.).

British Columbia has a lot to be proud of as a diverse energy provider and should be doing more to promote these and other examples of Canadian energy leadership, both within Canada and abroad.

Further Considerations

There were two additional items raised at the Energy Symposium which the group felt should be considered as part of the Energy Roadmap.

The first item is First Nations involvement in various dimensions of energy resource development. Specific topics noted in this regarding include:

- 1) Engagement of First Nations in projects proposed by the private sector or other levels of government from the outset, and throughout project evolution; and,
- 2) Support for continuation and increase of role of First Nations as energy producers, building on the success of renewable energy projects already underway in Nation communities.

The second item which Symposium attendees felt deserved further consideration is British Columbia's role in achieving national carbon reduction targets. Attendees recognized that these targets are the focus on much discussion among and between Provinces and the Government of Canada. This observation has been underscored by related events which have transpired since the Symposium was held in the winter of 2018. Against this somewhat fluid backdrop, the Coalition recommends that the Energy Roadmap contain provisions which ensure close monitoring of

national carbon reduction targets, and a framework for responses which guide the Province's contribution to achieving these targets. Given the breadth and depth of environmentally sustainable and renewable energy resource options available in British Columbia, it follows that this province can be a major contributor to Canada's carbon reduction targets.

Recommendations from British Columbia's Energy Industry

In developing this white paper regarding British Columbia's Energy Roadmap, the Coalition respectfully requests that the results of the Energy Symposium held in Fort St. John in February 2018 be considered. These results can be conveyed through key themes which include:

- 1) Engage in understanding British Columbia's energy resources and participate in their ongoing development and use;
- 2) Develop metrics to measure many dimensions of British Columbia's energy resources, and use these metrics for ongoing measurement, management and comparative analysis (including to other jurisdictions);
- 3) Consider British Columbia's energy resources within many spheres and at multiple scales, helping to put British Columbia in context with respect to environmental, social, cultural, economic and health sustainability at national and global scales; and,
- 4) Provide incentives to innovation in many ways – to individuals and organizations, to encourage both renewable and non-renewable energy developments, and through financial and non-financial mechanisms.

More specifically, the Coalition requests that the following items, which reflect the expertise and knowledge of the Energy Symposium participants and energy industry work force, are incorporated into the Energy Roadmap being developed for British Columbia:

- 1) Determine target(s) for greenhouse gas emission reductions for the Energy Roadmap and develop a Roadmap that strives towards achieving those targets. Consider whether those targets align with Canada's targets and/or British Columbia's current targets. If they differ, clearly communicate why;
- 2) Ensure that our First Nations neighbours are involved in the development of British Columbia's Energy Roadmap from initial inception through to finalization and implementation;
- 3) Provide a clear, credible and consistent source for data that can be used to establish baseline data, support marketing efforts and share information;
- 4) Determine British Columbia's current energy mix and desired energy mix in the future. This work should view conservation as a form of energy. It should also recognize that no forms of energy will be eliminated in the future energy mix, but that the distribution of where our energy comes from will shift;
- 5) Identify the fraction of global energy impacts for which British Columbia is responsible, along with the manner in which the province fits into global greenhouse gas reduction efforts; and,
- 6) Determine what proportion of energy is used for various purposes – building heating, industrial processing, goods manufacturing, transportation and other major uses. Once determined, ensure that data is updated and made available.

Closing

The Resource Municipalities Coalition sincerely appreciates the opportunity to submit this document to the Ministry in the hope that it will aid in preparation of the Energy Roadmap.

Our membership is focused in northern British Columbia, a region of the province which is proud to host a wealth of energy resources. These resources have traditionally been focused on natural gas resources and coal, augmented by

hydroelectric energy. With the recent decision to construct the Site C Clean Energy Project, northern British Columbia will now be the single largest-producing region for hydroelectricity in British Columbia., and the only area of the province where natural gas is extracted for domestic and international markets. Beyond these traditional resources are major new developments in northern British Columbia's renewable energy resources – wind farms, biomass and solar. As an illustration of these recent initiatives, northern British Columbia now produces over 80% of the province's wind energy. All of these resources are envisioned as major components of the future energy mix of British Columbia, Canada and beyond.

British Columbia has the opportunity to participate in energy futures at all of these scales in a manner keeping with the United Nations Sustainable Development Goals. The Resource Municipalities Coalition sees a tremendous opportunity for the Ministry of Energy, Mines and Petroleum Resources' Energy Roadmap to be a leader, along with First Nations, industry, local government and stakeholders, in establishing a solid foundation and setting out a clear path forward towards responsible and sustainable energy development.

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APPENDIX A – Developing British Columbia's Energy Roadmap Symposium Summary

Symposium Summary | February 28th, 2018 | Fort St. John, BC

Overarching Themes

- Education
- Consultation
- Global lens on climate impacts
- Reliable, scientifically accurate measurements
- Efficient use of resources available to Province
- Carbon Policy development must have clear and fair calculations
- Industry slang is hampering outside public buy-in
- Sector communication about innovation, regulatory framework, and social / environmental commitment is severely lacking – must be changed
- Incentivize innovation

World Café Tables, Questions & Key Feedback

Climate/ Environmental and Social Responsibility

Should long range climate impacts and non “local” impacts be considered in this policy? How and why?

- Realistic about climate impacts – Roadmap must include components of education for local, provincial and national offset impacts of the energy produced here in the NE
- Clear about how the impacts are going to be measured.

How do we ensure that communities are left “better off” by resource development?

- Difficult to measure correlation of some metrics (high school graduation, suicide rates, happiness index, etc.) to resource development, while others are easier to correlate (senior retention rates, increased infrastructure investment, post-secondary enrollment / graduation)
- Need clearly defined rules on operating in and around community
- Infrastructure investment has been increasing here but is that due to increased investment or increased population? Causation is difficult to determine
- Need to determine standards for tracking the transient workforce population commuting in and out of the region – huge impact on the communities

How can we balance the needs of citizens (local or provincial) and communities with the overarching climate demands?

- Education is vital to telling our story and the province / nation / globe understanding our piece in overall reduction of GHGs

How do we develop our resources and still protect the environment?

- Education on the standards and framework that have been developed
- Continued consultation with stakeholders to ensure larger picture is always considered

What about the Urban Rural divide... can it be addressed in this context?

- Education & communication – connect the resources to the outputs using appropriate mediums and across all demographics in the province
- Urban Rural divide is the product of misunderstanding and lack of education. This must be addressed

It is reasonable to develop policy that requires (E) NGOs and lobbyists to publicly declare their funding sources.

- Transparency should be the cornerstone in building credibility and trust in the marketplace

Electricity /Demand Side Management

Is pricing the issue?

- Access to options for all would eliminate this as an issue

Conservation as a management tool – Effective? Adequate? Efficient?

- Conservation is not necessarily equal across the province – northern communities require more heat and lights in the winter, southern part requires more during summer for environmental equalization. Equalization for this across the province seems lacking

Consumer decisions drive resource use... how can demand management be more appealing to the consumer. Should we try to embed that motivation in policy?

- Balance is out of sync with consumer decisions regarding resource use. Is pricing the right tool to use to motivate demand management? Explore other tools to manage demand

Natural Gas

What is the true carbon footprint of our NG industry/ the global NG industry?

- Reliable measurement, communication and education of the carbon footprint as it relates to upstream, midstream, and downstream impacts, as well as the overall impact

What will the NG industry offer as a replacement for other forms of energy?

- Education with reliable scientifically accurate research; NG can be a bridge source with a reduced global carbon footprint
- Roadmap needs to make NG as the bridge fuel more transparent

Should we be looking at our NG industry as a global change agent? Can we net our global impact against our domestic impact? (Paris commitments etc.)

- Global markets are necessary to local success – jobs, economic impact, global climate impact
- Roadmap should inform federal government

Other notes

- Building out other industries around NG is vital (plastics, fertilizers, etc.)
- Expanding market beyond US (a competitor) is important to sustainability

Renewables

Viability? Short term, long term.

- Technology continues to improve increasing opportunities both short term and long term
- Affordability and scalability is a key consideration
- Transportation and storage continues to be a challenge

What is the cost and will they be able to meet long term demand as a replacement for non-renewable?

- Subsidized renewables opens up other opportunities for oil & gas usage (plastics, etc.) in the future

- Still require mining and petroleum products for the renewable sector
- Needs to be economic reason for pursuing renewables

Should we view renewables as capacity and peak solutions?

- Need for backup power will always be needed but storage and transmission are a huge challenge with renewables

Input regulations – what is the footprint of the creation of renewables

- Inclusion in new builds – viable? What is the lifespan of the infrastructure?

Can we define the desired “role” of renewables in the policy, short and long term?

- Gov't will regulate renewables but who will promote them?

Other Notes

- Diversity across all renewables, with consideration to location and viability based on geography; carbon is still part of the equation, no matter how it is viewed
- Education on renewables that is readily accessible to all and outside party as spokesperson

Remaining Competitive / Innovation Clean Energy Fund

Should ICE – Innovative Clean Energy Fund for R&D continue to be part of the overall regulatory picture. Why?

Advantages and Disadvantages

- Need for increased transparency in this fund
- Innovation funding is vital to moving things forward

Technological advances ensure efficiency how do we include provision for R&D investment in this policy. How will we measure success? How do we ensure the innovation continues for decades to come?

- Increased awareness with proper marketing and report on outcomes and audit (ICE Fund)
- Measuring decreasing pollution from each industry

Describe how post-secondary education can be leveraged

- Tie funding for research to post-secondary, must create incentive for post-secondary to be involved – additional incentives

Describe how we can ensure an appropriate labour pool to meet demands and support continuous improvement

- Tie into available labour pools with incentives for post-secondary training needs
- Incentives for changing workforce

Green Building

Is 'renovating' the provincial/national building code to require passive or (...) standard an option for energy conservation?

- Building code relates to safety, not energy efficiency and is not monitored everywhere. Incentive based program for green building would be more appropriate

What are the financial impacts

- Volume decreases price but currently 25-40% more – 20-25 year payback – not feasible in environment of raising home costs
- Viable for communities located off the grid and huge utility costs
- Education required – everyone is excited about green until they hear the cost

How will this policy impact the building trades, forestry, etc.

- Specialized labour force required – should start in high school to maximize local benefits

What is the carbon footprint of green construction Vs traditional construction - is it worth the hassle?

