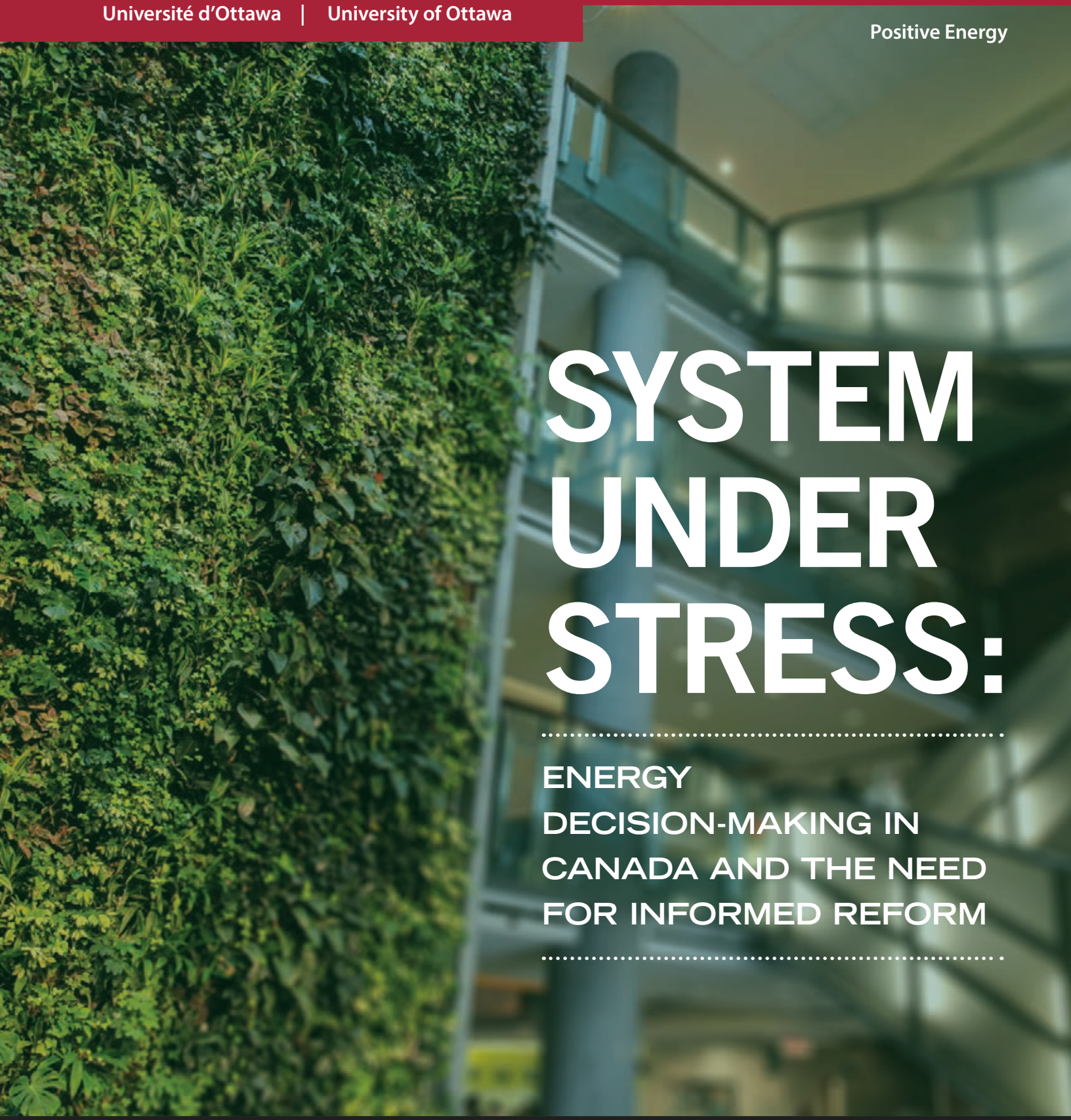

SYSTEM UNDER STRESS:

ENERGY DECISION-MAKING IN CANADA AND THE NEED FOR INFORMED REFORM

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POSITIVE ENERGY

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EXECUTIVE SUMMARY

Canada's energy decision systems are under stress, stress that appears to be growing and is reaching the point of dysfunction. This is costing and will cost Canada in many ways: in environmental performance; in our capacity to attract investment and foster innovation; in the energy system's ability to cost-effectively deliver reliable energy; and ultimately, in Canada's ability to manage the transformation to a much lower carbon energy economy. This paper aims to increase the light and reduce the heat on this problem and does so in four steps: framing the problématique; better understanding the system and its component parts; identifying the core stress points in the system; and outlining a broad approach to 'informed reform.'

THE PROBLEM IN A NUTSHELL: ELEPHANTS, HORSES AND SITTING DUCKS

The problem centres on the question of the level of public confidence in decision processes affecting energy. Put simply, public confidence is low and declining and the consequence is that public authorities' energy decisions – affecting all types of energy – have become increasingly protracted and uncertain, leading to outcomes that can be contrary to the interests of Canada as a society, without necessarily satisfying local communities, the business community or advocacy groups. We are all losing.

Many horses have left many barns: social, value and technological change. At its core, the public confidence challenge reflects numerous societal processes whose effects spread well beyond energy: declining levels of trust in government; declining deference to authority and expertise; increasing preoccupations with risk; growing expectations regarding the 'democratization' of public decisions; social fragmentation and greater individualism; and growing mistrust of 'big,' whether in the form of business corporations or public institutions. All this is amplified by the myriad effects of social media.

The impacts of these changes are far reaching and in the largest sense are evident in political processes throughout the western world. Canada and energy are far from uniquely affected. But affected we are. Many efforts have been made in recent years to 'solve' the problem, even at the same time that it appears to have grown. Despite the best of intentions, however, underlying value conflicts and divergent interests left unresolved – what we refer to below as 'policy gaps' – make adjustments to regulatory systems alone largely futile.

Many elephants in many rooms: policy gaps. Three policy gaps stand out: climate, reconciliation with Indigenous peoples and cumulative/regional effects of energy development. Climate change, the future of fossil energy and the path toward a low carbon economy continue to be debated but – after 25 years – without coming seriously to grips with the underlying problem. The history of Canada's fraught relationship with its Indigenous citizens has multiple dimensions and deep-seated challenges. Opposition by Indigenous communities to energy development is often based on concerns extending well beyond energy to issues like clean drinking water, affordable housing, or government follow-through (or lack thereof) on commitments and legal agreements. This gap is exacerbated by the fact that Indigenous communities occupy and claim rights over much of Canada's land where energy resource and infrastructure projects are being proposed or contemplated and we are far from establishing mutually acceptable conditions for arriving at the needed decisions. Finally, we have yet to develop adequate policy and planning systems to deal with wide ranging and cumulative effects of energy development – economic, social and environmental – on local and regional communities.

The sitting ducks: energy decision-making processes. Amidst this menagerie, energy decision-making processes are sitting ducks. Tough policy problems invoke widely divergent interests and values and can only be addressed through processes with explicit political accountability. The context is one in which society often distrusts authority and expertise. In the midst of this, energy regulatory processes are called on to adjudicate. It is hardly surprising that many such processes have failed the test of public expectations. What is surprising is that anyone expects that they should without significant reform to the larger energy decision system.

THE SYSTEM IN A NUTSHELL: POLICYMAKERS, REGULATORS AND NEW PLAYERS

The single most important thing that can be said about the energy decision system is that it is a system: a dynamic, organic system that is constantly evolving, where relationships among the various parties are often ambiguous and strained and the emergence of new and influential parties is adding stress. Efforts to find 'fixes' that take inadequate account of the systemic nature of the problem are at high risk of coming up short or even making things worse. *Regulatory reform is a necessary but insufficient condition to strengthen public confidence in energy decision-making.*

At the core of the system are two component parts:

- Policy machinery, consisting of executive bodies (cabinet), bodies for political accountability (legislatures) and bodies under direct political control capable of advising and executing (government departments).
- Regulatory machinery, consisting of numerous types of quasi-autonomous bodies, including resource, economic, environmental and power system regulators.

How these institutions work together (or not), how they are resourced, how they interact with other public authorities, how they incorporate in their processes the critical problem of 'planning' and how they interact with other actors in society are all questions essential to any effort at reform.

Meanwhile, other actors in society are becoming increasingly influential in energy decision-making. Traditionally, the private sector – private energy companies, private sources of capital – has dominated. Business remains vital and will be even more so in the low carbon transformation. But civil society has grown in importance, taking a multitude of forms from environmental organizations to local community groups to think tanks. Aside from civil society, local authorities with governing powers of one form or another have grown in importance. These include, notably, municipal governments and Indigenous authorities.

This dynamic, organic system is embedded in the larger context of the physical energy system – the system of resources and infrastructure that delivers energy services. Outcomes in physical energy systems are in turn substantially determined by the system of energy markets – international and domestic energy markets, financial markets, technology markets. Notwithstanding anything that participants in other parts of the system might wish by way of outcomes, the physical and market systems will inevitably shape the nature of potential solutions, the evolution of technology and the pace of change. This will be profoundly affected by questions of cost, risk, return and uncertainty – the overall investment climate.

STRESS POINTS – PRIORITIES FOR ATTENTION OF REFORMERS

There are three core stress points dogging the system that deserve priority attention from those seeking to strengthen public confidence in energy decision-making.

The policy-regulatory nexus: the two energy solitudes? The core of this stress point centres on the dividing line between policy and regulation in both substantive and procedural terms: who does what, who is responsible for what, and who is accountable? The distinction between values and broad societal trade-offs, on the one hand (the preserve of policy) and interests and technical negotiation, on the other (the world of regulation), is key. Informing this are multiple questions: how do policymakers get advice and on the ground intelligence and to what extent should regulatory bodies deliver that advice and intelligence? When and how do regulators in turn get democratically derived direction?

Digging deeper, how are systems of regulatory governance structured and how do they operate? How should regulatory independence be understood and operationalized?

Finally, what are the potential arrangements and forms that can better cope with the fraught subject of planning that lies between policy and regulation? What sorts of systems are needed to address broad public interest questions of cumulative and broader impacts in a systematic, scale-appropriate and democratically-grounded fashion that doesn't become so ponderous that it prevents any development at all?

Who Decides? The balance between local and higher level decision authorities. A number of factors, including the 'horses' and 'elephants,' are pushing questions down to local authorities. Many issues – such as land use impacts or social effects of a local nature – are ones that play out at the local or regional level and are to one degree or another in the hands of local bodies. In addition, energy technology is evolving in ways that will lead to increasing decentralization and, to some degree, local autonomy.

Against this, several critical questions stand out. Local control will often be in tension with broader regional, provincial or national interests. The role of Indigenous authorities creates unique questions. The ability of local authorities to act cooperatively beyond their own backyards will be tested if they want to take on greater control of their energy futures. The capacity of local bodies to act competently and responsibly will be heavily tested as they cope at the same time with other priorities, capacity challenges and financial pressures.

All of this will play out in a context where it is by no means clear the extent to which future energy systems will be interconnected or autonomous, what fuels and technologies will be in play and what business and regulatory models will eventually dominate. Local entities will take on increasing roles. However, rushing to place more in the hands of local authorities in the face of these sorts of unresolved questions would be the antithesis of informed reform.

How to Decide? Engagement, information and capacity. Apart from who has the responsibility and the authority to decide, there remains the question of how to go about it and for that matter, what 'it' is. Who should be consulted, when, covering what ground, using what tools, and with what expectation that consultation will lead to change?

A number of key issues and questions characterize this stress point. The most critical of all is the scope of the decision in hand and whether the mechanism through which peoples' voices are heard is the appropriate one to handle it. Is it a question for policymakers, for planners or for regulators?

Energy is a long game. The essential shape of the system evolves over decades. Decisions taken today fundamentally affect the effectiveness, security, efficiency and environmental impact of the energy system several decades in the future, but neither our engagement machinery nor our demands as citizens to be engaged are well suited to that reality.

Energy also plays out in a very large arena. For any given energy decision, who can be regarded as a stakeholder with a legitimate right to be engaged and heard? Related to this, when it comes to the role of federal, provincial, municipal, and Indigenous governments in a given energy decision, who does what and when, and how do the different roles interact?

Further adding to the challenge is that most decisions regarding energy investment, construction and ongoing operation are made by private entities, not governments. This fact raises numerous questions pertaining to public versus private roles, private decisions and commercial confidentiality versus the public interest in knowing. Public engagement is not an absolute good but something that has to be balanced against other factors. Procedural integrity is paramount, but processes – especially formal regulatory processes – will increasingly need to balance clarity, transparency and predictability with inclusiveness, adaptability and flexibility.

INFORMED REFORM: A SYSTEMS APPROACH UNDERPINNED BY GUIDING PRINCIPLES

Informed reform calls for a systems-based, careful, deliberate path forward. Key principles underpinning the process include:

- **Start from a systems perspective.** The focus should be on both the effectiveness of and public confidence in the machinery that occupies the space extending from energy policy all the way through to the operation of energy production and delivery systems.
- **Accept the horses.** Social and value change, and the social media communications environment, are here to stay and they will profoundly shape the decision environment. Every reform needs to look to those forces and how any given change will play in that context.
- **Befriend the elephants.** New policy priorities like climate and addressing the position of Indigenous Canadians have been layered onto the system over time and they reflect differing values. They are inherently political and policy-based, not regulatory, and must be addressed as such.
- **Be clear about policy objectives.** Policy affecting the energy system is inevitably driven by multiple objectives, including health and safety; security in several dimensions; cost and decision timeliness, and their effects on affordability, economic competitiveness and innovation, and environmental imperatives, including climate change. For an economy based in some measure on energy resources, a fundamental objective – at least traditionally – has been to take economic advantage of those resources.

