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Melina Laboucan-Massimo explores the Six Nations of the Grand River 100MW solar project alongside the Nation's Development Corporation staff members, including Darryl Hill and 2017 Catalysts.

WAVES of CHANGE

Indigenous clean energy leadership for Canada's clean, electric future

ABSTRACT

Indigenous communities, governments, and organizations in every region of Canada have been active developers of renewable energy projects over the past two decades. Today, First Nations, Métis, and Inuit entities are partners or beneficiaries of almost 20 per cent of Canada's electricity-generating infrastructure, and almost all of that infrastructure is producing renewable energy. Indigenous Peoples are thus at the forefront of the country's clean energy evolution. This paper traces the rising waves of Indigenous participation in clean energy over the past two decades. It looks at how to catalyze exponential growth in Indigenous clean energy opportunities, proposing specific actions and initiatives that can materially contribute to Canada's clean electricity future. The paper wraps with a series of strategic recommendations to forge new electricity relationships and commitments rooted in pan-Canadian collaboration, Indigenous participation in planning electricity futures, using carbon price revenues more effectively, and removing the capital bottleneck for clean electricity systems within the Canadian federation.

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INTRODUCTION

In order to achieve a clean energy future, Canada needs to move rapidly to reduce greenhouse gas emissions, do so through just transition principles that ensure that no community or region is left behind, and make real progress towards national reconciliation. Specific to that last point, and drawing from Indigenous Clean Energy's 2020 national survey, Canada's clean energy future must embody:

- ▶ Adherence to Indigenous rights and treaties; the norms of free, prior, and informed consent; and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).
- ▶ Respect for the ancestral lands and waters of First Nations, Métis, and Inuit communities, without exception, across Canada.
- ▶ Commitment to achieving a diverse array of social and economic outcomes for Indigenous Peoples and their partners, while pursuing the clean electrification and decarbonization of Canada's economy.¹

This paper was authored by Indigenous Clean Energy with the support of the Canadian Institute for Climate Choices. We seek to provide Indigenous viewpoints on a net zero future, reflective of the above strategy.

The trajectory of Indigenous-led electricity generation across Canada can be characterized as a series of dramatic transformations or waves—stages of continuous change building one upon another. The paper highlights the fact that Indigenous Peoples, communities, and organizations have played a leadership role in the greening of electricity thus far in Canada, making major contributions to lowering Canada's greenhouse gas emissions.

¹ "Accelerating Transition," Indigenous Clean Energy, 2020

The paper offers a new and valuable dimension to pan-Canadian energy transition and decarbonization dialogues, advancing the proposition that active Indigenous participation and engagement in shared decision making are essential to Canada achieving its clean energy transition and that this participation and engagement will ensure that the economic and social process of decarbonization will happen not just quickly, but fairly.

It is important to explain the paper's structure and organization. Section 1 of the paper outlines the three first waves of Indigenous clean energy production in recent decades. Section 2 delves into major opportunities accompanying the fourth wave of Indigenous clean electrification, as well as the challenges to overcome. Section 3 proposes clean electrification strategies focused on accelerating this fourth wave of Indigenous energy leadership to secure Canada's clean electricity future. This section presents strategic, system-transforming recommendations and opportunities, including Indigenous participation. Sections 2 and 3 fit together as a package.

In recognition of the vital clean energy leadership demonstrated by Indigenous Peoples and communities, we have introduced each major section of the paper with a wildlife icon. This has been done to integrate Indigenous traditions into the analysis and to recognize that culture is an explicit dimension of Indigenous worldviews.

Waves of Change is authored by a team of Indigenous people and clean energy advisors to Indigenous communities, led by Indigenous Clean Energy. The Canadian Institute for Climate Choices expresses its appreciation to the Board and Advisory Council of Indigenous Clean Energy—representing First Nations, Métis, and Inuit Peoples from all regions of the country, as well as gender diversity and youth—for their guidance in the production of this scoping paper.