- Reducing hassle and increasing education will improve uptake

How do we make green tech appealing and affordable for average folks?

- Incentive programs, like Power Smart, worked and should be duplicated for green building

Other Notes

- Utilize public building like schools & hospitals to educate on benefits, create familiarity
- Cost is currently prohibitive to much of the population
- Small incremental changes should be promoted immediately – light sensors, adjustable thermostats, low flow toilets, etc.
- Appreciation for different ecosystems in the province must be given to the standards set

Transportation

Is this conversation about moving people or is it about the resource industry? Is it both?

- Transportation infrastructure is integral to the continued success of the resource sector.

Roads, Rails, Runways & pipelines? What are our other options

- Changing use of transportation options. Must upgrade all
- Consider challenges to northern transportation – distances, supply infrastructure, etc.

Provincial infrastructure is critical to any alternative fuel transportation option. How do we get electric and compressed gas into our transportation network?

- National leadership needed on investment of transportation infrastructure

Compressed gas as a transportation fuel - advantages and disadvantages, management and safety

- Promote energy type conducive to population and geographic region

Policy, incentives, regulation, implementation, etc.

- Air transportation business development - level the playing field
- Education is key to connecting provincial use of energy resources in everyday life

Carbon Policy

What do we want carbon policy to do?

- Incentivize change – policy as incentive no penalty
- Realistic targets with carbon leakage addressed in the policy
- True accounting on the carbon ledger
- Clear, transparent measuring mechanism
- Education with transparency and easily understood parameters is essential

Is it local (provincial) or global. How do we connect global benefits with local goals?

- Global perspective is a must. Current math on calculation is not to any party's benefit
- Behaviours will not change by taxing those who do not have a voice

Relationships with First Nations and Landowners

Can we write policy around benefiting agreements? Or is it the prevue of the landowner or First Nation to negotiate individually?

- Capacity issues with communities to negotiate separately with proponents
- Policy won't solve the local needs for communities & landowners
- Policy around terms of engagement would be a benefit
- Policy should account for non-financial benefits

What is the appropriate way to engage stakeholders in resource development – community, First Nations, Land Owners, Citizens

- 'Early and often' engagement – before planning process "we have an idea" vs "we have a plan"
- Ongoing throughout project
- Increased communication between groups
- Building relationships & trust is essential to

Present an innovative and creative solution (solutions not problems)

- Utilize engagement rating companies and hold industry accountable, like WCB rating
- Innovation not necessarily the need – go back to basics of negotiations – trust, respect, strong relationships, effectively listening

Emerging Opportunities/ Adaption / Adoption of New Technology

How can we create an environment where embracing emerging opportunities is acceptable and welcomed?

- Acknowledgement of successes and failures in the past as means to move forward
- Early education in schools to encourage innovative thinking
- Increased funding of innovation in province, specific to energy sector
- Transferable skill sets for employments
- Need for Roadmap to push industry to be more innovative

We know that new tech is often "bleeding edge" how can support innovation, at what cost, and how much risk are we prepared to take?

- Media / social media creates challenges for early publication of concepts
- Education about innovation early would increase uptake
- Industry is a problem solver and uses innovation to create solutions that benefit innovation goals and financial goals
- Royalties should be reinvested back into companies pushing the innovation boundaries

APPENDIX B – Developing British Columbia's Energy Roadmap Symposium Notes

World Café Notes | February 28th, 2018 | Fort St. John, BC

A) Climate/Environmental/Social Responsibility

a. Should long range climate impacts and non “local” impacts be considered in this policy? How and why?

- BC is diverse. We have had a successful oil & gas community for a long time.
- Need to move forward and use what we have done previously.
- What are the current climate impacts?
 - Keep in mind Canada's impact on climate change is minimal compared to other regions.
- Be realistic about impact. Meet goals from provincial and federal standpoint.
- Need to understand the whole picture.
 - How do we communicate as to getting some text – recognizing our responsibility in the NE that we all have a part to play?
 - How do we include some of that dialogue?
 - What do we want to highlight?
 - Specifically, oil and gas? Can be any industry.
- Peace River used to freeze solid, does not anymore because of dams. Oil & gas industry impacts - not as noticeable.
- As we develop a roadmap, do we want a section on climate change responsibility?
- The impact of the dams is a regional layer opposed to a global layer.
- If LNG happens, impacts will be multiplied. Needs to be a habitat restoration component.
- We are using copious amounts of water in the oil and gas industry.
 - Important that water is reused rather than fresh water.
 - Social responsibility that we use water wisely.
 - Recognize water is a resource and that we are not just addressing oil and gas challenges, but all industries.
- In a number of watersheds, the nature of precipitation is changing over the last 20 years.
- More rain in Sept-Oct – traditionally was snow.
 - Changing for communities because snow pack is different.
- Is there a place in this plan to address climate change local, national, international? Yes – goes back to our footprint
- Need to restore water, landscape, etc. to be responsible.
- In an energy plan, we could address other industries whether agriculture, forestry.
- Trucking industry is involved in coalition – there are other industries to be included in this conversation to build a real energy roadmap.
- How do we want the topic of climate impacts to be worked into this from a local and provincial scale?
 - Opportunity for education.
 - Put in the good word.
 - Educate the prime minister, we don't get enough kudos. BC regulations are very strict.
- Effectuated in NE? No. We as a province, community are doing well. We don't make a large enough impact on the world in terms of consequences.
 - Other parts of the world that are heavy polluters.
 - BC sets good standards. If we don't build language into plans, how do we let people know that? That's where the education comes in. We share and teach.
- How do we know what long range climate impacts are going to be locally? We don't. We are seeing a change in the Dawson Creek watershed. Amount of precipitation is the same year after year, but amount is changing. Coming as rain where in past it was snow. In spring, amount of

available water is less. Could be something different but is being attributed to climate change. Paid attention to for 2 decades.

- When we are thinking long range, we need measures in place for today to compare in the future.

- Yes, working under premise that will feed into provincial roadmap.
- Bigger scale than just local. Need to look at in collective.
- Plan that we are doing today which will feed into the bigger roadmap. Information collected today will feed into plan.
- If we don't do it, someone else will. How? Expert assistance on how impacts could be quantified both long range and non-local.
 - Maybe we want to write something specific to us in our region.
 - Should it include the impacts in China and Japan?

b. How do we ensure that communities are left "better off" by resource development?

- Has to be rules on how you operate, and industry isn't doing that. They can lobby to make sure that steps are made.
- Get some level playing fields working. Important that industries invest in the communities properly to maintain services.
- Be sure that there are opportunities to provide services and be competitive (people, manpower, access). Closer to equality with Alberta with change in labour laws.
- Where is the role for communities in influencing this roadmap plan?
- What is the region of communities? It's how you work in BC, need to use local and needs to be economically viable. Competition needs to be weighed in the other persons favour.
- How would we measure what "better off" looks like? Equality and how do we ensure that everyone is benefitted?
- Engage and make sure that all voices are represented. When we define what better off means, is it more money in your pockets or people off the streets?
- More equality. Need to put back into the environment what we are taking out. When we are impacting the environment, we change the dynamics of the environment we live in.
- We have responsibility to make sure the environment is left "better off". How will we know in a decade's time if we are "better off"? What measures do we need to put in place today? The last school to be built was NPSS. Now that Ma Murray is being built, new hospital, infrastructure in FSJ is becoming "better off".
- Northern lights college nursing program...good measures that we are better off.
- Track graduation rates and retention.
- Good program with Northern Lights College – drilling program. Health & Wellness – we have decent facilities but not enough people to staff it. Need a way of fixing that.
- Demographics. Seniors are moving back because facilities are getting better. See people moving back. Measure – can accommodate all age groups within the community – retain people.
- Stability as a measure. Better understanding and cumulative impacts. If you are mitigating negative impacts, and maintaining, that could be "better off" but the benchmark can be improvement.
- Need to learn how to carbon capture – part of the way we can look at making our LNG greener. How do we communicate that?
- Best communication was letter from Mayor Ackerman. It's all about our politicians explaining what we do here. If we send our oil and gas south, we lose a lot of money.
- All about making sure that resources here are capitalized by business here. Too often, we think about the NE as the area producing gas, the transmission, then goes across the Pacific, we need some responsibility in the NE for when it is unloaded and how it is used there.

- Can't wash our hands of it just because it has left the region. It's our stamp.
- Set local content targets, social investment in community, volunteering in community.
- Policy to direct the companies that are operating to contribute back to communities.
- Would the shareholders have that responsibility? Would be nice to see other companies putting back same amount. Impact benefit agreements.
- Be a good neighbor.
- Resource towns (ie. Tumbler Ridge). Partnerships, agreement of a good neighbor.
- What does a community need? Who is going to maintain and take care of it? Sustainability piece.
- What does a community look like as better off? Donate to local charities and organizations. More money going into fund to deal with contaminated soil such as an "orphan well fund".
- How do we ensure communities are better off? Not just focusing on orphan wells.
- What else can we be doing as a measure? Reclamation processes (pipelines, mills, mining). Putting back to the way it was.
- Stay away from the boom and bust cycle. More infrastructure – more schools, community centers, swimming pools, hospitals.
- Guaranteed employment – secure jobs for a foreseeable time into the future. Attracting professionals.
- Don't want to live in a town that can't attract teachers, doctors, etc. Graduation rates, health, literacy.
- Measures for the community? Schools, healthy families, employment levels, social and environmental issues.
- How do we know we are better off in 10 years if we don't know where we are today?
 - Infrastructure improvements.
 - Collect high school graduation rates? GPAs?
 - Trees planted in a community?
 - Birth rates? Measure today and measure again in 10 years.
- What is defined as community? Northeast BC, all of BC? Who will be measured?
- Suicide rates can be measured, health care metrics, parks, hours worked, happiness index. How do we relate that back to resource development?
 - Are the two related?
 - Is it too hard to measure? Depends on individual that comes to the context.
 - Ruins some families and helps others.
 - How do you insure it?
- Need a strategic plan to ensure that people in these communities are better off.
- If nobody is using recreational facilities, need to do something about it.
- If people are retiring and staying, that's a good thing. Is it tied to resource development?
- Most resources that get developed, there is high productivity and higher wages, that can be equated with being "better off". If people choose to retire here and not leave, that can be a measure.
- Social functions and groups. Is it measurable and worth it to try? Is it possible?
- Overwhelming to track hundreds or thousands that move here to work on a pipeline project. Need statistics to provide to people operating here. Not only beneficial to ourselves.

c. How can we balance the needs of citizens (local or provincial) and communities with overarching national/global climate demands?