- **Define the relevant publics.** The public whose confidence is essential needs to be understood as all stakeholders who are fundamentally affected by public policy and regulatory choices, all the way through from local communities to energy consumers to investors in energy businesses.
- **Consider impacts on the physical energy and energy market systems.** Most energy transactions including investment choices and large scale energy transformations will occur in essentially free markets, many of them world markets. Energy transactions also play out in the context of the physical energy system, with long-lived infrastructure and assets. The public decision system has to account for the imperatives of those markets.
- **Collaborate and coordinate.** The architecture of Canadian confederation with all its complexities, ambiguities and overlaps, is as firmly established a reality as the fact of Canada itself. Much real decision authority lies outside the hands of any one government or even a well-meaning collection of governments. There was never greater need for collaborative and cooperative federalism.
- **Decide based on adequate, reliable, accessible information.** Informed reform requires excellent sources of reliable, accessible information. Sound information infrastructure underpins public confidence in energy decision-making.

The road ahead on energy will be hard, perhaps harder for Canada than most given the energy intensity of our economy, our vast energy reserves and our conflicted attitude toward our energy resource economy. This is all the more reason to focus our energies on correctly diagnosing the challenges ahead and addressing them effectively through careful thought and analysis – informed reform.

INTRODUCTION

In recent years, numerous high profile and protracted conflicts over energy development have erupted in Canada. While fossil fuel pipelines are the most obvious flashpoint for these controversies, – think Keystone XL, Northern Gateway, Trans Mountain, Energy East – energy projects of all descriptions (fossil, renewable, linear, non-linear) have faced widespread and extensive opposition in recent times. Whether wind farms in Ontario, large scale hydro in British Columbia or shale gas exploration in New Brunswick or Quebec, conflicts over energy development are flaring up at a seemingly increasing pace. These controversies play out mainly in the regulatory process for individual projects, notwithstanding the fact that many of the concerns opponents express – be it climate, reconciliation with Indigenous peoples, or other environmental effects – extend well beyond the remit of individual projects and, most often, of energy regulators.

Despite this, much of the political discourse has adopted a rather narrow view of the scope of the problems and what needs to be done to address them. Specifically, there is an unhelpful tendency to assume that regulators and regulatory decision-making processes for individual energy projects are the only roots of the problem: strengthen regulators and project decision-making processes, and all will be well.

This paper takes a different view. Informed by over two years of extensive research, engagement and reflection on public confidence in Canadian energy decision-making by the University of Ottawa's Positive Energy project,[1] it takes a 'systems approach' to the issue. We begin from the fundamental starting point that energy decision-making in Canada is a system comprised of multiple component parts, each operating with their own logic and imperatives, and interconnected with their counterparts in both obvious and less discernible ways.

The core component parts of the system are twofold:

1. **Energy policymakers** – elected officials who develop overarching objectives and related instruments for energy (objectives include health and safety, security and reliability, cost and its effects on the economy and society, and environmental performance; instruments range from exhortation to expenditure, taxation, regulation and public ownership), and
2. **Energy regulators** – the quasi-autonomous bodies that contribute to the development, and implement and interpret the framework of rules, standards and guidelines to pursue policy objectives.

Nested within and between policy and regulation is planning of various types and at various scales, although in a system based on markets and private property, planning tends to be a rather weak, undeveloped and uncoordinated part of the system.

1 The University of Ottawa's Positive Energy project uses the convening power of the university to bring together leading researchers and decision-makers from industry, government (policymakers and regulators), Indigenous governments/communities, local governments/communities and environmental organizations to identify key issues, action items and research gaps when it comes to public confidence in energy decision-making. Positive Energy's research is solution-focused, pragmatic and applied, and is undertaken by leading researchers in Canada and the United States supported by top-notch graduate and undergraduate students. Researchers work in close consultation with stakeholders, using an iterative process of engagement, collaborative research design, and high level solution-oriented events, dialogues and workshops. This approach enables Positive Energy to zero in on the core issues, undertake rigorous relevant research and develop detailed recommendations for action grounded in the realities of energy decision-making in Canada. Positive Energy's extensive network of leaders, organizations and researchers maximizes not only the credibility and relevance of our research, but the likelihood that recommendations will be acted upon by relevant authorities.

For obvious reasons, the policy and regulatory parts of energy decision-making tend to be the primary focus of decision-makers, but it is essential to recognize that the decision-making system operates within the context of the physical and market energy systems – systems with long-lived infrastructure assets; geological, hydrological, geographic, economic and demographic characteristics; energy source, use and trade flow dimensions; and most often, market-based pricing and market driven investment decision-making, where a premium attaches to clarity and stability; innovation and competitiveness-driven firms and subsectors, and domestic and international/global energy realities. In this context, it is imperative that policy and regulatory changes be developed with a view to their practical feasibility in the physical and market worlds of energy, worlds that operate with their own temporal, technical and structural characteristics, and which largely dominate energy outcomes despite the most fervent wishes of policymakers.

We contend that failure to treat energy decision-making as a system with policy and regulatory component parts nested in the physical and market energy systems has blinded Canadian decision-makers to:

a Accurately diagnosing both the problems and opportunities Canada faces when it comes to energy development and public confidence in energy decision-making, and

b Identifying the right solutions to chart an effective path forward.

Failure to treat energy decision-making as a system has also generated and exacerbated conflict over energy and the degree of public confidence Canadians have in the country's institutional arrangements for energy decisions. Recent reforms to the system have often focused on one part of the system (e.g., regulation) without consideration of other parts (e.g., policy), and the interaction or knock-on effects between the two. This disconnected approach to reform has, in some instances, generated unintended perverse consequences. As we describe further on, some efforts to strengthen public confidence in the system have unfortunately had the opposite effect.

In this paper, our focus is on public authorities: policymakers and regulatory bodies at the federal, provincial and territorial levels; Indigenous governments and authorities (recognizing that Canada lacks clarity over which Indigenous actors are legitimately constituted authorities and what the extent of their authority is); and municipal and regional authorities. Private, nongovernment, other Indigenous, and local community actors are all key players and influencers in the broader system of energy decision-making, but we have trained our sights on public authorities as this is where informed reform needs to happen.

THE PAPER PROCEEDS IN FOUR SECTIONS.

The first lays out the problématique: why has Canadian energy decision-making become so contentious in recent years? We underscore that failure to treat the energy system as a system qua system is both cause and consequence of conflict and reduced public confidence in energy decision-making.

The second section lays out the key component parts of energy decision-making (policymakers and regulatory agencies nested in the physical and market energy systems) and the ways in which the component parts interact.

In the third section, we outline what Positive Energy's research has revealed as three core stress points in the system – areas where tensions are most manifest and reforms most needed.

The fourth section focuses on how to repair the system. We call for a careful path forward, treating the energy decision-making environment as an (increasingly complex) organic system, and we describe the actions the University of Ottawa's Positive Energy project is undertaking to advance understanding, engagement, discussion and solution-finding on each stress point.

At its heart, the paper is a plea for informed reform: we urge governments and those interested in strengthening Canadian energy decision-making to begin from a holistic systems-based perspective that explicitly focuses on the core elements of the system, the ways in which they interact and evolve, the main stress points to address, and how to address them in balanced, durable and effective ways that comprehensively consider their impacts on and feasibility within Canada's physical and market energy systems.

THE CHALLENGE IN A NUTSHELL – PUBLIC CONFIDENCE IN ENERGY DECISION-MAKING:

Elephants, Horses and Sitting Ducks[2]

There is no single reason why public confidence has become such a salient issue in energy development, but rather, a multiplicity of factors generating the public confidence challenge. Many of the factors interact in ways that exacerbate the overall public confidence issue, and a number of them extend well beyond the remit of the energy decision-making system. What follows lays out the key factors, presenting them as two kinds of issues: horses (that have left the barn) and elephants (in the room). The 'sitting ducks' in this barnyard metaphor are energy decision-making processes, which have come under increasing stress and strain as a result of policy gaps (the elephants) and social and value change (the horses). It bears mentioning that Canada is not alone in facing the public confidence challenge – all western industrialized democracies, particularly those with large energy resource bases, are confronting this issue to greater or lesser degrees.

THE HORSES: MANY HORSES HAVE LEFT MANY BARNS (SOCIAL AND VALUE CHANGE; TECHNOLOGY)

Canada's energy decision-making apparatus was built largely in the early postwar period, a time when Canadian energy resources were being developed in large quantities for domestic and international (American) markets. This includes creating the National Energy Board in 1959, along with multiple energy regulatory bodies and government policies at both the federal and provincial levels, notably for hydrocarbon development in the Western Canada Sedimentary Basin and for the vast expansion of hydropower resources in provinces like Québec, Manitoba, Newfoundland and Labrador, and British Columbia.[3] But much has changed since the early postwar years. Today's context for energy decision-making would hardly be recognizable to decision-makers from the 1950s or 1960s.

As governments moved into the 1970s and 1980s, they focused on getting energy markets to work more efficiently and competitively, largely through deregulation and privatization. In Canada, this process got underway in the 1980s: in the oil and gas sector, it included deregulating prices, introducing competition into various segments of the upstream and downstream markets, liberalizing trade, and unbundling various functions within energy firms to establish open, non-discriminatory access to their services and facilities.[4] The electricity sector followed suit in the 1990s, with greater competition introduced into those segments of the industry (generation and wholesale/retail supply) that could be operated under non-monopoly conditions.[5]

The focus on markets was followed in the 1980s and 1990s by much greater policy attention to the environmental impact of energy exploration, production, transmission, and consumption. Concerns for biodiversity, ecosystem health, climate change, land use, and water quality and diversion, ascended on policy and regulatory agendas at the international, national, provincial/territorial and municipal levels, and new policy and regulatory measures and structures such as environmental assessment systems were put in place. These various regulatory frameworks, some

2 This section draws on a public confidence discussion paper prepared by Positive Energy for the 2016 Energy and Mines Ministers Conference (Gattinger 2016).

3 Inevitably in Canada the question arises as to what is federal and what provincial and whether the inherent fragmentation that accompanies federalism has hindered the development of coherent energy policy and/or created fertile ground for experimentation and mutual learning. Notwithstanding these debates, going forward, the Canadian energy policy and regulatory landscape will be shaped by active governments at both levels, unavoidably clashing but hopefully learning at the same time. For a detailed analysis of the history, politics and substance of 'energy federalism,' see Gattinger 2015.

4 See Plourde 2005.

5 Ibid.

of which are sectoral (energy-focused) and others horizontal (dealing with cross-cutting related areas like environment, competition and health and safety), arose incrementally as accretions on existing systems with little thought given to the overall system effect in accountability, governance and transparency terms.[6]

But perhaps most importantly for purposes of this paper, is the extensive, widespread and permanent social and value change since the 1950s, along with changes in technology. There is no turning back the clock on these changes – the horse has left the barn.

Social and value change, in conjunction with new information and communications technologies, have had significant impacts on political, economic and societal governance, including on the energy decision-making system. Seven key changes bear mention:

1. Levels of public trust in government, industry and experts have declined across western industrialized democracies in the postwar period.[7] Successive results of the Edelman Trust Barometer document this change, with the 2017 annual study noting that 'trust is in crisis around the world,' including trust in government, industry, NGOs and the media.[8]

2. Citizens' deference to authority of various kinds (elite, government, industry, medical, etc.) has also declined over the decades,[9] and people are less likely to accept and believe what the 'experts' have to say on everything from their health, to the environment, governance and the economy.

3. People are becoming increasingly preoccupied with risk, especially human induced risk, and risk tolerance levels are on the decline.[10] Moreover, different people can have utterly different views of what constitutes meaningful risk. In some instances, this is because understandings of the nature of risk have not risen proportionate to the preoccupation with it, while in others, differences in risk perception and risk tolerance are rooted in fundamental value differences.[11]

4. Citizens have a greater desire to be involved in public decision-making processes that affect them.[12] They want to have a say in all manner of government decisions from the international, to national, provincial and local.

5. Social values have become more individualistic than group/community-oriented over the years with individual or small group interests able to trump community/national interests. Moreover, there is much greater fragmentation and more visible lack of consensus over what, precisely, constitutes 'the national interest' and how best to determine it.

6. There is growing critique of 'big business,' (in the energy sector) 'big oil' and large scale industrial development.[13]

7. Accompanying the above changes are transformational developments in information and communications technology, particularly the rise of social media. These changes have created unprecedented opportunities for disintermediated and instantaneous communication between citizens and citizen groups, enabling rapid widespread mobilization and instantaneous sharing of information (along with misinformation/disinformation).