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INDIGENOUS CLEAN ENERGY PARTICIPATION

T The landscape of Indigenous clean energy

Numbers count, so let's count the numbers. Indigenous Clean Energy's national database tracks Indigenous participation in clean energy projects across the country, including sole ownership, co-ownership, and defined financial benefits. Over the last two decades, the number of medium and large hydro, wind, solar, and bioenergy electricity generating projects (projects generating one megawatt or more of electricity) with Indigenous participation has grown substantially. Today, at least 204 such renewable energy projects are in operation or are slated to come online within two years.

Since 2017, the number of medium and large Indigenous clean energy projects has grown by 29.6 per cent. Energy sources for these projects consist of: hydro (56.5 per cent), wind (22.9 per cent), solar (11.8 per cent), bioenergy (7.1 per cent) and hybrid sources (1.7 per cent).

Smaller Indigenous clean energy projects are also proliferating, with many Indigenous communities installing community-scale or small-generation systems for local supply and in some instances selling power into provincial/territorial grids. Indigenous Clean Energy estimates that 1,700–2,100 micro and small renewable energy systems with Indigenous leadership and partnerships are now in place. Nearly half of these installations are in Ontario, driven in large part by feed-in-tariff measures that offer Indigenous communities a pathway for clean energy participation.

Bioenergy has been an important fuel source for small-scale projects, with 72 power- and/or heat-generating systems now functioning or about to be switched on.

Renewable energy projects to replace diesel-reliant generation in off-grid Indigenous communities are in rapid development across the country, especially in the North, in fair measure due to government programming such as Natural Resources Canada's Clean Energy for Rural and Remote Communities (CERRC) program. Many of these projects are building micro-grids that integrate renewable power generation with battery storage and

control systems to tie into local power plants, taking advantage of cost-competitive renewable power generation and storage, as well as digital innovations that facilitate integration of multiple sources of electricity.

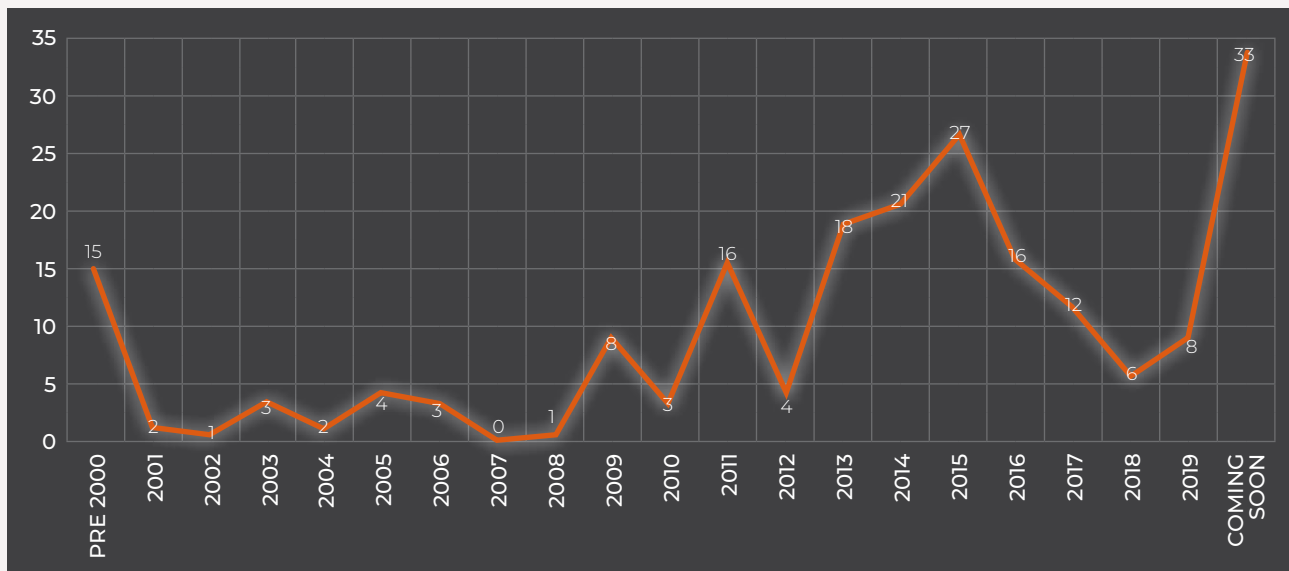
The level of Indigenous ownership of clean energy projects has ranged from single digit percentages, to significant minority ownership of 25–50 per cent, to 100 per cent Indigenous community ownership, which has become increasingly common over the past three years. Indigenous ownership and decision making regarding projects on ancestral lands are key to the whole process of reconciliation. The rising degree of Indigenous project ownership over each successive wave is an important and promising development worthy of further support and investment.