- Not for carbon tax, but everybody pays it. Committing globally and regionally.
- As long as other provinces buy into it.

- What is an economic driver? What about seeing the consequences of paying that bill? It's being 100% reinvested.
- Do citizens fully understand challenges? If you are going to have carbon tax, you need to sell it.
- List the reasons why, explain where it is going.
- End of the day, our impact globally is not that big in comparison to others. BC is a good news story. Ton of resource development in this province.
- Need to share what we are doing right. How can resource development happen responsibly.
- Come to the NE. Share the story. Can't do much more to reduce. Sharing is the key piece.
- Are we all diplomats for our region? Yes. Knowledge base is here.
- Can we do both? Yes, we need to.
- LNG and understanding of technology needs to happen before we sell it somewhere else.
- How do you convince people to use it? Need to use it for ourselves. Then we are truly a leader.
- What are the needs of citizens regarding climate demands? Best case scenarios are not only meeting our targets. Global issue.
- If we can reduce global climate issues globally, that's a win. Can BC help other countries understand? Yes.
- Anyone we can learn from? There are areas that are further ahead of us that we can learn from. Norway, California, New York state, Germany, Scandinavian countries, Japan. We can still be learning. Stay ahead by learning from others.

d. How do we develop our resources and still protect the environment?

- Great opportunity to take mining industry, oil and gas industry and first nations and say this is what we are doing.
- Combine industries.
- Where is the role or responsibility of the shareholder? Is it purely financial investment or should they be making other investments that would recognize environmental responsibility?
- Mission, vision and values are great, but walk the walk. Social responsibility. Its all about education.
- We want to get resources out of the ground in a way that is economical and socially responsible. Better off working as a team.
- How would you define that group? Regionally or provincially. Different ways to look at it.
- What about the massive companies that can move resources around? As part of their business, they want to be socially responsible and extract things responsibly. That's how they get shareholder investment and permission to operate in certain regions.
- Is this a role of gov't? Got to have a mandate set by someone to encourage them to become a part of it. Smaller companies, focus on the departments that are making all the money.
- It's the middle to lower end that are looking for ways to save themselves, need someone to tap them on the shoulder.
- Combination of government and shareholder. What about the role/responsibility of the user? That contract that we have with Hydro, PNG, etc.? No competition in the north.
- Nothing wrong with sitting in on a meeting and voicing concern as a landowner. That's a really good voice.
- Why is the price of gas higher in FSJ? There is a social responsibility to stick up for ourselves.
- As Mayor Ackerman said, "It's not about the party you represent, it's about the constituents." Good point.
- High standards. Where do those standards come from?

- Regulatory frameworks, federal legislation. Most companies go above and beyond in most cases.
 - Pretty strict on clearcutting here. Need to leave so much. That the forestry side of it.
 - Collaboration within resource industries operating in same region? Road use agreements, shared access. Hear different industry perspectives.
 - Something that has fallen off the table. Used to have big groups, sit at same table and share ideas. Doesn't happen as often any more.
 - Think there is more involvement in first nations consultations. One of the challenges is that it is easy to point when there is an issue within the region, when thinking of developing resources, we need to take a bigger picture look at what is happening in the region. Cumulative effect.
 - When you live out of town and expect peace and quiet and aren't getting it, there is a type of pollution happening.
 - Develop with standards. Look at different industry cultures i.e. Netherlands
- e. **What about the Urban Rural divide...can it be addressed in this context?**
- There is a divide, how do we fix with the roadmap plan? Education, give them some facts. Education on what is safe about the pipelines.
 - 60% of modern automobiles are made of plastic. Comes down to education. Communication.
 - Regardless of industry, we are programmed to think of the negative than the positive.
 - Gear it to everyone so that the positives are amplified.
 - Is it really an urban rural divide or some other? Is it easy to blame people in the lower mainland or are they as uninformed as someone here? Its population density.
 - Urban center is larger, so they are heard a lot faster. Two-sided story – we have learned from them (i.e. recycling). On a per capita basis, we are paying our fair share of taxes. Not us and them. It is all about everybody.
 - Could we build some education component or expectation into roadmap plan? That should be one of the measures, that an education needs to happen.
 - Projects keep getting shut down. Word needs to get out about how the process actually works and what is involved.
 - Kinder Morgan had nice commercials about being environmentally friendly, good movement. It explained that we are not building pipelines down the middle of the street or over it, but under.
 - Biggest challenge is how we communicate (Twitter, Facebook, newspaper, radio). What venues are you choosing to communicate? What is the most effective way? Is it masses of ads, or communication?
 - It doesn't need to be a course, but something built into the schools, one on one opportunity. Going to have other side of the story. Have to give pros and cons.
 - Can't be biased. Depends on where the message is coming from.
 - People are going to listen to someone that it doesn't benefit.
 - Not urban/rural thing, all of us have the responsibility to become educated and go out and advocate.
 - Should there be something that talks about urban rural divide? Is it real? Yes. 2/3 is rural and 1/3 is controlling it. All urban controlling.
 - Yes, if going by vote population. Time needs to be spent talking about everyone as one entity.
 - Can it be overcome? Need education piece. Move information to decision makers down south. Will take time.
 - Conversations will be had over and over. Provide resources.

- Is there a line, is it a population base, is Kamloops urban? All relative. Based on where you live and how you are considering the communities around you.
 - Is there something else out there that is dividing us? Lack of understanding. Might have something to do with communication.
 - Maybe it's a numbers game. Is it about employment? Education?
 - More jobs in Vancouver, or more jobs in Fort St. John, more schools in Vancouver, or more schools in Fort St. John? Not something where you can have one conversation about where resources come from, uses, etc.,
 - Need to be consistent in messaging. Not necessarily an urban rural, something deeper.
 - Is there a role we can play in educating people in the lower mainland? 100 different ways you can argue. Many factors. Not just urban rural. That creates divides.
 - Is there a place for this topic within the broader roadmap plan? Yes.
 - Whose responsibility to deliver information on environmental impacts? Can't be government or industry. Maybe NGO's, universities, etc. Information exists, but you need to figure out who will deliver the information.
 - Rural areas make resources, urban areas use them. NE BC is largely rural. Difference is that NE BC vs mainland is a divide because of geography.
 - If we are using language like urban rural, we need to know what that refers to. Need to be careful assuming there is a divide around environmental and social responsibility.
 - How people go about being responsible is different. That is the divide. Break it down, everyone has the same values, but lifestyle has different draws and views on the environment.
 - Who feels responsible and is willing to take action? Who is driving the conversation that will be written around these topics? Supply side and demand side. Rural is about supply, urban is about demand.
 - Developing language around protecting the environment, is there really an urban rural divide.
 - Urban areas do not understand the environmental footprint on the rural areas. In rural areas, there is so much land, it can be used in any ways. Densely populated areas would be where the divide lies. Defining component is around urban density.
 - Highly populated areas might be concerned with the environment around them (i.e. recycling, not land use). Rural residents have a close connection to the land and chose to live here because they want to use the land. If you have a lot of space, you protect it and don't develop it.
 - It's not clear how to properly define urban vs rural and therefore we cannot make assumptions that it will be one group or the other that will dictate policy.
 - Problem with defining urban rural and associating a certain mindset isn't fair. Each individual can have different values. Not black and white. Don't want to go down that path and label people. Doesn't make good policy.
- f. **Is it reasonable to develop policy that required (E) NGOs and lobbyists to publicly declare their funding sources?**
- Should come clean because there are certain activists out there, may be from China.
 - Maybe China says we want to have an LNG plant and think its important to come clean on it all. Positive and negative.
 - Don't believe we should be selling off resources. End product but not resources.
 - Policy and legislation saying where they get their money from is important.
 - Universities are starting to declare where funding is coming from because is affecting their research. What would we get out of this? Greater transparency, see where influence is coming from.

- Would you view an environmental group in a different way if you knew where funding was coming from? Yes. Would have some drawbacks.
- Might find people that don't want to donate because anonymity isn't there.
- Maybe groups that donate would be a conflict of interest.
- May attract people that have never donated before. Always a negative and a positive. What is more beneficial?
- By being transparent, there is nothing but positive. What would the negatives be?
- Might see that they are getting money from provincial/federal governments or through grants-in-aid.
- It might peel off things that people don't have the economic interest at heart of Canadians. Purely financial interest.
- What if an amazing roadmap plan was produced and we could get agencies on board? Would want to vet them, but sometimes things aren't what they seem. Challenge them.
- Goes back to old school of business. Before making final decision, you look at credibility. If that organization is receiving gov't grants are they signing off because they don't want to lose that. Provides clarity to everyone. Operational ethics.
- For the general public, they do not know and need to know where funding comes from.
- Companies are trying to geographically isolate Canada because they are funded from US organizations.
- Funded out of the states. There are agencies that are doing a good job, but there is a mix and Canadians need to be educated.
- Definitely should be public knowledge. Is that something government can do? Lobby to higher level of government. Can be written into governing legislation.
- Who is controlling climate change? Are we just a victim of consequence? A lot of misinformation out there.
- Where do we get that level of trust from? Who do we go to? Misinformation creates lack of trust.
- Who could take the lead and have credibility? Enough trust to present information and resources. Comes down to an employer that has the social license to operate on a global scale.
- We rely on huge companies to bring us that information. Social media is affecting everything.
- Before, more credibility in the news. No longer a single source.
- When doing major projects, we need the company doing project, chief of first nations, town council and mayor, needs to be a group effort to say that everyone has been asked and all bought in. Advocacy piece.
- It would make people feel good, but how is going to help.
- Public dialogue is public dialogue.
- If you stop American funding now, it might take away some of the protests.
- Public is concerned about pipelines, that's fair.
- Always going to have extremes no matter how you fund them. There are people opposed, people for and the people in the middle. Important to know intentions.
- People are feeling used in a political game between US and Canada. How they are received here is changed.
- When it comes to someone like Greenpeace, etc., they are who they are irrespective of their funding and most people's perspectives aren't going to change. Their views are very clear.
- Changes the way people think. Where does the public go for the information if they don't trust the government or industry?