6 For a detailed account of this process, see Doern and Gattinger 2003.

7 See Giddens 1990.

8 See Edelman 2017.

9 See Nevitte 1996, 2011.

10 See Giddens and Pierson 1998.

11 See Douglas and Wildavsky 1982.

12 See Fischer 2003 and Blondiaux and Sintomer 2002.

13 See, for example, Klein 2014.

The impact of these changes can be far-reaching:

- Citizens may be less likely to trust that governments make fair, unbiased, balanced decisions. Governments can be seen as co-opted by special interest groups, notably industry.
- People may lack confidence in expert opinion and scientific evidence, giving more weight to evidence from sources they trust, regardless of their knowledge or expertise (close friends, social media campaigns, celebrities or NGOs) than to the so-called 'experts.' All evidence – from scientific to individual opinion and belief systems – may be perceived as equal and deserving of equal weighting in decisions. All told, citizen trust in the source of evidence may be more important than its rigour. What's more, recent research in social psychology and political science underpins that people use 'motivated reasoning' when forming their opinions on controversial public issues, selecting evidence that aligns with their world views and values and dismissing that which doesn't.[14] Paradoxically, this tendency rises the greater the level of education, and efforts to 'educate' people about issues using 'the facts' can backfire, entrenching them more firmly in their positions and further polarizing the debates.[15]
- Governments are trying to 'open up' decision-making processes to respond to demands for citizen involvement, but this can generate real and perceived tensions between participatory democracy (citizen involvement) and representative democracy (elected or appointed officials taking decisions). It can also generate tensions between the imperatives of a system based largely on markets and private capital and those of a democratic political system (the fundamental role of private property as bulwark of democracy notwithstanding). Either way, in a democracy, there are multiple avenues to try to overturn or influence public decisions (lobbying, campaigns, the courts, etc.).
- When citizens' preoccupations are centred more on individual/local interests than on national/group interests, appeals to the 'national interest' or broader regional/group interests may get less traction or even fall on deaf ears.
- People may prefer smaller-scale locally owned projects or entities over large-scale endeavours, giving short shrift to relative costs/benefits related to scale.
- Perceptions of risk can trump realities of risk and risk mitigation. This can lead to the emergence of unhelpful terms of debate – like risk/benefit rather than cost/benefit. Citizens' and leaders' assessments of individual projects may not consider the impact of rejecting a project on the larger physical energy system (e.g., rejecting an oil pipeline could result in more crude flowing via less economic and environmentally sustainable means of transportation, rejecting a hydro or other renewable power project might stymie efforts to reduce the carbon intensity of the electricity system). Moreover, some risk controversies are actually values controversies wrapped up in the language of risk.[16]

14 See Kahan et al 2012.

15 Ibid.

16 See Wynne 2006.

- Most troubling of all, when it comes to energy decision-making, the combined effect of the above impacts can see public opinion, short-term political imperatives and political processes taking precedence over evidence-based decision-making and administrative systems like regulatory processes that are intended to be expert, neutral, balanced and evidence-based. This tendency can be amplified by the relative lack of public (and sometimes decision-maker) understandings of the realities of the physical and market energy systems in scientific, engineering, market, economic, environmental, technological and infrastructure terms.[17]

- The transformation in the information and communications environment – notably the rise of social media – magnifies and intensifies the above tendencies. The Internet, Twitter, Facebook and other social media platforms have created tremendous opportunities for disintermediated and instantaneous communication between citizens and citizen groups, with all the promise, prospects and perils this entails. Unprecedented vistas of easy, widespread communication are constantly unfolding, enabling rapid widespread mobilization of social movements and groups. They also enable the rapid widespread dissemination of partial or poor information – or worse, misinformation or disinformation – and can fast generate highly polarized and polarizing conflicts, along with wholesale opposition to energy development. These developments have in a sense radically democratized the communications environment such that the dissatisfied (of all sorts) have gained major advantage and influence on traditional organizations (of all sorts).

In the end, all of this has consequences for outcomes, some of which may on balance be beneficial but many of which may not: projects delayed or rejected on considerations well beyond their discrete merits, opportunities missed, less robust or sustainable energy systems, higher costs, reduced competitiveness.

Much of the heat (but rather less light) in this arena focuses on Canada's oil sands, climate advocacy and opposition to fossil fuels and pipelines in particular (think divestment, 350.org or 100% Possible). But that is at the high political level. At the local level, opposition can arise for a host of reasons. In Positive Energy's recently released report *A Matter of Trust: The Role of Communities in Energy Decision-Making*, climate change and greenhouse gases were a long way from the highest priority for local communities in five out of seven projects and communities we examined. Instead, community values, lack of trust in public authorities and local environmental effects were top of mind. All told, the possibility of opposition to energy projects of all descriptions – neatly captured in the term 'Blockadia'[18] – seems set to become the new normal. And with the rise of professional activism and well-organized and funded campaigns against large energy projects, political leaders face very polarized and polarizing choices. Exercising political leadership for the long term national interest requires ever-more political courage.

There's no question that what confronts decision-makers is a 'brave new world' of energy decision-making, one that is far more complex, interconnected, volatile, prone to polarization, fragmentation, distrust and misinformation, and far less controllable, at least by formal institutions and political bodies.

But the challenge doesn't end there.

17 See Moore et al 2013.

18 See Klein 2014. See Hoberg 2015 for the progressive application of Blockadia tactics to clean energy projects like largescale hydro.

THE ELEPHANTS: MANY ELEPHANTS IN MANY ROOMS (POLICY GAPS)

Energy decisions are often opposed for reasons stemming from broader questions of public policy rather than the merits or demerits of an individual energy project or policy for a particular energy source.[19] Such conflicts frequently play out in the regulatory process, which is ill-equipped to address the issues if they lie outside the scope of a regulator's mandate. *This is a policy disconnect that reform of regulatory processes alone will not fix. A systems perspective reveals the full scope of the challenge.*

Policy gaps arise in three key areas: climate change, Indigenous issues and wider ranging and cumulative effects.[20] On climate change, the absence of adequate forums for and perceptions of meaningful government action on climate over the last couple of decades has resulted in concerns over climate being played out in the regulatory system through opposition to individual projects. Advocacy in this space can be highly polarized and polarizing, and includes sharp targeting of the oil and gas industry itself as the source of climate change – rather than emissions from the consumption of fossil fuels. This tendency can narrow the focus of and debate about desirable government action on climate to the oil and gas industry alone. In addition, by focussing on fossil fuels per se rather than emitted greenhouse gases, it also tends to diminish the role of emissions-reducing technologies in energy production and consumption as well as other greenhouse gases and sectors (notably forestry and agriculture) in the climate solution space. Exacerbating this challenge is the tendency for governments over the years to have made (and continue to make) commitments on climate change that cannot practically be met in physical, economic or political terms. This generates both skepticism and a lack of confidence that governments take the issue seriously.

On Indigenous issues, inadequate government movement on reconciliation with Canada's Indigenous peoples can result in energy projects being opposed by Indigenous authorities or community members based on concerns that extend well beyond energy policy, regulation and development (e.g., rights and title; clean drinking water; social, health and education issues; the viability of traditional subsistence economies). This policy gap is exacerbated by a lack of clarity[21] and shared understandings of the legal context for Indigenous involvement in energy projects, notably, what court decisions mean for rights, title and the duty to consult and accommodate and the scope and nature of Indigenous governments' authority. This state of affairs has also generated a polarized and polarizing context, with the terms of debate often framed up in the language of 'vetoes' rather than a language of agency and partnership and building 'bridges' between Indigenous communities' needs and energy development.

On wider ranging and cumulative effects, the lack of adequate regional planning forums and mechanisms like strategic environmental assessments to address the effects of multiple projects in geographic, environmental, social and temporal terms can likewise generate opposition to individual projects for reasons that extend well beyond the project per se. Public concern can centre on the combined effects of a number of projects or development in particular regions where regional planning mechanisms are inadequate or entirely absent.

19 See the Positive Energy interim report on local community satisfaction with energy project decision-making processes (Cleland with Nourallah and Fast 2016).

20 Ibid.

21 Some might argue that in strict legal terms, there is clarity flowing from court decisions, but so is there a great range of interpretations and understandings, which strongly colours the decision-making context.

The fragmented nature of governing structures both within governments and in intergovernmental relations exacerbates these disconnects. Environment and climate change, energy and Indigenous issues are dealt with in separate ministries within governments and, with the exception of First Ministers Meetings, in separate fora in intergovernmental relations. Canadian federalism decentralizes authority over energy, which militates in favour of silo-building and parochialism, rather than collaboration and consensus-building. Further, as noted in the third section of this paper, policymakers and regulators don't always communicate enough or well enough with one another, so challenges in energy decision-making have become much more entrenched and extensive than they might otherwise have been.

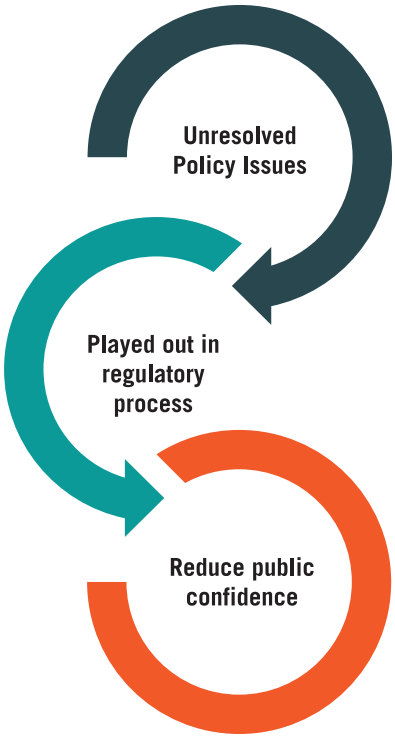
THE SITTING DUCKS: ENERGY DECISION-MAKING PROCESSES

As shown in Figure 1, policy gaps have had a cascading effect on the regulatory system and individual project proposals, and, ultimately, have lessened public confidence in energy decision-making. Because regulators are incapable of addressing issues beyond their mandates and individual project proponents face real limits to the extent to which they can address these broader issues on their own, public frustration mounts, and confidence in public authorities (policymakers, regulators) and industry (individual companies, entire industry sectors) can weaken.

Policymakers and regulators have sometimes responded to the cascading effect in ways that exacerbate the problem. This includes reducing public access to hearing processes – an understandable reaction intended to keep hearings manageable, but a response that leaves those concerned about projects or broader issues feeling 'shut out' of the process. It also includes shortening timelines or reducing overlap in regulatory processes – again, an understandable response intended to increase efficiency and predictability – both highly desirable for a competitive economy and to best husband scarce public resources, but one that can lead to perceptions that the regulatory process is less rigorous than it should be. It also includes politicians explicitly or implicitly critiquing regulatory processes and individual regulators, which compromises public faith in these institutions. Worse still, it has sometimes led to erosion of the independence of regulators in the name of greater political accountability. Industry has likewise sometimes reacted in ways that can exacerbate public mistrust, e.g., going on the defensive, underestimating or dismissing community concerns, or assuming that traditional economic arguments will carry the day.

FIGURE 1

AN INTERCONNECTED SYSTEM: POLICY GAPS CASCADE ON REGULATION



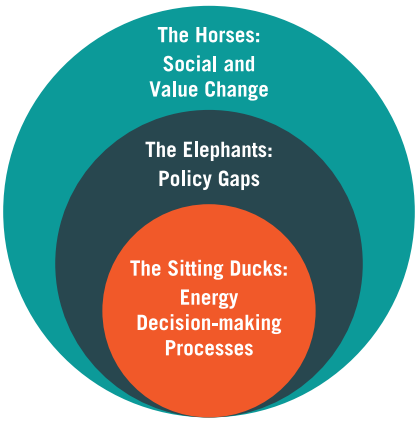
All told, energy decision-making processes have been sitting ducks in the context of the changes noted above (see Figure 2). In some respects – and certainly in hindsight – this was predictable, but the system didn't catch it early enough.

Policymakers and regulators have been critiqued along all the lines just noted: lack of confidence in the impartiality of evidence and decision-makers, in the degree of inclusiveness and transparency (or not) of decision-making processes, and in the extent to which larger policy issues are (or are not) considered in decision-making. Opposition and lack of confidence in regulatory processes has raised individual project decision-making to the political level, where leaders have been called upon to over-ride the regulatory process, often generating the worst of all worlds: a riskier, more uncertain, less fact-based process in which both the public and investors have even less confidence. Policymakers also face public confidence challenges when it comes to energy policymaking, with the public lacking confidence in the neutrality of decisions and the evidence bases upon which decisions are made.

The complexity of the issues and of the political, social, economic and environmental context seems ever on the rise, while the capacity and capability of the political, policy and regulatory system to respond effectively seems on the decline. The emergence of the term 'social license' – which suggests that social actors standing outside of the energy decision-making system can and should trump duly constituted democratic authorities – is symptomatic of the problem.[22] But it runs deeper than that. Governments the world over have reduced their policy and regulatory capacity in recent decades – notably in human resource terms – in response to fiscal pressures and the desire to reduce deficits and debt. And as part of the New Public Management,[23] they have contracted out, reduced the size and scope of government, and left more issues to the market and nongovernment actors to resolve. Combined with the growing complexity of energy decision-making – multiple imperatives, trade-offs, interdependencies, jurisdictions, etc. – the capacity of the overall 'system' to respond effectively, quite apart from its current architecture, will almost certainly need shoring up with additional financial and human resources, a direction very much at odds with the direction of public policy and administration in the past several decades. This issue is beyond the scope of the current paper, but is addressed in what follows when we highlight the importance of thinking through capacity issues and the resource implications of system reforms.

FIGURE 2

MULTIPLE FACTORS GENERATE DISTRUST IN THE ENERGY DECISION-MAKING SYSTEM



So what's to be done? In the next section, we identify where to begin: the path to solutions starts by recognizing that energy decision-making is a dynamic, organic, ever-evolving system and that the parts are all interconnected.

22 For a detailed analysis of the emergence, meaning and utility of the term 'social licence' see Colton et al 2016.

23 See Savoie 1994 for the emergence and rise of the New Public Management.

ENERGY DECISION-MAKING:

It's a System and the Parts are Interconnected

POLICYMAKERS AND REGULATORY AGENCIES: THE CORE OF THE SYSTEM

At its heart, the energy decision-making system is comprised of two core parts:

1. Policymakers in energy and related areas like health and safety, environment, competitiveness, and innovation. Their activities span the development and implementation of policy through various instruments (exhortation, expenditures, taxation, regulation, direct service provision and public ownership). The key policy players are political leaders and bureaucratic officials in energy and related policy departments at the federal and provincial/territorial levels. As noted below, these key players are increasingly sharing the policy stage with Indigenous and municipal/local leaders and governments, but this has not been a smooth transition. There is considerable uncertainty over who has or should have what authority in legal and political terms – especially for Indigenous governments.

2. Regulatory agencies for energy and related areas (environment, health and safety, competitiveness, etc.). Their activities span the development of regulations and their application to individual projects (project proposals, construction, operation, decommissioning). The key regulatory agencies are those at the federal and provincial/territorial levels. We focus our attention on the range of semi-autonomous (arm's length) bodies that regulate various elements of the physical energy system and energy markets:

   - resource regulators, which oversee the development of natural resources like hydrocarbons;
   - economic regulators, that ensure natural monopolies like pipelines and electricity transmission and distribution systems operate in the public interest;
   - environmental regulators, which focus on environmental protection through such processes as environmental assessment, and
   - power system regulators that oversee the establishment and operation of power infrastructure and operations due to the need for reliability and real-time balancing in the electricity sector.[24]

   This focus on regulatory agencies (as opposed to expenditure, taxation or other energy players) reflects the fact that regulatory bodies, along with policymakers, are the core decision-makers in the system when it comes to energy development, and that the main stress points in the system are centred on policy and regulation. As with the proliferation of players on the policy stage, new players are also appearing on the regulatory stage: notably municipal and Indigenous leaders and governments. Again, there is a good deal of uncertainty over the degree of actual and desirable authority of these players – especially Indigenous governments.

A crucial function sitting within and between policy and regulation is planning at various scales (local/regional/national/etc.) and for various issues (most notably big questions about the future of the energy system and wider regional and cumulative effects). In a complex interdependent market-based system driven more by the investment decisions and actions of individual firms and the emergence of new and often disruptive technologies than by public authorities' actions, planning is a challenging – if not contradictory – activity to undertake. Partly as a result, it is often overlooked, neglected, explicitly avoided or done poorly if at all.

24 See Cleland with Nourallah and Fast, 2016.

Nonetheless, the policy gaps identified above, particularly as they play out at regional scales, necessitate some level of planning if they are to be addressed effectively. The first question is how to design planning systems so as to mitigate their inherent contradictions in a rapidly evolving market-based system. The next question is who should be responsible for planning, with what scope and geographical coverage, and with what outcomes? As described in the next section, the absence of adequate planning functions and mechanisms is inherent in the three main stress points in the energy decision-making system.

THE ENERGY DECISION SYSTEM SITS IN THE PHYSICAL AND MARKET ENERGY SYSTEMS

Efforts at reforming the energy decision-making system must begin from the tenet that the energy decision system operates in the very real context of the physical and market energy systems: policymakers and regulatory agencies co-exist and interact against the backdrop of physical energy and energy market realities. These include basic scientific and engineering realities; geographic and resource realities; long-lived infrastructure; the expectations of those who have received rights or permission that they will be able to exercise them; highly dynamic market conditions; (sometimes disruptive) technological innovations, and international and global supply, demand and environmental opportunities and constraints.

The physical system has been built up over the course of the last half century and reforms to energy decision-making must grapple with the reality that infrastructure path dependence looms large – it may prove difficult if not impossible to make radical change quickly or within the bounds of what is technically, economically or politically sustainable.

As a small but salient illustration of this, Figure 3 shows Canada's complete energy system from energy sources to disposition as exports, domestic end use or lost energy (energy lost during conversion from one form to another or transport from one place or system to another). A number of fundamental physical realities jump out from the figure:

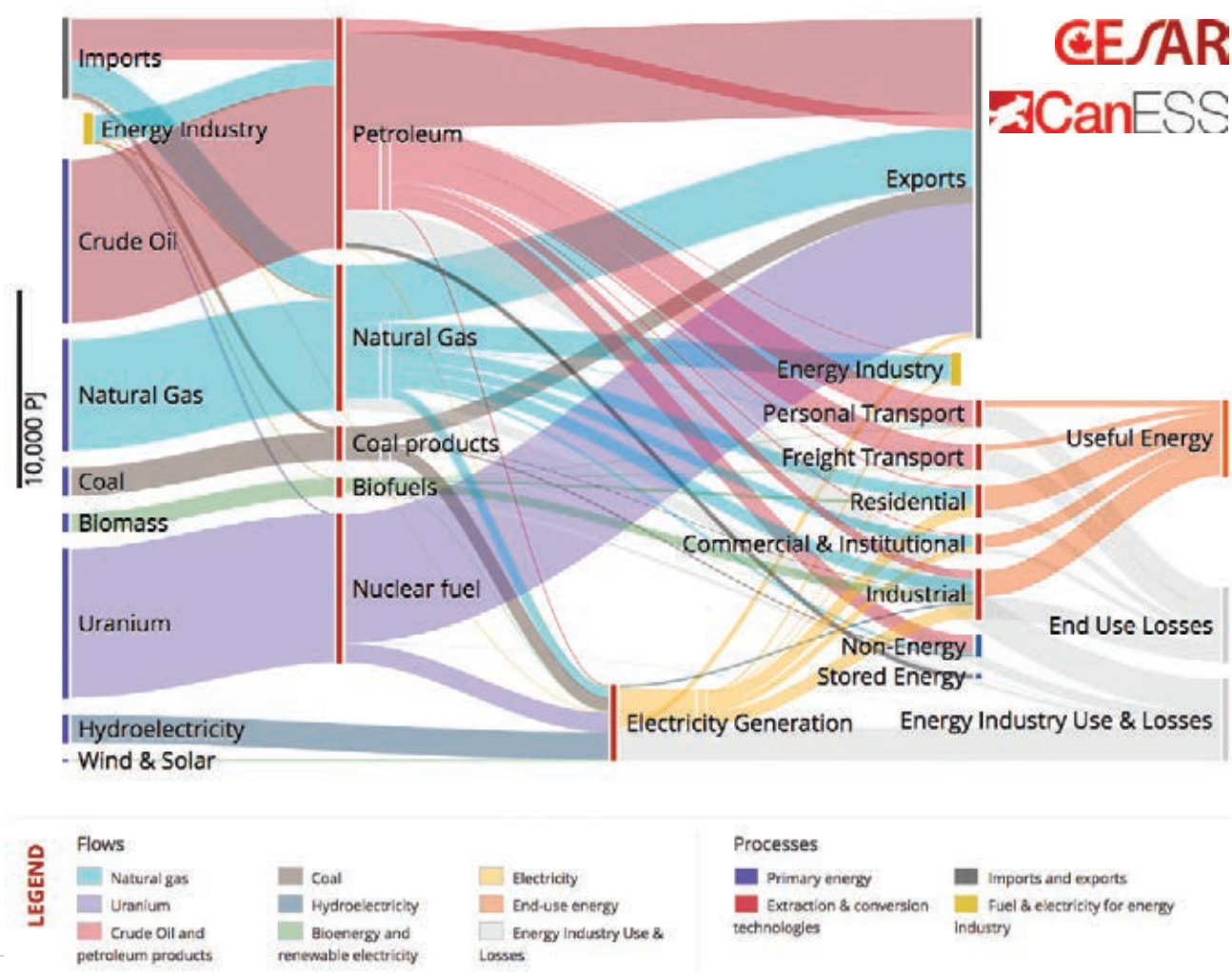
- The first is the dominance of fossil fuels in Canada's energy mix in production, end use and trade terms. As in all other industrialized countries, oil, natural gas and coal account for the lion's share of Canada's energy sources.
- Second, although Canada's electricity sector is largely based on non-GHG emitting technologies (hydro and nuclear), energy end use is dominated by fossil fuels – liquid fuels and natural gas – not by electricity, and certainly not by electricity from renewable sources.
- Third, following from points one and two, transitioning Canada's end use profile towards non-emitting or lower-emitting energy sources (in the mainstream discourse understood as greatly increased electrification of Canada's energy system), will necessitate wholesale changes in policy, including the scope and the intrusiveness of policy, as well as changes in energy markets and infrastructure. This is most evident to ordinary Canadians in the transportation sector, where people can appreciate the scale of the shift involved, but also represents substantial change across the entire energy end use profile – and, needless to say, may not be advisable for end uses like heating, where natural gas offers an affordable, reliable and efficient fuel, and where the infrastructure is extensive and well built up. Moreover, enhanced electrification will necessitate building a lot of 'stuff' – electricity generation and transmission infrastructure that may or may not be supported by local communities or Canadians writ large – think wind farms in Ontario or large hydro in British Columbia.

- Fourth, end use losses are substantial across Canada's physical energy system, and underscore the importance of strengthening energy efficiency across the board.
- Finally, fossil and nuclear fuels account for the vast majority of Canada's energy exports.

What Figure 3 does not show is that energy exports have been Canada's largest export sector in dollar terms in recent years, and, as a consequence, the single largest source of foreign exchange earnings for the country, an important economic reality to bear in mind.[25]

FIGURE 3

CANADA'S COMPLETE ENERGY SYSTEMS IN 2013
Source: CESAR 2017.



25 See Statistics Canada, Exports of goods on a balance-of-payments basis, by product, 2011-2015. Available on-line at http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/gblec04-eng.htm. Energy products were by far the largest export on a balance-of-payments basis from 2011 to 2014, but edged down in 2015 due to price and volume declines.

IT'S A SYSTEM AND THE PARTS ARE INTERCONNECTED

The various parts of the energy decision-making system interact in multiple dynamic, organic and highly interconnected ways:

1. **Through broad policy directions** having an impact on and structuring regulation. Policy directions may be institutionalized in enabling legislation creating energy regulators, or may be articulated in various policy statements. They may also be embedded and effectively encrypted in (or decrypted from) a string of government decisions, actions, or inactions. In public interest terms this is of course the least desirable format for governments to articulate policy directions, but in cases like energy where the politics can be fierce, the economic and political stakes high, and the imperatives in tension if not outright contradiction, governments may leave themselves room to manoeuvre by opting for less explicit policy pronouncements.

2. **Through a multitude of discrete policy choices**, decisions and programs that either put flesh on the bones of broad policy directions, or respond in more ad hoc ways to specific situations, opportunities or challenges. Governments draw in various ways on different policy instruments that range in level of coerciveness from least to most coercive: from exhortation and persuasion through provision of information, to expenditure, taxation, regulation and public ownership. Specific examples in the energy field include information for consumers on matters like efficiency and climate change, various forms of financial support for projects or for research and development, carbon pricing using levies or other forms of taxation, rules for particular kinds of energy sources (e.g., ethanol in gasoline) and provincial crown corporations in the power sector. In all cases, these choices bear on public and private decisions, both across policy fields and jurisdictions but also within the realm of regulation. Needless to say, these choices are not always coordinated as best they might be across the various parts of the system.

3. **Through planning (or the lack thereof) at various scales (national, provincial, regional, local) and for various functions** (cumulative effects, electricity system planning, urban planning with an impact on energy systems). With the exception of planning undertaken by public bodies within their spheres of authority (e.g., cumulative effects management by an energy regulator or electricity system planning by an independent system operator), the place, function and dynamics of planning within energy decision-making are arguably among the murkiest and least understood aspects of the system. Many of these latter processes interact with other parts of the system in almost entirely unconscious ways. Various planning authorities and processes go about their business within the confines of their mandates and may not be aware of the impacts of their decisions – positive or negative – on other elements or scales of the decision-making system. This may be the most pronounced between municipal or regional planning processes for things like local energy or environmental concerns, on the one hand, and regional, provincial or national processes for broader energy or environmental issues or projects, on the other. One notable exception is electricity system planning, where provincial electricity system operators have developed planning processes integrating local, regional and provincial interests and scales, albeit with decidedly mixed track records, particularly with respect to working with local interests.

4 **Through the physical and market energy systems.** This includes specific investment choices, innovation and technological change, and aging/renewal/replacement of capital stock having an impact on and informing both policy and regulation.

5 **Through specific energy project decisions –** approvals or rejections, and, where projects get the green light, construction, operation and decommissioning – where the regulatory system bears most directly.

6 **Through ongoing operation, monitoring, follow up, enforcement and course correction of individual projects** and various geographical, functional or sectoral components of the physical energy system, again, predominantly through the regulatory system.

IT'S A DYNAMIC, ORGANIC, EVOLVING SYSTEM WITH NEW PARTS EMERGING

In recent decades, the number of players in the energy decision-making system and the complexity of their interdependencies and interconnections has grown considerably. In particular, actions by Indigenous and municipal governments have shown that more attention needs to be paid to these entities.