- Reasonable voices in between. That reasonable voice, does it matter who they are being funded by?

B) Electricity/Demand Side Management

a. Is pricing the issue?

- Are we talking about electricity of industry?
- Is our electricity too cheap?
- For the consumer, industry? Either
- Don't think too cheap living in the north – less volume of people our resource supports the south, we shouldn't be paying as much
- If demand side managed, belong as an initiative in the energy roadmap
- Is pricing too low, or is the pricing the right of all British Columbians?
- Too much sensitivity to price
- Peak management? Not necessarily
- Is price the issue, if energy is elastic then industry doesn't matter
- Consumer use is inelastic for consumer

b. Conservation as a management tool - effective? Adequate? Efficient?

- Natural gas – nothing stopping us dropping a generator, what is really the infrastructure,
- Is clean tech the solution to shave peak demand, or are we going to use pricing?
- If building new infrastructure, you're increasing carbon footprint
- High populated area using the power, every time you build something, all the input
- Necessity to our electricity and other natural gas, electricity in terms of heat, shorter days, need for lights, that's a factor, in our cost being higher, its compounded, no choice to shut the heat off, no options, need lights on
- Doesn't offset half the year, hours of daylight and cold are longer than half the year
- Need an assessment – what the actual need vs. luxury?
- Investigation into what we
- Impact on families/ don't have the choices to use less
- Downplay your usage, do you need to run dishwasher, plug car in at peak times?
- Does peak demand have to be seasonal? Management?
- Cost of infrastructure delivery needs to be shared by all citizens and not penalized by rural
- peak demand is an option and should not be on the back of the consumer, managed so that it can be manager
- Kelowna peak times when hot; FSJ when it is cold
- intensity are not only factors, strength of the sun here and strength in California, solar is very viable, use it in the winter month and make in the summer months - Kelowna they would make it and use at same item

c. Consumer decisions drive resource use...how can demand management be more appealing to the consumer? Should we try to embed that motivation in policy?

- What could be things we want to discuss - energy roadmap then the question is demand side management? What about prices? Do we crank the price up? Or is it the right of all to have the cheapest price
- Wouldn't that also be determined by natural gas? If they follow through with their need in consumption increase?
- Does the midstream change the development of product?

- Use pricing to manage peak demands, start to shave, can a community day we are going to image peak demands by an LNG generator?
- Watson Lake uses an LNG generator in their community – makes sense, create their own?
- Problem in Fort Nelson generators - upgrades, reliance and the instability
- How would you manage demand on the electric grid?
- One issue unsure of – understand gas prices in my home rates get raised in the north costlier to supply in the area
 - Is power the same? is it prorated, burden on the lower populated areas
- Don't know if the power costs are higher in lower populations than Vancouver?
- Idea of raising the cost of the entire province, raise by 40% in Fort St John and raise 1% in Vancouver
- Principal – ie all citizen treated equally in term of infrastructure, longer pipe to your house, transmitting to Vancouver and back to Vancouver
- Distribute evenly, everybody shares the cost
- How is that our taxes are paying for the taxes on bridge
- All people living on islands want ferry service - it's a choice, equal to a toll system
- Some choose to come in to play – if you choose to live in an isolated area, management
- Choosing to live in a urban area, we should not subsidize the housing in Vancouver,
- Food in Inuvik, 20.00 gallon of milk, should we subsidize?
- We grow electricity in this area and we are being asked to subsidize
- Balance is out of sync
- Do we want demand management to be included, and if we do is pricing a tool, should demand side management be made more appealing do we imbed in policy and legislation? Do we allow communities to develop their own solutions?
- What are the prices that we need to be including in policy
- Should not be penalized for living in rural BC
- Should we as community shave that peak so not paying more?
- BC Hydro say on the conservation side - how much more conservation is there? Technology in electrical motors is growing by leaps and bounds
- Take a drive 112 Ave, exterior houses, have exterior lights on 24/7
- Bottom line - figure out if pricing tool to manager demand or our alternate sources, options for industry and community and opportunity
- If can, manage their grid demands – because of hydro policy, Hydro won't let them put on the grid, why don't we have that policy in place

d. does the Upstream/Midstream relationship in community impact development of product?

C) Natural Gas

- a. What is the true carbon footprint of our NG industry/the global NG industry? Can we define this in the roadmap?
- We compare ourselves to AB – we are more efficient in BC
 - As a resident, how harmful is fracking?
 - There is an economic benefit
 - Carbon – 3 ways to use industry carbon:
 - 1. Flaring – only in emergency
 - 2. Fugitive emissions – valves
 - 3. Burn natural gas to power facilities
 - Roadmap – how far have we come in the past 5 years?

- Historical reputation – has not been good
 - Maybe an independent assessment?
 - What is our regulatory system
 - How do our strict regulations affect us?
- Carbon footprint – Canada's impact globally – what is our impact?
- We have our own footprint – we need to decrease footprint in order to increase production.
 - We do things well
 - We do better in BC because we have world class regulations
 - Our environmental requirements outweigh everywhere else
- Roadmap – should be clean on our record and in proper context
- We need to measure, to look back on, see benefits
 - Transparency and measurability
 - BEOGC and government are starving for data
 - We don't have standard methods
 - Lots of testing for proof that we are maintaining standards
- We have a high standard that we need to promote that – ex: Vancouver needs to realize we have high standards
- The struggle is we already have high standards, we can't lower them
- Put pressure on places with low standards
 - Grandfather operations
 - Huge global impact is the real effect
- We spend lots of \$ on educating people to understand, but people living elsewhere have no idea – that's where we need to understand
- We shouldn't be reducing standards, we should be working to improve
- Media – can we use it more to properly inform lower mainland – should be used as an educational opportunity, social media is tricky now
- Challenge for carbon footprint compared to world
 - BC has most rigorous standard in the world
 - We know our carbon footprint really well, others don't
 - We report down to micro level of GHGC
 - Generate #s and have them qualified by verifier
 - Federal inventory isn't very good
- What do we do different in BC?
 - We have new facilities/technology
 - Hydro electric power
 - BC Hydro produces 97% of electricity (mandate)
- Roadmap – lower emission energy is our roadmap
- Carbon footprint plays roll in the analysis
- Benefit – electrifying oil & gas
- Solar reduces footprint
- Principles – BC wants to grow NG
- Roadmap should articulate #s to show how it compares globally with specific info
 - Metrics and if they line up
 - What does it measure globally?
 - We need to sell how good BC is
- Look at what we've done in the past, what we are doing now, and what we plan to do in the future
- Use it as an educational tool
 - Promote how well we extract our resources
 - How it should be applied to other industries
 - Factor in the renewables

- We do better because we have stiffer regulations – people don't know that
- Government needs to educate people more
- Needs to come from academia, government, industry
- Decisions made in Southern BC, resources in Northern BC
 - Social media needs to be used – let's have enough data and comparisons
 - Educate people from the start
 - Data is changing constantly
- Gas is not green
- 2 plants on Horn River Basin – 400,000 cars on road
- We should have a way to capture those emissions – lots of CO₂ in there

b. What will the NG industry offer as a replacement for other forms of energy?

- 3 areas NG used as energy:
 - 1. Electricity (coal, nuclear renewables)
 - 2. Home heating and industry heating
 - 3. Transportation
- NG is a bridge and a cleaner form of energy
- How can NG become solution?
 - Driven by government, technology
 - Needs to be demand and market
- NG – 40-50% less carbon emissions (than coal)
- Roadmap needs to be truthful, scientifically accurate
 - Everyone's input for validity/trust
 - Message needs to get out
 - Have visual impact in the roadmap like David's apple and banana example for people to understand better
- Should government be promoting NG?
 - Yes – helping to provide incentives to help meet emissions
- What is NG competing with?
 - Coal
 - High carbon fuels
 - Electricity
- Replacing transition fuels – what is the benefit?
- If we can cluster, we can add value
- Not just looking at forms of energy
- Electrification NG facilities to reduce carbon
 - Convert to electric motors
- Make process more efficient and more available
- Streamline
- What does NG compete with?
 - Coal in Asian countries
 - Dirty oil
 - Smaller scale LNG for remote communities
 - Solar? Wind power?
- Roadmap needs to make these more transparent
- Roadmap should look at trade offs
- Pros and cons of each, needs to be a balance
- Life cycle – environmental comparison, social economic impacts of these choices
 - It can't just be about carbon footprint, we need to look at environment
- What does NG compete with?
 - Coal for fire power generation (60-65%)
 - Nuclear

- Balancing renewals
 - Oil furnaces
 - Diesel engines to natural gas
 - Mining sector
 - Should we just look at environmental trade-offs?
 - Driven by economy
 - Air travel – will there be a change in what they use?
 - If there is no LNG, there's no domestic industry
 - Can we educate Vancouver on NG? Yes!
 - It will get adjusted with new mayor
 - It may be a better time
 - We should look at the cost of not getting LNG and what the impacts would be
 - Net costs need to be included in roadmap and the province
- c. Should we be looking at our NG industry as a global change agent? Can we net our global impact against our domestic impact? (Paris commitments, etc.)
- Yes – to reduce emissions we don't take into account our exporting?
 - Yes – we have to look at the net benefit in entire world – to cut emissions in half we have to strategize
 - Paris doesn't take into account that we are a small producer on the world stage
 - We have to recognize what we contribute to the world
 - Needs to have the ability to measure correctly
 - Less of a functional industry matter, more of a legislation matter
 - Industry standards need to try to make improvements and move forward
 - Need to re-invest carbon tax back into industry it came from
 - Not put it all back into transportation
 - Government should be recognized by exporting resources
 - We are benefiting the world
 - Along with price, we need technologies
 - Huge benefit – if we reduce through conservation, we still need more just because of population growth
 - Good efforts in lower mainland doesn't compensate
 - Vehicles are made of plastic – 1 billion to 2 billion vehicles soon – need to be aware
 - Trudeau doesn't have our back on this
 - Province should use roadmap to inform federal government
 - Add our piece to the global piece for impact
 - We don't really care where things come from
 - Roadmap needs to consider it
 - May be able to capture something complex
 - Supply and demand – if we put things on the market there will be less room for other things
 - Take longer to recognize carbon trade offs
 - Need to realize the benefits
 - Paris Agreement should not be a barrier
 - If we don't sell our products from here, somewhere else will which will cause job loss, unemployment
 - Yes, we are global
 - LNG lives and dies on global impact – we need to look at carbon policies
 - BC are you happy with this # of deaths? How many could we save from breathing?
 - Direct lives saved, and direct lives made for the better

- Communication and education – who decides what message is? Need to keep it consistent – who drives message?
- PM should look at NG as industrial opportunity

d. **Other notes**

- Should roadmap be looking at NG as industrial product as well?
 - Where resources are generated
 - Need demand for NG
 - Negative gas prices this fall
 - We will become the US swing supplier
 - We are in competition with the US
 - We just have 2 refineries because people don't want them
- We shouldn't just use NG as fuel, but building another industry (plastic, fertilizer, etc.) – should be shipping to Edmonton, not Chicago

D) Renewables

a. **Viability? (short term, long term)**

- What % of BC power is coming from renewables?
- Affordability needs to be considered
- Don't just focus on one area, diversify
- Make it private sector friendly
- Technology will continue to move forward, and viability will grow
- Consistent support from government is key
- View it as a long-term investment
- Very viable – already using it
- Transition slowly until technology improves
 - Each sector will transition at different rates
- Transporting renewables is challenging and problematic
- Goal: eventually get industry to carbon neutral/negative footprint
- Make small changes to bring renewables into industry
- Energy efficiency should always be part of the conversation
- Different renewables in different areas is best for success – diversification
- Everything requires infrastructure
- Scale to be considered with viability – some items better on a per house basis (solar), some better at large scale (wind/hydro)
- Geothermal (power) vs. geexchange (heat) – important to note the difference
- Green does not equal renewable (i.e. nuclear)
- BC is 93% renewable already
- BC Dams use same water 3 times – very efficient
- Focus on new renewables, not ones that have already been perfected
- Viability inherent on location
- Need to be able to store in -40 weather
- Does renewable impact views/water/land?

b. **What is the cost, and will they be able to meet long term demand as a replacement for non-renewables?**

- Standing offer program must be considered
- What are the building costs? Need carbon to build renewables
- Will they replace carbon?

- Maybe in 100 years, plan for the future, perfect renewables now
 - Things will not progress without a push – subsidies
 - Reduce reliance slowly
 - How much maintenance will be needed?
 - Oil and gas needed for plastic production – renewables can allow them to focus on that
 - May never 100% replace carbon-based sources
 - How can waste be reused as power?
 - Will adding new renewables increase/decrease costs of power/heat?
 - Renewables currently heavily subsidized
 - What is the cost of renewable production for places not on hydro grid?
 - Cost for production changes with location
 - Geothermal upfront cost too risky for some
 - Mining for battery cobalt/lithium creates large footprint for solar
 - Should have economic reason to pursue renewables
 - Need to have the infrastructure available for production, storage, transmission to be viable
 - Is there a reason to have more power output in the province?
 - Commercial vs. personal
 - Cost/installation/billing etc. should be transparent and upfront
- c. Should we view renewables as capacity and peak solutions?
- There will always be a need to back up power
 - Few renewables are a 100% replacement for oil and gas
 - Makes renewable costs decrease
 - Needs to be cost effective and reliable – heat for home needs to be consistent
 - Need better power storage (fuel cells)
 - Ability to handle electrical load?
 - Transmission will always have % loss
 - Need a balance of carbon and renewable
- d. Input regulations – what is the footprint of the creation of renewables?
- Make renewable items mandatory in building (roofing/glass tiles)
 - Social impact/acceptability needs to be considered as well as footprint – i.e. nuclear energy
 - Infrastructure – how do we transmit power, what kind of footprint will transport create?
 - How long will each infrastructure last? How is it removed/disposed?
 - Should renewables be required for new builds?
- e. Can we define the desired “role” of renewables in the policy, short and long term?
- Who is responsible for pushing renewables forward?
 - Federal/Province will regulate
 - Companies need to warranty biodiesel – reason why people won't convert
- f. Other points
- Types of renewables
 - Wind – money available for independent power producers
 - Gets up to 5x \$/kWh compared to others
 - Increase due to forest clearing
 - Hasn't progressed as far/fast as people expected – due to cost?
 - Solar – new tech, less direct sunlight needed, make building products (tiles, window film)

- Individuals will take over industry
 - How long do panels last? How do you dispose of them?
 - Tesla solar shingles – 25-30% of your house
 - Hydro – cheap, need to build dams
 - Geothermal – government needs to explore, expensive to consumer?
 - Tidal – biggest investor is Encana, inline turbine
 - Biomass – regrow trees
 - Beehive burners
 - Sawmill waste can be used somehow – facilities should have to reuse waste
 - Biofuels (ethanol)
 - Using a lot of water to grow corn
 - Takes corn away from food industry – creates another food waste problem
 - Impact on surrounding areas and animals
 - Canada has lots of space for farming bio items – oil seeds (canola/rape seed)
 - ALR – bio items, hemp products, wood fibre
- Need to diversify away from carbon-based, find balance with carbon on the way to becoming all renewable
 - Not everyone needs to use the same source, be smart about location/geography
- Transmission line to Whitehouse/Yukon
- Transmission carbon from a fuel to only building within it
- Visibility on source of renewables
 - Where they come from
 - How they are harvested
 - How the public accesses them
 - Education for the public
- Broadcast info and engagement with the public
- Make info readily available
- Educate neutrally – offer education on all types equally
- Educate consumers to where their power/heat comes from – start in schools
 - Educational campaigns (tv/social media)
 - Needs to be communicated by someone NOT industry or government
 - Create a sense of responsibility for the environment
- Each renewable has a variety of ways of implementation
 - Solar tiles vs film; wind farms vs wind mill on roof

E) ICE – Innovative Clean Energy Fund (for R&D)/Remaining Competitive

- a. Should ICE (Innovative Clean Energy) Fund for R&D continue to be part of the overall regulatory picture? Why? (Advantages and disadvantages)
- Yes – should continue
 - Drawback: one more thing investors have to pay for, tax payers should pay into this
 - Yes – remain motivated to be cleaner
 - How much power is given to ICE?
 - Need to be regulated, keep incentive to be clean but not taxing
 - Goal should be the end goal, not more funds (roadmap)
 - Take fund on how much cleaner a company proves to be levied less
 - As a producer you are motivated
 - Reward program

- With any fund, not a lot of transparency how it is spent, not sure if being done
- Who pays for it? The market will if its not government funded
- Need to invest
- Weird that not many people are aware of it even though it gained 97 million
- Yes continue – needed for funding innovation

b. **What is the alternative?**

- Instead of levy – tan run
- Carbon tax?
- Allocating some of money to North
- In line with moral jurisdictions
- In line with provincial priorities
- What are the projects? If its dispersed evenly throughout the province
- Funding for LNG for create a demand
- Reliance on fossil fuels will not go away
- What's better for society? In the short term it's not cost effective
- Need funding to reduce carbon footprint
- ICE can reduce it
- ICE used selling LNG, clean can be seen as a scale
- LNG fits on that scale
- Get cleaner as we get better, need efficiency
- Duplication of so many funds
- Tax incentive
- Direct funding to where its going
- It's hidden by the producers from ICE
- Need dedication to where funds go
- Opportunities for North to take on funding
- Real science and development
- Who owns the invent? Not federal
- Be more coordinated with other corporations to coordinate so no duplication and look into other places

c. **Technological advances ensure efficiency: how do we include provision for R&D investment in this policy. How will we measure success? How do we ensure that innovation continues for decades to come?**

- Passive house – how much does it cost?
- Are you getting best value and right prices?
- Report on outcome and audit
- Needs to be marketed properly
- Increase awareness
- Not easy to apply for ICE
- Measuring decreases in pollution from each industry
- Who is using it? Where the innovations extend
- Who defines what clean energy is? LNG? Are they considered?

d. **Describe how post-secondary education can be leveraged.**

- Universities get funds to do research
- Incentive based or help do research

- More availability in the North for post-secondary instead of travelling all over
 - Co-op to get practical knowledge in industry
 - Ties into support industries as well
 - Real world aspect in future
 - Good to have people with lots of information on oil and gas spreading right education
 - Not approachable, not open for conversation at universities
 - Funds for post-secondary to look at goals from both ends of story
 - Not just post secondary – elementary, high school, municipal governments
 - Ideas from young people to this
 - Info on what ICE even is/does
 - Tuition free program based on funds
 - Municipalities receive funding if they do this
 - ICE partner with UNBC for research
 - In North, in order to pursue academic goals, they have to relocate
 - Expand on post secondary in the North
 - You understand what pool is now and what it could be in 10 years
 - Level of certainty to ensure its changing
 - Always comes down to cost effective
 - More education for instructors, ideas should be factually based – funding for that
 - Not everyone is informed evenly, especially where you are located
 - Many extremes at university (oil is bad)
 - Directing education at universities for open conversation
 - Educate young people but not brainwashing
 - Funding to re-educate to work on new technology
- e. Describe how we can ensure an appropriate labour pool to meet demands and support continuous improvement.
- First Nations and Immigrants
 - Explore pools of people who are not normally asked for these jobs
 - People of disabilities for employment
 - How do we get them motivated and trained?
 - Go after the underrepresented
 - Boom and bust effects hugely, incentive program
 - People into work/life balance, incentive for that to be flexible
 - Keeps work force going
 - The market is who makes it available
 - Need to test with funding help

F) Green Building

- a. Is 'renovating' the provincial/national business code to require passive or (...) standard an option for energy conservation?
- Is the role in the building code?
 - How to enforce building code in the district – not monitored?
 - Is where it should be, where is the balance?
 - Provincial government can give tax incentive to purchaser?
 - Mostly through local government, not provincial
 - Cost charge
 - Building code needs to change to get started

- Increase the minimum standard – contractors will be forced to meet the requirements
- Cost effective codes to help (find balance)
- 5% of what normally would be/should be, but as natural evolution
 - Example: India built roads of plastic
 - Need more incentive to decrease footprint
 - Need to include whole building, not just bits and pieces
- Building code becomes social experiment, should be about safety
- Who plays role in providing info to city/builders?
 - BC Hydro – kind of doing it already
 - Can go public by pairing with tv shows (Holmes on Homes) so they are building with greener products – people see it and become more familiar
- City incentive programs – can be done/has been done before
- Public buildings should be built greener
 - Margaret Ma Murray (new elementary school) – is it green/energy efficient? (no one knew)
 - Not – should have, would have been a good place to start/set an example
- Building codes are not easy to change
 - All safety related
 - Going to have to have inspectors trained to look for new issues
- Change codes to reflect issues of the day

b. What are the financial impacts?