Indigenous governments and Indigenous communities more generally, have become far more involved, empowered and engaged in their communities' energy futures and their level of involvement in energy projects either as agents or in partnership with third parties. A string of court cases has affirmed and expanded the rights and title of Indigenous governments when it comes to resource development, but cases have also generated uncertainty and differences in interpretation of the precise meaning of rulings. Added to this is the desire of some to adopt the United Nations Declaration on the Rights of Indigenous Peoples, and the related uncertainty over the meaning and interpretation of Free, Prior and Informed Consent when it comes to energy (and other resource) development in Canada's constitutional structure.

For purposes of this paper and Positive Energy's forthcoming research and engagement, we focus our attention predominantly on public authorities in Indigenous communities (i.e., Indigenous governments). We recognize, however, that even here, there is uncertainty over which entities or people hold authority, or perhaps more accurately, what sort of authority different community leaders possess (notably chiefs and council as opposed to hereditary chiefs and elders). Individual members of Indigenous communities are considered in this paper and in our forthcoming work mainly when we turn to the third stress point in the energy decision-making system sketched out below – engagement, information and capacity – as this topic area focuses on, among other matters, how community members (Indigenous or not) are involved in energy policy and regulatory decision-making.

The second group of 'new players' is municipal and other local governments. While municipalities remain 'creatures of the provinces' in the Canadian constitution, and recent case law underscores the primacy of 'higher order' governments when it comes to energy decisions (City of Burnaby v. Trans Mountain Pipeline ULC), there is no question that local governments are becoming more vocal, active and engaged in energy decision-making processes,[26] both in formal regulatory processes and in the political sphere. In parallel, energy options have become increasingly decentralized and, related to this, community energy planning is becoming increasingly mainstream.

26 It is by no means only municipal governments who are weighing in directly in what traditionally have been federal responsibilities. Provincial governments have in some instances taken very active roles, all of it adding to the complexity and fragmentation of 'energy federalism' referred to in Footnote 3.

Mayors in various jurisdictions have become outspoken opponents of particular energy projects in a process some might deem a cynical bid for local support and re-election and others might deem a vivid illustration of local democracy in action. Community groups and individual citizens are also increasingly engaged in energy decision-making, whether it's in community energy planning, support of local energy projects meeting community needs or in opposition to energy projects proposed by third parties transiting through or meeting energy needs beyond the community.

Either way, it's clear that the 'old world' of elite, centralized energy decision-making with deferential local authorities and communities is behind us. The fundamental question is how energy decision-making systems should be reformed to accommodate, recognize, negotiate and support this new reality. As with Indigenous governments, for purposes of this paper and Positive Energy's forthcoming research and engagement, we focus our attention predominantly on public authorities in local communities (governments), although the influence of local community members and groups is also considered where relevant, notably in the third stress point sketched out below.

For both of these new sets of players, an important starting point when it comes to reforming the system is to begin by reframing the conversation from a polarized and polarizing 'veto' debate, to a conversation that seeks to build 'bridges' between local community needs, interests, concerns and values, and broader regional, provincial, national or international needs, interests, concerns and values. It will also be important to consciously focus attention on questions of capacity – if and where Indigenous and municipal governments take on greater authority and responsibility for energy decision-making, it is imperative they have the support and capacity to do so effectively, efficiently and economically.

THE NEED FOR INFORMED REFORM

This paper is an appeal to those reforming energy decision-making systems to do so in a manner we term 'Informed Reform.' As noted above, a number of recent reforms to the system have failed to approach energy decision-making as a system. This has both contributed to and exacerbated the current challenges energy decision-makers are facing, including, notably, the main stress points we identify below. A number of energy decision-makers have been focusing attention mainly on regulatory reform, but reforms to the regulatory system must be undertaken with explicit focus on their connection with existing and forthcoming policy choices, as well as the relationship between policy, regulation, planning and the physical and market energy systems. In short, **regulatory reform is a necessary but insufficient condition to strengthen energy decision-making.**

KEY POINTS OF STRESS IN THE SYSTEM

What follows sketches out three main points of stress in the energy decision-making system as revealed by our reflections, extensive engagement with energy sector leaders and research.[27] The discussion is intentionally brief and provisional as it lays the framework for our forthcoming research and engagement. As explained in the paper's final section, in the coming months, Positive Energy is preparing comprehensive discussion papers on each stress point, and convening energy leaders to explore the main contours of each of the three stresses, along with the most effective, sustainable and promising avenues to address them.

STRESS 1: THE POLICY/REGULATORY NEXUS: THE TWO ENERGY SOLITUDES?

Policymakers and regulatory agencies are the core components of the energy decision-making system. They are interconnected in substantive, temporal and operational terms, with policymakers laying out the broad set of objectives for energy (economic, security, health and safety, environmental, etc.) and regulators establishing and imposing specific rules and standards backed by sanctions of the state to give operational effect to policy. In the Canadian energy decision-making system, as in most western industrialized democracies, policy is generally the purview of governments (elected officials making policy and the public service implementing it) while regulation is frequently carried out by quasi-independent regulatory agencies headed by appointed officials.

The former operate in the political system, and generally respond to 'small-p' political imperatives: the values, interests and concerns of society, broadly understood to include the general population, the private sector, civil society organizations, communities, regions, and the like.[28] The ultimate 'big-p' political imperative is re-election, and governments that don't get the balance right in policy terms know all too well they will feel it at the ballot box.

Regulatory agencies, meanwhile, operate in a realm that is considerably more technical, expert and evidence-based, sheltered institutionally to some degree from 'small-p' and certainly from 'big-p' political interests. This is no accident, but rather, a conscious historical choice on the part of government policy-makers to have decisions about individual energy projects and the detailed rules for energy markets, energy security and environmental, health and safety performance made on neutral expert evidence-based – rather than partisan political – grounds. Without the short-term 'big-p' political imperative of re-election, regulators are, in theory at least, better positioned to take decisions – many of which will have repercussions for decades to come – in the broader long term public interest.

A well-functioning energy decision-making system would see policy and regulation working hand-in-glove within the bounds of this policy/regulatory nexus, including a clear understanding of who is responsible for which decisions, with what sorts of governance arrangements, and with what levels of interaction and communication, on the one hand, and independence and autonomy, on the other. And yet, the relationship – or sometimes, the lack of a relationship – between policy and regulation is a key stress point in the system, some would argue a point of increasing stress.

27 This includes, Cleland et al 2016 (including the individual case studies for this project: Bird 2016, Fast 2016, Simard 2016, Sajid 2016a, 2016b, 2016c), Cleland with Nourallah and Fast 2016, Gattinger 2016, Nourallah 2016, public opinion surveys undertaken on behalf of Positive Energy by Nanos Research (Nanos 2016 and Nanos 2015), and the following Positive Energy events: a conference on local communities and energy project decision-making (October 2016), a high-level workshop on the role of public authorities in energy decision-making (June 2016), a high-level workshop on Indigenous involvement in energy (fall 2015), the Positive Energy Big Ideas Energy Leaders Dialogue (fall 2015), and Positive Energy's inaugural conference (March 2015). Research papers and public opinion polling results can be found online at https://www.uottawa.ca/positive-energy/research-publications.

28 Of course, 'big-p' partisan politics are never far from view. All policy decisions are ultimately viewed through a partisan lens as well.

While some tension between policy and regulation is inherent in the system given the political nature of energy decision-making, stress in the policy-regulatory relationship can arise due to either too much or too little interaction between policymakers and regulators. Positive Energy research on community confidence in energy project decision-making highlighted the first issue in a number of cases.[29] It was perhaps most notable in the case of natural gas power plants in Ontario, where controversy and community opposition stemmed in large part from significant concerns over political interference by the Ontario government and lack of independence of the relevant regulatory agencies. The latter issue, insufficient relationships between policymakers and regulatory agencies, is exemplified by policy gaps cascading in unhelpful ways on regulatory decision-making processes (as described above). Further complicating the picture is the fact that there is no single policymaker or regulator: multiple policymakers and regulators exist within and across jurisdictions in Canada's federation.

Three Main Tensions. There are three main inter-related tensions in the policy/regulatory relationship: the dividing line between policy and regulation in substantive and procedural terms, the governance of regulators by policymakers, and planning (or the lack thereof).

The first, the **dividing line between policy and regulation in substantive and procedural terms,** is the most fundamental. At its core, on the policy side of the dividing line are broad questions of societal values and trade-offs that can be very challenging for policymakers to make given the political and often highly controversial nature of the matters at stake (e.g., climate change, water quality, social inequality, biodiversity, public health). On the regulatory side of the dividing line are more technical interest-based matters that involve negotiating various interests within the context of broader policy decisions. The system often lacks clarity when it comes to the respective roles, responsibilities and functions between and among policymakers and regulatory agencies across a host of issues – energy, environment, information, planning, economic development, and project decision-making, to name just a few.

The relationship between the federal government and the National Energy Board over pipelines provides a compelling example. Recent years have seen the federal government become ever-more directly engaged in the regulatory process for pipeline applications, in some instances publicly commenting on the desirability (or not) of individual pipeline proposals before they have worked their way through the regulatory process. This serves the system poorly as it implicitly – if not explicitly – undercuts the legitimacy, role and importance of evidence-based regulatory decision-making. The federal government also altered the regulatory decision-making process with legislation in 2012 requiring all NEB decisions – including rejected proposals – to come before cabinet for review and possible variance, including the possibility of overturning NEB decisions and referring terms and conditions back to the Board for reconsideration.

Further, in 2016, the government put in place new interim measures for major energy project proposals, including additional consultation processes undertaken by the government (via panel) over, above and subsequent to NEB hearings, and inclusion of upstream greenhouse gas emissions from the production of fossil fuels in its final decisions on project proposals coming before it after the NEB regulatory process. This latter provision injected considerable uncertainty into decision-making as it was not readily apparent on what basis or bases the government would or would not approve/reject a project.

29 Cleland with Bird, Fast, Sajid and Simard 2016.

While these changes are well within the purview of governments to make – governments are the architects of the overarching framework within which regulations are developed after all – they have muddied the waters of the policy/regulatory relationship, making the NEB's role vis-à-vis the government less clear and implicitly if not explicitly calling into question the credibility, legitimacy and rigour of its hearing processes. Moreover, some of the changes were undertaken in the midst of individual project proposals working their way through the regulatory process, which generated uncertainty for both project proponents and those who supported or opposed the development in question. To be fair, there was a clear need for governments to do something given the political controversy over large pipeline project proposals, public criticism of the NEB, and the 'cascading effect' of policy gaps on climate, Indigenous issues and cumulative impacts on NEB hearings.

Going forward, however, it is essential to clarify the respective roles in procedural and decision-making terms between policymakers and regulatory agencies. To return to the dividing line between values and interests, this is perhaps most pivotal when social opposition to energy projects is driven by fundamental questions of values and value trade-offs – the preserve of policymakers and the political system – rather than questions of individual or community interests and concerns, which can more readily be mediated, negotiated and addressed in the regulatory system.

All of this relates to the topic of regulatory independence. The independence of regulatory agencies is fundamental to their capacity to operate with credibility on evidentiary – not partisan political – bases. Pivotal to independence is absence of political interference in project decision-making processes: policymakers and individual politicians must respect the arm's length independence of regulatory agencies for the system to have legitimacy. They must not 'shorten' the arm for their own political gain.

That said, independence is not absolute. While regulatory agencies must have autonomy in order to take decisions, they must not be thought of as entirely insulated, isolated or separate from the broader energy decision-making system of which they are a key component part. If independence is interpreted too broadly, an unhelpful disconnect can emerge between policymakers and regulators: they may work at cross-purposes or miss out on opportunities to learn from one another. As noted in the previous section, a number of the current challenges to public confidence in the energy decision-making system have emerged in part because of disconnects between policy and regulation. Conversely, failure of policymakers to respect the autonomy of regulatory agencies can likewise weaken public confidence in energy decision-making.

Properly scoping those components of the relationship that require independence is fundamental to informed reform of the system – we need a more nuanced, detailed approach to the areas where independence is essential, and those where greater levels of collaboration, coordination and interaction are not only possible, but desirable.

It is also essential to identify, appropriately utilize, and, where necessary, expand, the means of communication and exchange between policymakers and regulators so they can work together to produce better outcomes. This could include areas like ongoing stewardship of the overall decision-making system (is it functioning well?) and ongoing monitoring of emerging issues, trends, challenges and opportunities (what's coming down the pike?). Had the latter been undertaken systematically, a number of the policy gaps noted earlier in this paper may well have been mitigated, addressed earlier or averted altogether.

Operationally, it means strengthening the means of communication between policymakers and regulators. This could include better use of formal legal tools like cabinet directives to regulators, informal tools like information exchange and collaboration, annual reporting from regulators to policymakers, and requests for advice and analysis.

The second tension, nested within the first, relates to the **governance of regulators by policymakers.** There are multiple 'touch points' between policymakers and regulators – enabling legislation for regulatory agencies, appointment processes for and representativeness of agency members (chair, CEO, individual members), regulators' accountability relationships back into the political system (through a minister, directly to the legislature, by what means), and the internal governance arrangements of regulators (how panels are struck for individual project proposals, how regulations are developed, conflict of interest guidelines).

Governance arrangements touching on these matters exist for all regulatory agencies – the issue is not a lack of structures. Rather, tensions arise where the arrangements have not been adequately thought through when it comes to their connection to the first tension: the relationship between policy and regulation. The governance of regulatory agencies by policymakers must be consistent with the dividing line between policy and regulation.