- Passive houses are \$\$\$
- First Nations have Passive House because reserves have huge utilities costs
- Can use less costly interior to bring the cost down
- Passive house makes sense as you don't have to pay utilities in the long run
- Cost is the biggest issue – \$\$\$ in the long run, much better
- How much more would it cost?
 - 25-40% more
 - \$500,000 – \$700,000
 - Need volume to become cheaper – people doing it/using it
- \$89 for 2 months for electricity in FSJ (2012 build)
 - Energy is cheap right now in FSJ
 - Macro concept
 - Build city in a different way to save energy
 - Share walls with other buildings
 - Build city around walking distances and buses
- FSJ is already expensive, need to help bring people to want to live here
 - Northern living allowance
 - Lead them slowly
- Valuable globally
- Locally – look within city
- LED lightbulbs (\$\$\$) vs. normal incandescent (\$)
- 'Cost attractive' – change home to help
- 2,000 ft² in BC payback (FSJ)
 - 20-25 year payback
 - Issue: this is a transient town (people live for 5 years and move)

- Resell issue: not everyone wants a passive house – minimal market
- What is the difference in cost between passive and non-passive house?
 - 1,200 ft²
 - 20-30 year payback
 - FSJ cost of living already low – public excited about green until they see price tag
- c. How will this policy impact the building trades, forestry, etc.?
 - Specialized labour force
 - Might not be local – money not going back into the city
 - New construction only
 - Existing buildings are grandfathered in – can't change building or lose grandfather status
 - Building quality decreases – can't charge a lot to rent building unless expensive improvements are made
 - Green building products are higher quality but expensive
 - Have skilled trades people
 - Start in trade schools/high school
 - Forestry industry benefits because making thicker walls means buying more wood
- d. What is the carbon footprint of green construction vs. traditional construction? Is it worth the hassle?
 - Is it a necessity to become more energy efficient?
 - Customer have choices and needs to be pushed towards greener materials
 - Two obvious benefits
 - Natural
 - Economic benefits
 - BC already pretty low electricity by design
 - Rural communities are more inclined because they run on diesel or gas (expensive)
 - BC needs to get really good at green builds so that it will be more applicable – we're not there yet
 - Too expensive to start making a code out of it
 - What is the cost to build vs. renovate?
 - Build is equal (minimally more) to building a standard house
 - Renovating is more expensive
 - Doing it right the first time
 - Need to communicate message that building green isn't that much more than just building a regular house
 - Makes people feel better about their house – “you are helping”
 - Is worth it, we need to reduce the hassle to make it more appealing
 - New way of doing business – not a hassle
 - Over 16% of homes every month have issues meeting utility costs – can bring that down with passive homes
 - Other countries are much further ahead than Canada – building greener and more effectively
 - Triple pane window – good and can see profit (selling feature)
- e. How do we make green tech appealing and affordable for average folks?
 - Need incentive to get people to use it
 - 10 years ago – power smart programs to encourage people
 - Needs incentives/tax breaks

- Not all materials are going to be local
- If it's affordable, it's appealing
 - Balance it when opportunity arises
 - Cost matters but not as much as you think
 - Windows are like computers – get outdated fast

f. Other points

- Decrease utilities
- Self-gen is solar
- Way to 'enforce' greener practices to build
 - Transport house
 - New builds or retrofits
 - Want to see enforcement come from Province, not cities
- Figure out the 'normal', build 'pros' upon it
- How minimized are passive houses?
 - 10% of a single-family dwelling
 - Heated by people inside of it
 - Simple design
 - How windows are faced
 - Use building techniques to optimize it
- Training needs to occur to help build/install
- LEAD standard – must be government funded
- Green transportation
 - Creating new infrastructure that is green/'natural gas'
 - Health benefits for greener – elder complex has clean air being used to help
- Better filtration?
 - Air comes from outside
 - Goes through least polluted areas first and then goes through kitchen last because it has most "pollution"
- Build green for everything – not just buildings, transportation, etc.
- Greener in Vancouver which is already so high – can't increase cost of living or people will get mad
- We're not at the level of enforcing and creating new minimum standards for building – can start focusing on it in schools so that it starts to become familiar
- Northwest Territories has a good project now – rural area with access to wood fibre
- Geothermal is green AND cost effective
- Be cautious about making public build green – not overly available in Canada
 - BC Government needs to build green to set example, use state of the art technology
- How to sell green idea to public?
 - Communicate the advantages – lack of understanding for general public
 - Don't have to build certified passive house – little changes here and there
- Combined heat/power
 - All over Europe
 - One in Calgary – sells energy back to grid, has been profitable (incentive)
- Lack of producers (pellets for stoves – heat)
 - Wouldn't take a lot of effort to start generating a business
 - Hard to find, costs more as there is little competition

- Carbon tax as incentive – give back to becoming greener
- Sensors on lights – turn off when no one is around – start small, build up
- Furnaces – timer to turn off/lower when out of the house
- Incentive programs too complicated right now
- Prices drop as product becomes more readily available (i.e. LED lights)
- Should be focusing on an industrial level rather than a house – industrial has a much bigger impact
- Support for renewable resources in construction
- Diverse ecosystems in BC will affect the standards
 - i.e. 'Don't run your car for more than 2 min' doesn't work up in the north
- Have a conversation on the energy roadmap – good start
- Standards moving towards performance base
- Get a plaque for green building – not worth the \$50,000+ to create it
- Low flow toilets – got \$50 to change toilet, lots of people did it

G) Transportation

a. Is this conversation about moving people and things or is it about the resource industry? Is it both?

- Training seen as an obstacle on moving the resources
- Transportation market – trucks/diesel fuels etc. utilizing both to benefit the country/community
- Workforce being moved – get our bridge (Taylor) up to speed and scales are needing work
- Mile 54 scales are a wreck – fix fist before we can get infrastructure in place before we can transport anything
- Cost effective – ships/west coast – here; need to improve infrastructure first
- 1975 bridge west causing issues
- People need to be near the industry to support government (provincial and federal) infrastructure
- Improve highways – safety energy – only was are long, no short values around, arteries need to be clear
- Value added: chemical clusters – AB (south of Calgary)
- Services using byproducts of itself

b. Roads, rails, runways vs. pipelines? What are the other options?

- Trucks/parcels – highway is so busy and full (2014/2015)
- Commute has changed – busses and provide camp less vehicles on roads
- Highway travel and infrastructure is a risk
 - Getting people to site
- Improving infrastructure and utility corridors are to be increased if we need the movement
- Gas plants in past used same pipelines – would need to upgrade to support the increased demand
- Infrastructure is there – but would need to be updated
- Climate/travel/living in the north is so different – mindset is different, driving is absolutely essential
- Educate the public – transportation by air in 1 day can't be done: WestJet/Air Canada, etc.
- Upgrading corridors: truck/rig moving/service operations in the north “can't find anyone that cam move cattle into truck”
- Pipelines – allow them or are we going to sit back and allow follow through of government stand
- Chicken/egg situation: ports need to be LNG; boat owners won't LNG

- Ports are starting around the world – how can we implement our transport?
 - Supply to trucking – currently diesel is more consumer based/driven
 - Commercial truck has no range with natural gas (weight is also a problem)
- c. Provincial infrastructure is critical to any alternative fuel transportation option. How do we get electric and compressed gas into our transportation network?
- Nationally our infrastructure is failing us – not enough of it
 - Transportation and data – participate in economy
 - CN and CP not leaders in technology
- d. Compressed gas as a transportation fuel? (Advantages, disadvantages, management, and safety)
- More appealing and benefit to using natural gas to save/provide and use LNG (our current resource) – lead by example and use natural gas technology
 - City buses are natural gas – transportation works best for big cities
 - Suburban areas – promote energy type conducive to population
- e. Thoughts about policy, incentives, regulation, implementation, etc.?
- Innovative technology – invent to build engines that would be use for car/truck (research in process)
 - Education: down south economically effective oil and gas
 - How do we educate the “most populated” Vancouver to oil and gas through:
 - Burnaby/boats moving 200/300 barrels/day out of the harbour
 - Paid advertising on benefits to oil and gas, not slamming oil and gas – education needs to be done
 - Air business development – subsidized by government
- f. Other points
- Technology – millennials: involved, different mindset (social media) – challenge to hire different mindset
 - Education – hydrocarbons need to be powered by natural gas and will communicate this version into votes
 - If we can't convince Vancouver this is the next step, we are fighting a losing battle
 - Carbon foot print – natural gas: ability to convert to electric drive for products
 - Public entity: public – new dam – distribute more educationally
 - Electric drive: 3 phase power to power plant facilities
 - Require more power
 - BC Hydro closed branch – cut workers and back logged now
 - Public awareness: #1 commodity = water – how do we get it?
 - Energy could be marketed similarly
 - Empty truck passes full truck on highway – should make move both ways, move product and people faster and more efficiently
 - Private industry is willing – let them put in place, don't stand in the way of private
 - Government essential services – no throwing \$ at a failing market

H) Carbon Policy

- a. What do we want carbon policy to do?
- Financial application
 - Policy in terms of credits
 - How to spend credits?
 - Want it to recognize global warming

- Want it to reduce greenhouse gases
- Lower emission energy
- Incentivize change
- Competitiveness – as carbon prices go up things get limited
- Realistic carbon targets
- Working within budget and setting realistic targets
- Carbon ledger – current method is not accounting for all
- Clarity in certainty
- Figure out how to get all parties into the same game
- Fairness of industries
- Carbon leakage to be addressed
- Not all carbon credits are equal
- BC is a leader
- Propane – no GHG potential
- Questioning how carbon tax is included in a propane bill vs natural gas bill
- We're all paying for it whether we see it or not
- Utilization of energy needs to be better
- Provide incentives back to the general population
- Connect carbon policy to things in people's everyday lives
- Solar windows
- Make a connection so that everyone knows what it's for
- Needs to be more transparent
- Previously it did come back as a rebate in BC but it changed in September
- Is GHG a global warming gas? Absolutely! Is it good to reduce it? Yes! What is the full effect as of present? Unsure
- Policy should not penalize people
- Use policy as an incentive – currently not feasible because of the cost
- Carbon policy is not real accounting
- How can it be measured? Should be as effective as a measuring stick
- How/why can a polluting industry by a credit?
- People see a lot of smoke and mirrors for the discussion
- Difficult to have meaningful engagement without a definitive understanding of what it is supposed to do
- Costs have increased causing the industry to take steps to reduce emissions – direct impact on the bottom line

b. Is it local, provincial, or global?

- Needs to address how the UN accounts for greenhouse gas omissions
- Need to shift the thinking from provincial to national to global
- Cross jurisdictions – agreement and recognition
- How does BC make money off of it?
- Very global issue
- GHG will exist wherever it is dealt with
- If you don't start dealing with it now, it won't ever get dealt with – has to be done without penalizing
- Coal has 20x GHG potential

- Purpose of carbon policy – reward good behaviour
- Ingenika = diesel not propane (most Native bands run on propane)
- Canada produces 5 million barrels of crude oil a day
- School boards in Vancouver are being penalized when they shouldn't be – money should be put back into fixing them

c. How do we connect global benefits with local goals?

- Targets need to be hit – but why?
- Gases are counted where they are burned, not where they are produced – what would happen if we counted them where they are produced?
 - Want to count where it is used, not produced
- Net picture = global benefits greater
- Discussions around China & production vs. importing
- Paris Agreement
- Think global and act global
- We need to be seen as the global leaders in climate change
- Honest conversation needs to be had to take place with taxpayers
- Carbon tax transfer has been used to offset other taxes
- Money can get paid out but not returned to the industry
- Need to segment the discussion
- We are a resource-based economy
- Carbon needs to be discussed with both negative and positives
- Oil sands in Alberta produce a LOT of carbon emissions – pollution is a big topic
- Carbon policy can fund innovation to help people in communities (i.e. solar window)
- Challenges with the way the math is working
- Communication – need for transparency
 - If no one knows/understands, interpretations are made and may not be accurate
- We can't kill an industry to reduce minimal amounts

d. Other points

- Needs to be global
 - Using pricing to measure reductions of emissions
 - How to agree globally? When we can't even agree provincially?
- Need to avoid narrow view
- Be fair and realistic/competitive
- Realistically identify that there are issues and how to deal with them
- Equations are complicated
 - How much to build initially vs. how much over entire usage?
- Policy needs to state from conception to user – needs proper measurement
- Want it to reduce emissions – more to it, less complex
- Needs to be a level playing field
- Need to look globally > provincially
- Want it to do something different than it is doing now
- World needs net growth – need a suitable change option
- Upstream operators cannot gain credits
 - Credits gained by investing \$ into the industries that it comes from
- Behaviours will not change by taxing those who don't get a voice
- Can our roadmap ensure that every policy has the correct data?

- Idea is to brainstorm to boil down key things that we already know and what we still need more information on to provide it to the government – need to frame it appropriately to enable the government to listen
- Government needs to be malleable to stay on top so hopefully that will benefit our province and industries
- Ensure the information is framed so that it is not that of the opposition
- We don't always understand what we think we do
- Current regime is wonky
- The North is being blamed for costing too much with the industry
- Want policy to keep BC as a forefront leader
- Use our own materials within our own province – walk the walk

I) Relationships with First Nations and Landowners

a. Can we write policy around benefiting agreements? Or is it the prevue of the landowner or First Nation to negotiate individually?

- Individually Alberta reselling with this
 - Province not to do
 - Individual based on the impacts
 - Negotiations are different based on landowner/community needs
 - Large projects requiring having benefit agreements
 - Condition of permits
 - Many communities don't have capacity
 - Consider social issues
 - No blanket/cookie cutter approaches when creating agreements
- Equality benefits within agreements
- It does work but some issues with the agreements and what community needs
 - Health, education, does not have to be money
- Closed door agreements need to stop and have to be transparent to benefit communities' current needs
 - Majority of people to make agreement happen and move forward with proper communication
- Government use/consult as different communities have different needs
- Agreements made effect future generations and need to have considerations
- Time and activity to create agreement based on project
- Individual approach with each community so industry has better understanding of what happens with traditional ways and culture/language
- Remove internal policies/cultural issues before negotiations
 - Communities to have strong structures in advance to negotiating
- Timelines – no structures to agreements
 - When deadlines aren't met by either party, there are added stresses
- Engage individual – no need for a policy
 - No one size fits all, but have a template that is a starting point
- Have communities write their own policies on how to engage and work with policy
 - Variables on the project magnitude and community leaders
- Discussing directly with communities/landowners and contributions or input to include into documents
 - Wanting to be heard and listened to
- Landowners and First Nations should be a part of the policy and be a part of the follow up
- Individual negotiate with FN and landowner as each need is different and how to be involved
 - But have framework in place before that says how to engagement with communities

- Having a good faith agreement in place first
- Agreements vary based on needs of community
- Government shouldn't tell FN and landowners what to do
- Approaching groups before projects begin
 - An appropriate way to engage not coming in and being a struggle when hearing "this is my final offer"
- "Engagement Fatigue" there isn't the capacity to keep meeting and informing
- Companies provide capacity to FN communities through finances
- Policy should be around proper negotiation – everyone involved should benefit
 - FN or not – everyone should work together to achieve a common goal
 - Write something that benefits everyone, setting a precedence
- Each FN community is governed differently
- Should have rules for what happens with "Terms of Engagement"
 - Everyone has to bargain in good faith
 - Strong terms should be in place
 - Removing biased to have best interest of everyone
- No policies currently offer more successes when negotiation – also quicker with timelines
 - Rights, needs, equity, fairness, standards
- High standards should be part of framework
- Can they be able to negotiate amongst themselves? (sub surface rights – seismic work on land)
- Everyone needs to be treated equal and the same
 - Level playing field for landowners and FN the same
- Policy of how you engage, benefits, sustainability, opportunity, impacts with outcome, access
- Policy for government or industry being clear on what is being created
- High level policy that has an umbrella, everything is created – works the same, acts as jumping off point

b. What is the appropriate way to engage stakeholders in resource development? (community, First Nations, land owners, citizens)

- Best way to communicate = early and often, multifaceted
- Building relations before building infrastructure – it also results in trust (early and often) to create solutions together
- Do some of it, just pick something out and do what you can
- Companies to not go in with a pre-set design so the communities can create the layout
- Having a marker in place to have industry goes into communities to say, "we listened" and this is what we did about it
- Creation of a feedback roadmap when:
 - Communications happening
 - When communication is in place
 - Project updates
- No moving goal posts, keeping the framework in place where First Nations groups create and pass to industry
- Bringing everyone together for educational sessions from FN and industry perspectives so all facts, issues are brought up at the beginning
- All to be present so it is not filtered through many people
- Tie question 2 and 1 together as they should be hand in hand
- Discussing and providing input throughout the whole project, not just at the start
- Looking at requests carefully and fairly, not just about money
 - Contributions to be sustainable
 - Education

- Infrastructure
- Job opportunities – trade – education with commitment, not just job security
- First Nations having strong policies in place, prior to industry even coming
- FN landowners have their own requirements when industry comes to build on land (Squamish) – not only governments having environmental standards
- FN groups should be on decision making process through early engagement – must be in a meaningful way
- When it comes to opposition it can be through proper/factual education
- Communication should be factual, unbiased, acknowledge the positive and negative – honest
- Both sides need to be acknowledged, not ignoring
- Messages > better communication between groups
- Realistic and clear, even with benefits for individual and community benefits
- Driving communication and education in the right areas at the right times
 - Emotions affect decisions and outcomes
 - If we can get younger generations to put family emotions from the past aside to make proper decisions that are more educated on both sides – FN and industry can better benefit from the outcome
 - If you believe in something so strongly, learn the other side to have empathy and fully understand
- Early and often to engage and groups being able to influence decisions
- Talk to groups before planning process, not bringing them already developed plan
- Using appropriate and plain language
- Don't rush things – find compatibility
- Do homework – first, find understanding (trust and transparency)
- Willing to listen, understand, and work with
- Approach FN consultation right the first time – when trust is lost, it takes a long time to gain back
- Talk to groups before the planning process – “we have an idea” vs. “we have a plan”
- Accountability – who is responsible for knowing what rights and responsibilities are
- Respect all involved
- Process vs legislation vs content
- Having integrity with everything
- What happens when project is over, and company is gone? Lifecycle of projects

c. Present an innovative and creative solution (solutions not problems).

- Industry having scores with engagement rating companies that judge companies on how they rate with working with FN groups
 - Holding companies accountable on their scores, downfalls, and offer an audit/quick reference guide for other companies or communities
 - Like WCB ratings
- Presenting information to a community perspective
- Indigenous communities need to be in the “driver seat” – need to feel like they are in control throughout process
- Long term and sustainable
- Have FN communities report back on what they have done with industry and celebrate success
- Rating stakeholders – is there a need for certain to be there? Does it affect their community?
- Early engagement with outside the box scope – non-negotiables vs. negotiables
 - Location, price, time, design
 - What factors are at play?
- Result oriented – has to have a result @ the end of a part of the outcome
 - Removing emotions and biases

- Are all groups deciding to how reach?
 - Include land owners/FN in the start with planning, not 4 years into planning and industry is ready to move forward
- Does not need to be innovative – needs to go back to foundations: trust, respect, strong relationship, listening, but understanding what is being said
 - Defined and realistic outcomes
 - Expectations are clear for both parties
 - Understanding all parties' rights
 - What does a win/win look like?
- Change legislation
 - Holding accountability to industry on behalf of FN and landowners
- Information available whenever
 - Writing surface leases accordingly – clauses included into standard lease where owners are protected
 - Banks with mortgages on land lease leans
 - Government to step in with federal bankruptcy laws
 - How well sites are surveyed
 - Surface rights board has all records of agreements
- Reflect how past negotiations and engagement pieces are in place and everyone understands what's going on
- Proper education, leveling the playing field
- Understanding level of impacts and the issues that are often associated with the projects
- Just because you believe in something doesn't mean you are right
 - There's your story, my story, and the truth somewhere in the middle
- You have to be able to understand all perspectives to be successful
- You can agree or disagree but put that aside for what benefits majority
- Trying to get opposition at the table to be a part and help shape/negotiate agreements