Does a regulatory agency's enabling legislation reflect existing policy objectives and practice, or are there gaps in the agency's mandate and operations that risk furthering the disconnect between the policy and regulatory worlds? Do appointment processes ensure that agency members individually and collectively reflect key policy and regulatory considerations when it comes to expertise, credibility and representativeness? Are there specific governance arrangements that account for core constituency interests (e.g., representatives for public interests like the environment or consumers)? Are the agency's reporting requirements and accountability relationships back to policymakers consistent with the respective roles, responsibilities and functions of the political and regulatory systems?

The third tension in the policy-regulatory nexus relates to **planning.** As noted earlier, weak planning capacities for issues like cumulative or more wide-ranging and regional effects have both generated and exacerbated tensions between policy and regulation. Going forward, efforts to transition Canadian energy systems to lower carbon profiles will likewise require much greater capacity for forward planning. Strategic environmental assessments that develop comprehensive plans for the long term are an example of ambitious forward planning, albeit one that can clash vigorously with both political and market imperatives. None of this should be taken lightly. Planning, political systems and market systems are not easily reconciled, and if planning is to avoid the traps of becoming either meaningless fluff or a costly drag on investor confidence, it will need to be approached with a system mindset.

All of these processes require information, data collection and analysis, forecasts and community outreach, which necessitate not only the capacity to undertake and effectively discharge these functions, but also conscious efforts to coordinate these activities to effective ends within and across the system of energy decision-makers (both policymakers and regulators) along with planning for other sectors and activities (e.g., integrated landscape management).

This topic is treated in greater detail in the third stress point below dealing with information, capacity and engagement. For purposes here, the key point is to acknowledge the need to strengthen planning capacities in both the policy and regulatory worlds. This includes careful attention to which component part or parts of the system – policy and/or regulation – should have planning responsibilities and for which issues. This would go a long way to bolstering the overall system and public confidence in it. It would also, importantly, strengthen the capacity of the system to engage with communities and other actors in informal ways outside of the formal quasi-judicial adversarial context of regulatory hearings.

A final core area for attention is the role and place of Indigenous governments in the policy/regulatory nexus. The lack of clarity over the level and nature of Indigenous governments' authorities, roles and responsibilities in the realm of policy and regulation has generated tensions, misunderstandings and mismatched expectations in the decision-making system. For industry proponents, it can seem like there are two regulatory processes when it comes to projects: the formal one carried out by federal and/or provincial regulators, and rather less structured processes that Indigenous governments carry out or require industry proponents to carry out. Not only does this create overlap and duplication, but it also generates uncertainty over the fundamental question of 'Who Decides?' when it comes to energy projects.

Indigenous authorities have a number of unique policy demands, imperatives and contexts, including constitutionally protected rights, the pivotal backdrop of reconciliation, and traditional knowledge. To address these and other issues, a number of jurisdictions and other resource sectors like forestry and fisheries have developed co-management boards with a formal role for Indigenous governments in the development of policy, regulation and project decision-making.

Thinking through the desirability of these sorts of new governance arrangements for the energy decision-making system and at what level of the system (policy versus regulation, development versus decision-making) will be essential to informed reform. While the broad contours of the role of Indigenous governments merit raising in this first stress point, the more fulsome treatment of the topic sits squarely in the second and third stress points below: who decides (the role of local) and how to decide (information/capacity/engagement). These issues are also closely related to the points above about planning and strengthening capacities for planning in the system.

Towards Solutions. Efforts to strengthen the policy/regulatory relationship would do well to start from some basic principles:

- At the risk of repetition, the first is to recognize and affirm that policymakers and regulators are the two core component parts of the energy decision-making system. Efforts to reform one should not be carried out in isolation from the other – reform must be undertaken with the broader system in mind.
- Second, while regulators play a pivotal role in energy decision-making, policymakers and elected officials are the ultimate stewards of the overall system and its architecture. As such, they play a pivotal role in monitoring the system's performance – not only when it's under stress as it is now but on an ongoing proactive basis.

- Third, some matters like 'big policy' (climate change, energy trade or energy security) and questions over broad societal value trade-offs, belong properly with policymakers (elected officials), not regulators. Other matters like technical assessments, regulation of company operations, and negotiating various players' interests when it comes to project decision-making, belong properly with regulators so that they are undertaken based on evidence – not partisan politics. That said, such distinctions are far easier to draw in theory than in practice. Identifying where the bright line lies will forever be a work in progress. Most importantly, when decisions are made in this policy-regulatory nexus, they should be made with explicit recognition of the balancing acts involved and should be made transparently.
- Fourth, strengthening planning at various scales may be an important means of identifying where the bright line lies, and of bridging the policy (values)/regulatory (interests) divide (and, as noted below, of bridging community and broader energy interests).
- Fifth, it is essential to clearly delineate the authorities, responsibilities and roles of Indigenous governments in energy decision-making, and the manner in which the Crown's duty to consult and accommodate should be undertaken. While this is unlikely to be resolved in the short term, it is critical to the re-establishment of a clear and stable regulatory environment.
- Finally, it bears repeating that policy/regulatory governance sits in the broader context of energy markets and the physical energy system. Reforms must be evaluated in the light of markets and the physical energy system to ensure they are consistent with efficiency and competitiveness imperatives, including timeliness of policy, regulatory and project decision-making, cost and complexity of the overall system, incentives or disincentives for investment and innovation, and the political realities for leaders on contentious issues.

STRESS 2: WHO DECIDES? THE BALANCE BETWEEN LOCAL AND HIGHER LEVEL DECISION AUTHORITIES

Traditionally most decisions relating to the energy system have rested firmly in the hands of either provincial (usually) or federal authorities but the public confidence debate has brought that assumption very much into question. This stress point focuses on the questions of where and how other authorities – mainly local – bear on such decision processes and how the answers to those questions may be evolving.

We are concerned here primarily with the role of bodies that have the ability to make enforceable decisions and that are in turn legally and politically accountable for their actions. There is another vitally important set of questions respecting local level influence and that is where various bodies at the local level may have a great deal to say and may have a great deal of political or moral influence but do not have authority as such. Questions respecting the roles of other bodies and actors like community members and groups are addressed in the next section dealing with the third stress, engagement and outreach (how to decide).

To begin, it is important to lay out a number of tensions, or terms of debate, that lie at the heart of this stress point.

National interest and local control. The primary question on which this stress point turns concerns the interest of the larger society in developments whose consequences ramify over a large territorial extent (contributions to climate change, economic efficiency and rights concerning the free passage of goods, and implications for energy security being among the most obvious) and those of local communities. Traditionally, the interests of the larger polity – especially at the provincial level – have tended to prevail in Canadian energy decision-making, but with the emergence of the turn to 'social licence,' the balance has shifted. Jurisprudence concerning the rights of Indigenous communities has crystallized if by no means entirely resolved that balance insofar as Indigenous communities are concerned. The important point is that there must be a balance and that trade-offs are inevitable.

Indigenous and non-Indigenous Canadians. It seems advisable first to clarify how Indigenous authorities are to be treated as compared to local authorities such as municipal governments. For the purposes of this particular stress point, we conceive of Indigenous authorities as essentially local in their nature. They are primarily concerned with land, with local services and with local economic development, as well as culture and values which may be very local in nature. As such, they address themselves to the effects of energy decisions largely through those lenses. As we make clear in the previous section, this is in no way meant to imply that Indigenous authorities established through treaties or analogous mechanisms and underpinned by inherent rights as recognized in Canadian law and the constitution are in any legal sense equivalent to municipal authorities established under provincial law as 'creatures of the provinces.'

Cooperation. Inherent in the question of the rights and responsibilities of local authorities is the question of cooperation. To the extent that such authorities have a larger role than in the past and to the extent that decisions have ramifications that extend beyond the community, how do local communities in the pursuit of their local interest avoid beggar they neighbour actions and instead, on their own initiative and their own authority, act in the larger interest as well as that of their immediate constituents? The will and the capacity to do that may fundamentally determine the extent to which genuine local control is a practical option in twenty-first century energy governance.

Capacity. Will is one thing. Capacity is another. Energy decisions are complex: technically in the sense of the safe, reliable, efficient functioning of energy systems; environmentally in the sense of myriad environmental implications; economically in the sense of the economic viability of energy operations and the environment for competitiveness, investment and innovation; and politically in the sense of a multitude of effects on individual interests and values. To the extent that local authorities make enforceable decisions or carry management responsibilities respecting permitting, construction, investment or operation, they require depth of capacity that is not often found even in higher level governments, much less at the local level. Redressing this imbalance carries very large resource implications as well as implications for necessary cooperation far beyond what exists today.

Energy from the bottom up versus central solutions. Energy technology is changing in numerous ways. One concerns the emergence of local solutions beginning with the management of energy use (primarily respecting efficiency) and increasingly extending to the exploitation of local resources (primarily for local use) including renewable resources and the effective use of waste (heat which is otherwise wasted as well as waste from domestic, agricultural and resource operations). The emergence of local solutions – many of which already exist, are economic and have been applied in numerous Canadian communities – carries important opportunities to create more environmentally and socially sustainable outcomes and makes local decisions both more important and more practical. But it also compels a much more extensive and sophisticated capacity at the local level.

Local and Central Energy: A Reality Check. Despite the emergence of more and more local solutions, energy systems remain highly interdependent. Two principal factors at the heart of the transition to low carbon energy systems will, despite the emergence of more local solutions, tend to increase this interdependence. The growing use of renewable sources creates locally sourced options, but renewable sources require backup to account for their intermittency (and quite possibly their extreme vulnerability in the face of changing climate) and the most practical backup may involve grid interconnection. To the extent that energy is delivered primarily in the form of electric power, that need will likely grow, not diminish, at least until large scale power storage becomes a practical, economic option. Some systems may be inherently more autonomous, like combined heat and power systems, although at the same time such systems will more often than not be dependent on a source of fuel that is centrally sourced.

Figure 3 earlier in this paper illustrates the extent to which energy systems depend on non-local sources and accompanying delivery systems. Transportation energy is almost entirely centrally sourced and will remain so as long as transportation relies primarily on liquid fuels, whether derived from refined petroleum products or bio-fuels. Energy for heat (space heat, domestic hot water, and industrial process heat) may be locally sourced in the form of local biomass and waste but as the system functions today the vast majority depends on centrally sourced natural gas. Electric power – which in principle can provide transportation and heat energy as well as energy for more conventional electric applications – can be derived locally but is still largely centrally sourced from large scale facilities.

All in all, the potential for local energy systems to become autonomous, while growing, will still be dwarfed by the requirement for externally derived energy and, therefore, for energy infrastructure that traverses many communities and in which all affected communities have a legitimate interest.

The other side of the energy equation – energy as a business serving external markets – makes interdependence even greater. Canada has benefited greatly from a large and robust energy supply industry, shipping oil and petroleum products, natural gas and electric power over thousands of kilometres from one part of Canada to another and to export markets. Canadians in all parts of the country benefit from the business opportunities created by the comparative advantage different communities have in the supply of both energy commodities and the expertise and technology associated with their production. This will not change in the foreseeable future.

All in all, Canadians as a whole have a large collective interest in energy systems that deliver safe, secure, and affordable energy to their communities and create associated economic opportunities. These systems are interconnected. They traverse extensive geography affecting multiple communities. They may well become even more interconnected. It follows that in the accommodation of local interests, the need will grow for those questions to be addressed in the context of the interests of the larger community.

Toward Solutions. There is no obvious answer to all of this, so much as several potential directions that can evolve incrementally:

- Solution-finding begins, first, with clarity about the distinction between local authorities and local communities. Local communities do not formally grant permission, at least not in a society governed by the rule of law and concepts of democratic accountability. Local authorities, on the other hand, may have much more formal roles involving enforceable decision authority and management responsibilities. The debate needs to recognize this distinction.

- Second, at the heart of this stress point lies the question of how local authorities are able to get a grip on their energy futures. What are their local energy options? To what extent will they be dependent on external sources? How will those sources be delivered? How will environmental and social effects be managed? How will benefits accrue to the community? What are the roles of the local community and local authorities in addressing these questions? These questions are the essence of community energy planning, which is an essential foundation for local communities to become effective partners in managing the national energy interest.

- Third is the need for a much more robust discussion and identification of solutions about how local authorities tie into higher level decision processes.

  - This takes us in the first instance into the realm of regional planning, where local authorities need to have substantial and legitimate roles as the representatives of local citizens.

  - It also connects to more technical processes. Environmental assessment, for example, is a responsibility usually of federal or provincial authorities requiring extensive technical expertise, but many of the interests and values impinged upon are highly local in their effects and may be best understood by drawing on local knowledge, notably traditional knowledge of Indigenous communities. How best to square that circle in a world of constrained resources?

  - Similarly, in assessing the economic viability of a given energy project there is a necessary balance to be found among technical expertise, local knowledge and expertise, and procedure, that respects both local and larger interests. New approaches to constructing tribunals or their operation may permit some rebalancing.

  - Power management creates a unique set of issues where a larger system relies on both long-term planning of facilities that take years to build and on real time balancing of operations to ensure reliability. How might local interests be more effectively integrated into those decisions?

  - Finally, it leads to the inevitable if awkward question of when and how higher level decision processes take ultimate precedence.

- Fourth, all of this raises questions about new models of engaging local communities and their governments. Across the country, myriad processes have sought in different ways to bring local citizens into decision processes and new models are emerging, such as 'co-creation' of regulatory regimes, making them the product of both higher-level authorities and local authorities and communities. The next section on engagement and outreach (how to decide) expands on these sorts of mechanisms. The important question for purposes of this stress point is the extent to which they exist in parallel to local authorities and the extent to which local authorities have a direct role in shaping them.
- Finally, there remains the vital question of information – sources, accessibility, adequacy, and credibility. As with the question of new models of engagement and inclusion, this question exists outside the specific question of the role of local authorities. But it also raises interesting questions about how local authorities can become meaningful parts of the information system.