J) Emerging Opportunities/Adaptation/Adoption of New Technology

- a. How can we create an environment where embracing emerging opportunities is acceptable and welcomed?
- Innovation is profit driven
 - Educate public = biggest hurdle
 - Language is limiting us (i.e. 'rigpig')
 - Need to be honest – acknowledge failures in past
 - Education in schools – informed on both sides
 - As technology increases, number of employees decrease – tech often replaces people
 - Have put no money into ways to be innovative and use it in BC
 - Plain language
 - Start at young age – for older, see the value
 - Information and knowledge – be credible
 - Know your audience and engage/present the information appropriately – website, face to face, etc.
 - Innovation awards
 - Instill pride in profession
 - Create a baseline: conversation has to start with a baseline
 - Understand where the industry is heading and where the innovation is leading and why we must innovate in order to improve the industry
 - Open to change: invest in change

- We have previously been innovated... how do you continue being innovative and create an environment of innovation
- Create best practices and continue evolving Best Practice Policies
- If you are afraid of innovation, you won't be innovative
- Get rid of water to frack: Water is expensive
- Innovation allows you to be leave a smaller footprint. Be innovative
- Have to be unapologetic on how the industry has advanced.
- You have to be Honest: you can get information from anywhere.
- Acknowledgement of failures of the past: LNG does not have a good history. One documentary is 'for, one documentary is 'against'. How can you get your message across and have the other side understand the message?
- Both sides are right. Do not spin the yes side or the no side. Communicate and acknowledge the different points of view. This is where LNG can contribute, how can we come together and know the realities of getting something through politically and how difficult to process is. How do you negotiate with First Nations and the government? LNG has embarrassed both sides. This is not pollution free however, LNG is trying to do it with the least amount of carbon footprint.
- Communicate what the industry is about.
- No side: Knows where they are going to attack.
- Why doesn't the Yes side communicate their successes and innovation and acknowledge what they've learned from their failures. How do you better voice the Yes side and make the conversation of Energy moving forward. Work together – not apart.
- Could you get First Nations to speak on behalf of LNG. There is generally some cynicism when First Nations are spoken about.
- How many jobs are First Nations actually getting from LNG/Energy investment? This number is not communicated within and outside of the industry.
- Why isn't energy and oil and gas not being learned about in elementary schools? What are the facts – not opinions of the facts? How do we relay this message to educating kids and shaping their knowledge of what our industry is at a very young age? Kids are being shaped into being environmentalists and learning that the energy industry/pipelines are bad for the environment. How do we curb this mindset into being positive about the energy industry?
- No emphasis on entering trades programs. If you were going into trades 20-25yrs ago – if you went into trades – you were looked at as a failure. This view has been changing in the past 10-15yrs.
- How do you attract the right kind of people to the area? The nay-sayers are not here. Surprised that education isn't more involved.
- Governments pay a lot of lip service and has not made it very comfortable for the industry. If natural gas royalties were closer to 1.5-2 Billion dollars – Provincial Government would be willing to listen to the industry and its leaders – but when royalties are only 250 million dollars – Provincial government will not give natural gas industry a bigger voice. Something is wrong with that. When royalties for cigarettes are larger than the Energy Industry – something is wrong!
- Build a sense of community. Make natural gas more readily available to the citizens. Support communities who use natural gas (some of the time, not all the time) to heat homes, and make electricity. Use natural gas in trains, trucks and cars. Create innovation around natural gas use instead of diesel fuel.
- 40% decrease in employment levels in the industry of NE BC because of technology. Work used to be seasonal. Millennials are not wanting to go into camps for 2-3wks – they prefer the ability to travel and work on the road.

- People should be looked at more of an asset than a liability. Innovation and tech reduces the amount of people who will be employed within the industry. How do we retrain these people?
 - How can trades and redundant employees be retooled into this changing industry?
 - Training people to be more adaptable. Trades are transferable.
 - Industry in the Peace has not kept its higher level wages. Ex: a person in Kamloops is working for \$5 more an hour in a mill than what he would be paid in the North Peace doing the same job.
 - The narrative is changing for trades – trades can make good money – working conditions have improved considerably since the industry first began. How can we communicate these changes to the rest of society?
 - Proper Education, Communication, Need for better information.
 - How can the Energy Plan push industry changes into being more innovative?
- b. We know that new tech is often “bleeding edge” – how can we support innovation, at what cost, and how much risk are we prepared to take?
- What is the ultimate goal of emerging tech? Creation of a sustainable industry?
 - Highlight best practices
 - Tax breaks for innovative ideas/processes
 - Do not be apologetic
 - Funding spokespeople outside of industry to be credible speakers
 - Need to work twice as hard as “no” side as they have set up the narrative
 - “Yes” side needs to infiltrate academia
 - Tax break for innovative energy companies to locate in municipality
 - Roadmap cannot get bottle necked in Victoria
 - Need strong position paper from WEBC – actionable items
 - Provide answers, not problems
 - Can citizens lobby federal government to put pressure on foreign lobbyists
 - We can produce LNG cleaner than all
 - Create political environment that is supportive – it is up here
 - Energy roadmap should look at carbon tax policy
 - Rewards program
 - Incentivize innovation
 - Need collaborative environment for roadmap
 - Cost – not just \$, but cost to employees and customer base
 - Need to evaluate cost with reward
 - ICE (Innovative Clean Energy) Fund – use as incentive to reward
 - Not enough transparency in our companies
 - Not enough educating the general public
 - Media influences them a lot
 - Energy roadmap should look at carbon tax policy
 - Rewards program
 - Incentivise innovation
 - Credible spokesperson
 - Education, communication, need
 - Energy literacy in school curriculum
 - Government controlled by bubble – cannot be credible source/communicator/advisor
 - Educating the Public. Make them understand
 - The Lower Mainland does not understand that the industry is innovative
 - Most people are misinformed and believe the critics of the industry when failures occur

- People believe the industry is doing more harm than good and do not understand how innovative, how conscious, and how small the industries' carbon footprint actually is in relation to this industry in 3rd world countries
- The LM and Island does not understand how innovative the Peace is in advancing innovation in the industry
- Media/Social Media/Newspapers need to be avoided
- The industry does not convey a high-tech, highly innovative industry.
- If you refer to yourself as a 'rig pig' – a pig refers to you working on a rig. That does not confer a high tech, highly educated, and highly innovative industry.
- If you are being very innovative, the industry/company should be given more tax breaks in order to be more innovative.
- Industry should not be apologizing for advancing innovation. Industry is advancing in bringing in best practices and taking huge strides in innovation
- Do not rely on media, social media and other avenues to being unapologetic. But do NOT discount them either.
- The NO side is very strategic, well-funded, well positioned to be in opposition to defeat the Yes side of industry.
- Hey, I just created a 20% more efficient well – but no one in the industry is wanting to talk about it with other citizens.
- Telling our story is a huge one. Tell people about the innovation. Train the leaders. Sponsor a chair at business schools like the Sauder School of Business at UBC to be the next leaders for the industry.
- No Side did a very good job of educating themselves and the innovation isn't being breadth through the academia side of learning.
- Imbed the industry within academia. Build it at the elementary age all the way through to University. The Energy industry is not bad for the environment – yes, the industry impacts the environment however the industry is striving to be leading innovation.
- Every school has a chair of environment... why isn't there a chair of Energy at Universities.
- Could be a research facility or tax breaks in different areas of the province and Canada.
- Tax breaks are all well and good... but they won't spur the small guy to be innovative.
- Do not make 26 wells with 26 different roadways. Make 26 wells and only one roadway to them (within vicinity).
- Roadmaps cannot simply be feedback and become a bottle neck in Victoria with no action being taken. We must take action now.
- Outcome of this symposium should be actionable items in the form of a strong position from NEBC paper: This is the problem, this is the answer. Engagement in Victoria is poor at the moment. What does the North Peace need in terms of continuing to be leaders of innovation.
- Local governments are beneficiaries of LNG. Single Municipalities do not have huge dollars to throw money at the industry however, municipalities can support the industry in terms of policy and moral support. Local Municipalities are very supportive of LNG. However, without Federal dollars and Federal government support, it will be very difficult for the industry to continue to be leaders of innovation.
- Industry works hard to optimize innovation. Technology is changing at such a rapid pace; how do you shift the mindset to push the envelope and continue to innovate without Federal support. Being innovators of an industry requires taking on a lot of risk.
- Not to innovate is Foolish! How much is the right amount to invest? Federal support must be a bigger issue. Municipalities are not big enough to fund these initiatives – it has to come down from the Federal Government.

- We are where we are because of Innovation.
- Put the problem in front of industry and the industry will solve it. Industry doesn't want to take the initiative right off the bat – it is too expensive. Horizontal drilling is an example.
- Reducing the carbon footprint – there is no obvious, immediate financial return.
- Incentivize the industry into being more innovative.
- If companies are using innovative processes to reduce their carbon footprint – the government should reinvest the tax royalties back into the company(ies) that are pushing the boundaries of innovation.
- Carbon tax/incentive should be helping you make a choice. Currently, companies are not able to use it differently – you are either able to use it or not use it. Incentivize innovation through the carbon tax. You need to be given a choice. If you innovate – you get an incentive. If you do not innovate – you get no returns from being taxed.
- Industry has done a fairly poor job of communicating its successes.
- The No side is telling their narrative about the industries failures. And the yes side does nothing to tell its narrative. The narrative for the industry is being told by the Critics of the Energy Industry! This industry will never get ahead if we do not change – Society views the industry as being reactive – not proactive.
- Communicate better, better education. Driving awareness into a young enough crowd. There is no driver in education in the right place. Energy in its entirety. There will always be some impact. How can you better educate people about the impacts and the good that can come from the education? Who can talk about the education in the Lower Mainland who is not part of industry. Find a fully independent body taking the facts and disseminating the information apart from yesses and no's and NGO's. How can this body function apart from government, the critics and the leaders of the industry? The body needs to be fully independent from any outside source and be respected.
- Forestry aspect: more steps could be taken in waste management (ex. Canfor). Slash piles that they burn: 30% of the tree is left in the forest. Carbon Footprint of that is huge! What can forestry do to use that other 30% of the tree? Forestry industry does not have a way to make money from that part of the tree, so they chose to burn it rather than use it. Technology isn't quite there to use that part of the tree effectively. If you have no market for that tree, that part of the tree is burned.