STRESS 3: HOW TO DECIDE? ENGAGEMENT, INFORMATION AND CAPACITY

Apart from who has the responsibility and the authority to decide, there remains the question of how to go about it and for that matter, what 'it' is. Who should be consulted, when, covering what ground, using what tools, and with what expectation that consultation will lead to change?

This set of questions engages broad public interest communities such as trade associations and non-government organizations. It also touches on local communities both as collections of individuals and informal organizations and as local authorities, but in this instance representing the interests of the community to third parties as opposed to deciding, enforcing or managing in their own right. Importantly, it also engages Indigenous Canadians, albeit operating under distinctive legal conditions as specified in the 1982 Constitution, in treaties and other agreements, and under evolving doctrines concerning the right to be consulted and accommodated.

A number of key issues and tensions characterize this stress point.

Scope of the decision: policy, plans, projects. Most of the discussion and most of the controversy swirling around energy is centred on projects and decisions to approve or not approve them. But the issues are more often than not much larger – concerning climate change and greenhouse gases, the changing relationship of Indigenous Canadians to the rest of Canadian society, or smaller, but still large issues concerning regional scale eco-systems and communities. When projects and project decision mechanisms are forced to bear the weight of these large-scale issues, they almost inevitably fail. Therefore, the most critical question of all is what is the scope of the decision in hand and is the mechanism through which peoples' voices are heard the appropriate one to handle it? Is it a question for policymakers, for planners or for regulators?

Time: conception, development, construction, operation, end of life. Closely related to the question of scope is that of time. Do the consequences of a given decision play out immediately in the sense of immediate physical impact on land or a community or do they play out over years or decades as events unfold and as investment plans crystallize? Regulatory decisions and regulatory mechanisms are well suited to dealing with decisions of immediate consequence, but with potentially long term effects as in the case of

long lived physical infrastructure. As such, they attract the attention of stakeholders and in consequence they have evolved to accommodate stakeholder input.

But many important decisions for the longer term may also involve policy and planning where the demands for engagement are more often than not minimal (not because of lack of importance but because of lack of attention) and where the decision system has evolved minimal mechanisms or at best weak ones to bring citizens into the process. At the other end of the decision cycle – operation and, eventually, end of project life – there is a similarly weak demand for engagement and a corresponding lack of mechanisms.

Energy is a long game. The essential shape of the system is organic and evolves over decades. Decisions taken today fundamentally affect the effectiveness, security, efficiency and environmental impact of the energy system decades in the future, in other words they set up what is broadly known as 'path dependence', but neither our engagement machinery nor our demands as citizens to be engaged are well suited to that reality.

Geography: national, provincial, regional, local. Energy is not only a long game but it is one that more often than not plays out in a very large arena. When an energy user turns a switch or resets a thermostat, the implications of that choice can extend literally thousands of kilometres upstream to a hydroelectric dam or a well head or even around the world in the form of a contribution, however miniscule, to greenhouse gas emissions. Alternatively, if an upstream community believes that a pipeline or power line should not be permitted to traverse its territory, the implications of that choice flow thousands of kilometres both upstream and downstream.

The question, then, is who can be regarded as a stakeholder with a legitimate right to be engaged and heard respecting a given energy decision?

Many governments, many agencies: who does what, when, and how do different roles interact? Governing is a complex business. This is especially so in Canada with our federal model but it is true, regardless, and the social and value changes of the postwar period have made it ever more true. A given energy choice will in all likelihood have direct implications for several governments: federal, provincial, municipal, Indigenous. It will likely touch ministries responsible for energy, the environment, health and safety, the economy, foreign affairs, fisheries, wildlife and heritage to name obvious ones, and, under those ministries, will touch on the responsibilities of several subsidiary agencies.

In this case, the question respecting citizen engagement is who bears the primary responsibility for undertaking that engagement and how are the various pieces of the puzzle brought in as needed and appropriate? This question takes on a particular weight with respect to Indigenous peoples, where the Crown bears a legal responsibility to consult and, where appropriate, accommodate, and the matter of which Crown (in the right of the federal government or a particular province) and which agency carries out that role is a matter of critical legal and political importance.

Public versus private roles, private decisions and commercial confidentiality versus public interest in knowing. Most decisions regarding energy investment, construction and ongoing operation are made by private entities, not governments. This has implications for the public's right to know and the process of citizen engagement. Is the choice of chemicals in a fluid for hydraulic fracturing a proprietary matter of competitive advantage to a company or a question of health and safety to a nearby community? Are the options for location of a power plant matters for confidential commercial negotiation between an investor and power system regulator or important land use planning questions of interest to a community at large?

As practices have evolved, many issues that used to be regarded as matters of commercial confidentiality have increasingly been drawn into the public domain and regarded as matters of public interest, where transparency is paramount. But there are no absolutes here. The nature of a given decision, the parties involved and the stage in the decision cycle are all factors that affect the extent and nature of public engagement and corresponding levels of confidentiality and transparency.

Timeliness, efficiency and investor certainty versus consultation. A related question turns on what may be fundamentally divergent priorities between public and private entities. Private entities value timeliness, efficiency, relative certainty and focus on a given purpose and its supporting business case. Communities of all sorts may place more priority on openness and democratic debate and that in turn brings in a multitude of related issues and complexities. Public entities, for their part, need to strike a balance between the two.

Again, as practices and social values have evolved, society has tended to place greater weight overall on democratization of decision-making, and decision processes have inevitably become more complex, more time consuming and less certain. All good in a democratic society – up to a point. But things have to get done eventually, and time, complexity and uncertainty all have real costs. Engagement of the public is not an absolute good but something that has to be balanced against other factors.

Procedural integrity: balancing clarity, predictability, flexibility, adaptability. In keeping with the social and value changes described above (the 'horses' in our animal metaphor), modern society has come to regard questions of procedural integrity as matters of high priority, particularly for more 'formal' regulatory processes. Are regulatory requirements clear? Is the process predictable in its steps and timing? Is it well understood who can be heard, how and under what circumstances? Do all legitimate parties have equal access to the decision process and does it take place transparently? Is it clear when a decision will be rendered and are decisions accompanied by the reasons and process by which they were reached?

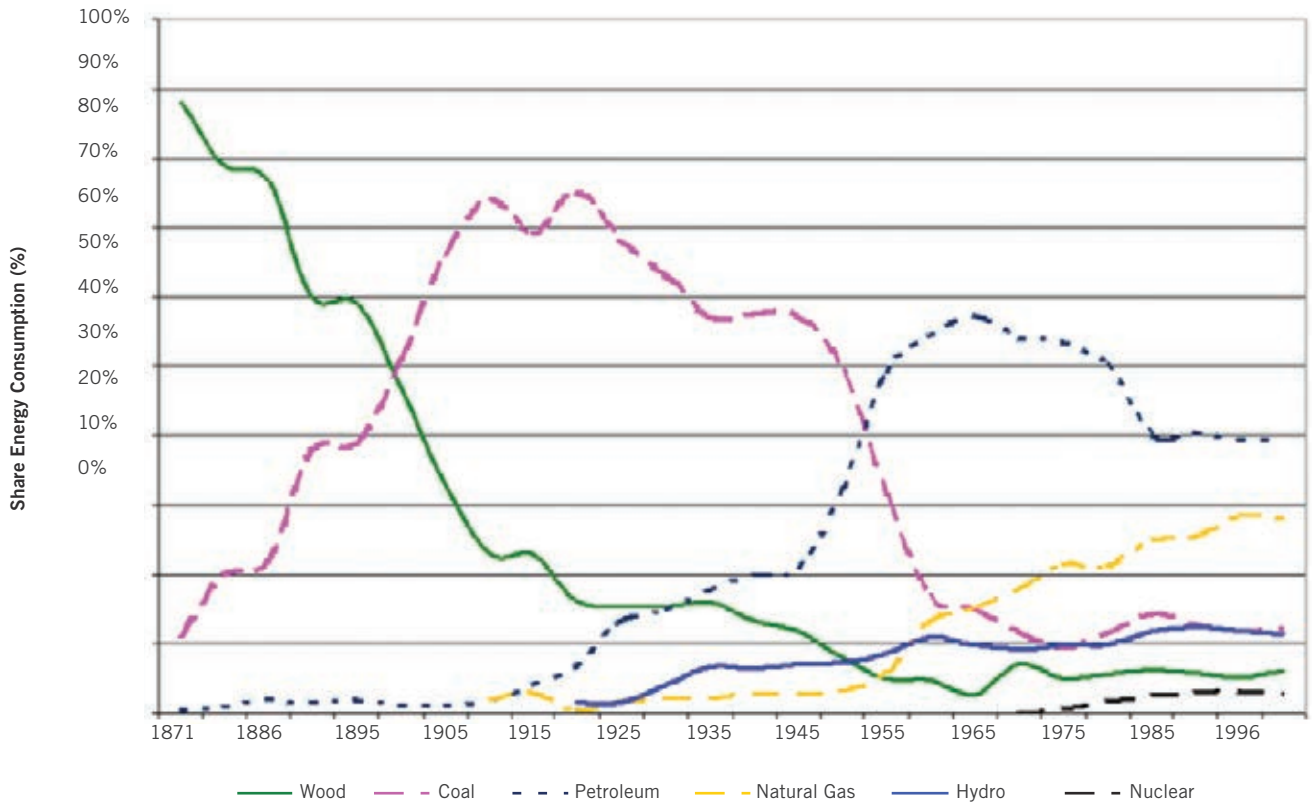
Formal regulatory processes need to operate under these sorts of requirements as quasi-judicial bodies, but neither the procedures, nor often the reasons for decisions, are always easy to understand. They will inevitably be to one degree or another exclusionary – either of people and organizations or of questions and issues. They will more often than not be relatively inflexible. At the same time, there is a growing countervailing public desire for engagement to be inclusive (of questions and entities), readily understandable, adaptable and flexible in the face of different contexts and issues. These considerations will be in inevitable tension with the desire for clarity and predictability. Public decision-makers will need to strike tough but essential balances between these considerations or establish processes that give flexibility for regulators to adapt decision-making processes to different contexts (e.g., urban/rural, level of familiarity with energy development) and types of projects (notably linear/non-linear).

Towards Solutions. A number of directions merit exploration here:

- The first is **energy policy and strategy.** Over the next decade and beyond, Canada will move through the most turbulent era for energy policy in its history, adapting to changes in external market conditions and environmental imperatives and forcing changes in internal markets and energy infrastructure much greater than ever before seen. And unlike the forty- to sixty-year (or so) transformation from the coal to the oil era (see Figure 4 below), which came about by degrees, was mainly driven by changing markets, had the effect of creating what is now Canada's largest export industry and took place without much public comment, this transformation has the potential to eliminate our largest export industry, will be driven by policy, will need to take place more quickly and is occurring in an environment where the public expects to have input every step of the way.

FIGURE 4

CANADIAN ENERGY DEMAND BY PRIMARY ENERGY SOURCE, 1871-1997
Source: Cleland 2002.



Canada needs new mechanisms for bringing the public into the big, long term energy conversation. Among other things, this probably means an institutional capacity with some independence from government that can undertake analysis and provide an ongoing forum where citizen voices can be heard by experts who are perceived as objective – or at least, collectively, as balanced. It is not at all clear what form such capacity might take, especially in a relatively decentralized federal system. Several energy regulators, including the National Energy Board, embody some part of that capacity, but it is not clear that this sort of thing is in fact a regulator function, as opposed to something that should be in the hands of a separate arm's length body.

- The second is **regional planning and strategic environmental assessment.** Below the level of big policy but above that of specific projects lies the realm of regional impacts – positive and negative – and impacts that are cumulative over many years. The emergence of Canada's Indigenous governments as decisive players in the determination of what development should or should not take place underscores the point.

  Given the scale of change involved in the low carbon transition it is hard to imagine how individual environmental assessments and facilities decision-making processes can accommodate the necessary analysis and assessment. As important, it is difficult to imagine how formal regulatory processes can accommodate the necessarily fluid, informal and subjective sort of upstream broader-based engagement involved in regional planning or strategic environmental assessment processes.

  New mechanisms, occupying the largely untrodden space between policymakers and regulators, will need to be developed and evolve. By and large these will fall in provincial or territorial jurisdiction but they will also necessarily involve some measure of federal/provincial/territorial collaboration, given federal responsibilities for facilities extending beyond provincial borders, as well as matters such as fisheries, migratory birds and navigable waters. And, needless to say, local and Indigenous authorities of various types will also need to be involved.

- Third is **co-operative development, management and monitoring of policy and regulations.** Apart from establishing the ministry scale institutions described above, Canadian jurisdictions will need to experiment with new mechanisms to bring stakeholder communities more directly and responsibly into processes that governments habitually reserve for themselves. There is no inherent reason why regulation development should belong exclusively to governments or their agencies; indeed, there are arguments that stakeholders who are closer to the ground have unique knowledge that should be incorporated into regulatory thinking on an ongoing basis and that the legitimacy of regulatory systems would be enhanced by greater transparency and collaborative decision-making.

  Various jurisdictions and agencies are already experimenting in these areas. More experimentation is needed. As important, where examples have been in place long enough to properly assess their operation, they should be evaluated and lessons incorporated in redesign or the development of new mechanisms. All of this is something that governments should be actively and energetically pursuing with the engagement of various stakeholder communities and with as few pre-conceived notions (on anyone's part) as possible.

- **Information** is fourth. All of these efforts will need to be underpinned by excellent sources of reliable, accessible, adequate and trusted information. Canada at present has an energy information system that can be charitably described as haphazard and incomplete. Governments have kicked this issue down the road for well over a decade, but some have come to the realization that without sound information infrastructure, Canada will be badly hobbled in its energy policy and regulatory efforts over the coming decades.

  The set of questions surrounding energy information is, inevitably, complex. The matter cannot rest in the hands of any one government. It is a federal/provincial/territorial – and potentially local and Indigenous – matter. Nor can any single information agency have sole or even primary responsibility, in part because it is an intergovernmental question, in part because there are numerous sources, both extant and potential, ranging from formal statistical bodies to regulators to new sources such as Indigenous and local communities and in part because the information in question often extends beyond energy per se – notably to include environmental information. The information challenge is a microcosm of the larger system management challenge.

A Note on Limits. What is described above is a fundamental change to Canada's institutional machinery for dealing with energy. Doing it will not be simple, easy or cheap.

First of all, big unresolved policy – decarbonisation and reconciliation with Canada's Indigenous peoples – will not be solved by institutional changes. It will still be chaotic, politically messy and expensive. It would require human resource capabilities far greater than Canada devotes today to managing energy policy and regulation. That means financial resources devoted to things that governments of all stripes have preferred for many decades to cut – not expand. It also requires skills and senior management capabilities within governments and within stakeholder communities that don't exist and will be difficult to create. There are inherent limits to public input, discussion and consultation. Decisions eventually have to be made and there will be winners and losers.

All of this will be challenging to reconcile with the realities of a market-based energy system in which energy prices are largely determined in the market and where the vast majority of investment will be from private sources. Private capital worries about commercial confidentiality; stakeholders worry about openness. Private capital worries about timeliness and predictability; stakeholders worry about adequate time for careful reflection and consensus building. Private capital worries about competitiveness and the innovation climate; stakeholders worry about fair returns to the community at large.

CONCLUSION
INFORMED REFORM:
Reforming a System Requires A Systems-based Approach

At the risk of belabouring the obvious, this is not solely about federal decision machinery – and far less about only the National Energy Board. The great majority of the issues, both with respect to hydrocarbon management and even more so with respect to the low carbon transition, fall under provincial jurisdiction. And, again to restate the obvious, the 'system' that leads to eventual desired outcomes (energy services, domestically consumed or exported) involves myriad ministries and agencies from upstream (resource development) to downstream (energy consumption or export) and across a broad spectrum of economic, environmental and social policy as well as technical energy issues such as power system management.

Our scope, therefore, is the whole public policy machinery in Canada that bears decisively on all energy service production. Our focus is on the effectiveness of and public confidence in the machinery that occupies the space extending from energy policy through to the operation of energy production and delivery systems. What we have done in this paper, however, is to prioritize the focus to three core stress points in the machinery.

A SYSTEMS APPROACH

Any complex public policy matter inevitably gets dealt with to one degree or another in so-called 'silos' within governments – and policy is rarely comprehensive and rational but more often something that arises through a process of muddling through.[30] But strengthening public confidence in the energy decision-making system necessitates a systems approach. As we've argued above, one of the reasons Canada's decision-making system is under stress is precisely because decision-makers have not conceived of the system as a system.

Moreover, the context within which this system operates has been fundamentally transformed: social and value change are here to stay, and new policy priorities like climate have layered onto the machinery over time. What's more, broader questions of public policy like reconciliation with Canada's Indigenous peoples have also had a decisive impact. Further, not only are Indigenous authorities new 'parts' of the system, but local authorities are too. Add to this that tackling the greatest energy challenge of the twenty-first century – the great low carbon transition – may be unique in the extent of interdependence and interoperability of the various decision-making components and most certainly in terms of public expectations. In this context, it's little wonder that stresses have emerged. If there ever was a need for a more systematic approach, this is surely it.

We take as a premise, one that is supported by Positive Energy's research and engagement to date (notably a high-level workshop on energy decision-making held in spring 2016 and the recently released papers *A Matter of Trust: The Role of Communities in Energy Decision-Making*[31] and *Fair Enough: Assessing Community Confidence in Energy Authorities*[32]), that any serious effort to strengthen public confidence in energy decision-making needs to rest on a much more sophisticated understanding of how the various system components work together – or ought to work together. We take it as a further premise that, while many or most of our energy decision institutions remain surprisingly robust and are evolving incrementally in many positive ways, most are not well adapted to the realities of twenty-first century energy governance – particularly with the rise in importance, influence and potential role of Indigenous and municipal authorities, and the fundamental reforms to the energy system in the offing post-Paris.

30 Lindblom 1959.

31 Cleland with Bird, Fast, Sajid and Simard 2016.

32 Cleland with Nourallah and Fast 2016.

In the previous sections, we outlined the core stresses in the system and many of the possible elements of a system better adapted to twenty-first century energy governance and the challenges before us. There are undoubtedly many other approaches and our purpose is not to offer definitive answers, but to spur a much broader, deeper and more careful discussion of possible reforms.

In addition, as we think through potential reforms, our thinking needs to rest not only on the need to take an institutional systems-based approach but also one based on several energy realities. This includes the physical and market realities over which governments and Canada have relatively little or no control. These realities compel systems thinking if we want to deal effectively with their implications.

Most energy transactions occur fundamentally in largely free markets. Much electricity is priced administratively (although not all), particularly at the wholesale level. Most energy delivery infrastructure is subject to natural monopoly regulation and, therefore, in the purview of government regulatory agencies but not policymakers themselves. Prices for well over three-quarters of the energy we use are determined in markets. Energy investment and innovation are largely in the hands of private markets; even power systems have to take account of the cost of capital and the effects of risk, including growing political risk, on the climate for investment and innovation. Most energy consumption decisions are taken by private actors either directly or indirectly in their choices respecting energy using capital.

Much of what takes place in energy markets is mediated in part by world and regional markets. Oil and gas prices are determined in such markets. Even electric power prices as well as potential markets for power are strongly influenced by markets in adjacent jurisdictions. Virtually all decisions respecting the availability and cost of capital are determined in world markets. Apart from world markets, Canada is also subject to other world forces including important treaties that establish cooperative arrangements such as the International Energy Agreement or the Paris Accord and the effects of reputation in a globalized world.

Canada's federal system is arguably in decision-makers' control but the architecture of confederation with all its complexities, ambiguities and overlaps, is as firmly established a reality as the fact of Canada itself. How that architecture might actually function in the future is still subject to many uncertainties whose fate lies largely in the hands of the courts. Two obvious examples are the eventual fate of internal free trade, the question of whether Section 121 of the Constitution has practical meaning in a modern economy, and the balance between the authority of Indigenous communities and that of federal and provincial governments. In short, much real decision authority lies outside the hands of any one government or even a well-meaning collection of governments.

It is for debate just how much control governments have over what we can call the desiderata of energy policy. In principle, at least, this is the one thing that governments truly do control. But the course of Canadian climate policy over twenty-five years should give us pause. When governments over-concentrate on any one or only certain aspects of what is desired and give short shrift to others, other realities have a habit of eventually intruding.

Today it seems clear that two policy objectives related to energy are largely accepted. One is the desire to transition Canada's energy system to a lower carbon configuration. Another, ostensibly aligned with the first in much of the popular narrative but often in conflict, is the objective of ensuring that our energy choices are aligned with the desire for reconciliation with Canada's Indigenous people.

But there is a third objective over which we lack consensus: whether Canada should be exploiting its energy resources, most notably oil but also coal, with natural gas not far behind, followed by uranium, nuclear power and some large scale hydroelectric power. This is despite the fact that an enormous part of Canada's current and future prosperity – including the development potential in regions occupied by many Indigenous communities – rests on the development of our energy resources. In the context of global climate change and Paris, this is an important debate to be sure but it calls for a mature, well informed and realistic conversation.

In addition, a number of other objectives seem masked from view. The energy system has to deliver energy services safely. Canada's does so perhaps better than any other country in the world. But as we saw in the case studies in Positive Energy's *A Matter of Trust* research report, many local communities have doubts about the implications for health and safety from energy choices such as wind farms, power lines, and unconventional natural gas development. And when those doubts arise they tend to be decisive.

Related to health and safety are questions about environmental and social impacts aside from carbon. Again citing *A Matter of Trust*, if one thing lies at the heart of community confidence in energy decisions it is the question of whether decision-makers are sufficiently attentive to those impacts. As we saw in the case studies under analysis, local concerns may trump climate change objectives.

Next is energy security. Energy debates in the 1970s and 1980s were heavily dominated by questions of energy security. Today, the subject almost never arises and yet it lies behind many energy decisions. Security has several dimensions. Conventional geo-political (largely oil) security is now mainly taken for granted in Canada – but not by all countries. System reliability is also taken for granted because the system – the Great Blackout of 2003 aside – almost always works. System resilience (the ability to cope with or recover from failures) is also taken for granted but that is in considerable measure because the system is based on high degrees of optionality (for example, a pipeline or power line failure can be addressed almost instantly by use of storage, backhauls and swaps).

In the future, faced with a dramatically changing climate, energy systems will come under increasing stress caused by weather. Political leaders will soon discover that, for the public, resilience is a very high priority indeed.

And finally, the security issue of the age – cyber security – lies well under the radar for much of the public. But in a world of hackers and various unfriendly agents, and in particular should we become almost wholly dependent on electric power – a system uniquely vulnerable to cyber-security threats because of its nature – a sophisticated system of cyber-security is arguably the sine qua non of energy policy.

Last but certainly not least is cost. Energy costs also spend most of their time below the radar screen largely because we have a system that is extraordinarily efficient and because of the high degree of optionality in a multi-fuel universe. Governments ignore this reality at both their peril and the peril of an effective approach to the low carbon transition. There is no hiding this reality except perhaps in the short term. We can quietly regulate or subsidize energy choices and the public won't notice until the fiscal or market consequences become overwhelming and we can then take money from one pocket to put in another, usually making the problem worse. We can price carbon explicitly and obviously – the most effective way of delivering the needed signal – but we are seeing the limits of public tolerance in the current debate about possible carbon prices up to $50/tonne of carbon dioxide, a price as much as three or four times too low to be consistent with our 2030 or 2050 objectives. Real energy system thinking will place these dilemmas clearly in front of the public, for better or worse.

Cost issues have different effects. The most worrisome in a society founded on notions of social justice is the question of affordability for vulnerable consumers. Almost as worrisome is the effect on competitiveness of energy consuming industries that compete with other jurisdictions and on resource developers attempting to attract low cost capital. We talk about carbon pricing being structured so as to be fiscally neutral but fiscal neutrality – and systems thinking – should include recycling carbon price proceeds so as to reduce affordability effects for the vulnerable and competitiveness effects on the economy at large.

THE ROAD AHEAD: INFORMED REFORM

The road ahead on energy will be hard, perhaps harder for Canada than for most countries given the energy intensity of our economy, our vast hydrocarbon and other energy resources and our conflicted attitude toward our energy resource economy. Informed reform begins with an understanding of the energy decision-making system as a system, with multiple component parts, and key stresses that need resolving. In addition, it requires that we embrace the notion that human societies are motivated by multiple objectives and that modern society is governed by a great complex of decision systems, many of which are outside the control of government. Some, however, are in the control of government and among those is the architecture of the institutional machinery that sustains public policy and regulatory choices in a way that is efficient, expeditious, inclusive and fair in its outcomes.

As detailed throughout this paper, looking forward, informed reform should, at a minimum, carefully, holistically and systematically address three core stresses that currently dog the system:

- The policy/regulatory nexus: how do policy, planning and regulatory systems interact to best effect?
- Who Decides: how do local authorities of various sorts – most notably Indigenous authorities and municipal authorities – take part in decision processes to best effect?
- How to Decide: how do citizens engage in decision processes to best effect and what information and capacity requirements does this necessitate?

POSITIVE ENERGY RESEARCH DESIGN: FOCUSED DIALOGUE AND ACTION ON KEY STRESSES

- Positive Energy's research design for the role of public authorities in energy decision-making is proceeding in four phases:

- Phase I Spring/Summer 2016: Framing up the Research. Positive Energy organized a high-level research workshop in spring 2016 for policy and regulatory, industry, ENGO, academic and Indigenous leaders. A discussion paper was circulated to workshop attendees in advance of the event, and the workshop helped to identify the core research questions to be addressed over the next twelve to eighteen months. Most importantly, this workshop informed the content of the current paper.

- Phase II Fall 2016/Winter 2017: Mapping the Energy Decision-Making System and Key Points of Stress in the System. The current discussion paper provides a broad map of the energy decision-making system and identifies three key points of stress that decision-makers would do well to attend to.

- Phase III Winter/Spring/Fall 2017: Workshops on Each Stress Point. A series of high-level workshops with a select group of energy leaders (50-60) will take a deep dive into each point of stress and identify recommendations for action. 'Going-in' discussion papers authored by specialists in each field will support these events and will be finalized post-event with a set of preliminary recommendations.

- Phase IV Fall 2017 Final Report. In fall 2017, a final report rolling up the research and recommendations across all three areas of stress will be prepared for public release.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