The first three waves of Indigenous clean energy leadership

Before diving into Indigenous clean energy's fourth wave, let's consider the tidal swells of the first three surges. What happened, and why? Figure 1 tracks the number of Indigenous-owned, co-owned, or beneficiary renewable energy projects that have come online each year. Each wave saw Indigenous renewable project participation growing across the country.

Figure 1:

Indigenous renewable energy projects commencing generation by year



Source: Indigenous Clean Energy. 2020. Accelerating Transition: Economic Impacts of Indigenous Leadership in Catalyzing the Transition to a Clean Energy Future Across Canada. Ottawa: Indigenous Clean Energy.

We can characterize the first wave of Indigenous clean energy projects, which took place prior to 2005, as *ground-breaking projects*. This wave was driven by three main factors: project precedent, provincial policy change, and legal recognition of treaty rights. Firstly, notable communities like the Pic River First Nation asserted through project development negotiations the fairness and justice of Indigenous co-ownership of projects on ancestral land. Secondly, modest provincial and territorial electricity policy efforts resulted in early-adoption projects. For example, British Columbia's remote communities program led to communities like Atlin developing a small hydro project that replaced all diesel consumption. Thirdly, grievance settlement arrangements resulted in projects. For example, the Treaty of the Braves (*La Paix des Braves*) between the Northern Cree and Quebec recognized that large hydro projects should include financial benefits for Indigenous communities. As a result of these three factors, the vast potential of Indigenous participation in clean energy projects began to be acknowledged by Indigenous government and organizations, provincial and territorial governments, utilities, and renewable energy development companies.

The second wave, 2005–2015, was characterized by a *national projects surge* in Indigenous clean energy. This was driven by an array of policy, Indigenous, and electricity market forces, all of which sought to expand the scale of renewable power in several Canadian jurisdictions. Provincial governments including Ontario and British Columbia introduced legislative and procurement measures seeking renewable generation capacity to combat climate change and attaching value to Indigenous project participation. Ontario's Green Energy and Green Economy Act placed a premium on replacing coal-generated electricity with renewables. The legislation included procurement-supportive conditions (e.g., an Aboriginal Price Adder for Power Purchase Agreements), capital measures (such as securitization of Indigenous equity investment in renewable projects) over a period of years, and promotion of small-scale renewable energy projects through feed-in-tariff contracting.



In addition, and of vital importance, between 2005 and 2015 there was growing realization amongst Indigenous communities across the country that clean energy projects sited on traditional territories represented a major economic opportunity for rights holders. This led to community-centred clean energy capacity-building efforts, and many First Nations, Métis, and Inuit governments and organizations negotiated project partnerships with utilities and project development companies.

Public policy and Indigenous clean energy momentum during this second wave was reinforced by the rapidly declining costs of renewable energy and the pace of technological innovation that strengthened the performance and reliability of clean energy supply.



Each period of Indigenous clean energy over the past two decades has built on the previous wave.

Third came the *project consolidation and scale wave* from 2015 to 2020, as provincial and territorial electricity projects started to focus on larger generating capacity. While there were fewer Indigenous clean energy projects greenlit during this third wave, the diversity and size of projects and the related financial and social impacts were much larger. In fair measure, this was due to changing procurement conditions for new generating capacity, which placed more emphasis on larger projects. The Nigig Power Corporation partnered with Pattern Canada to jointly develop the 300 MW Henvey Inlet Wind project, for example, which created over 1,000 new jobs in the Georgian Bay area during peak construction, more than 20 permanent jobs during operations, and over 100 indirect jobs through expansion of programs

and services of the Henvey Inlet Band. The Mesgi'g Ugju's'n wind farm in Gespe'gewa'gi (Gaspésie), equally owned by Mi'gmaq communities in the region and Innergex Renewable Energy, has generated similar outcomes.

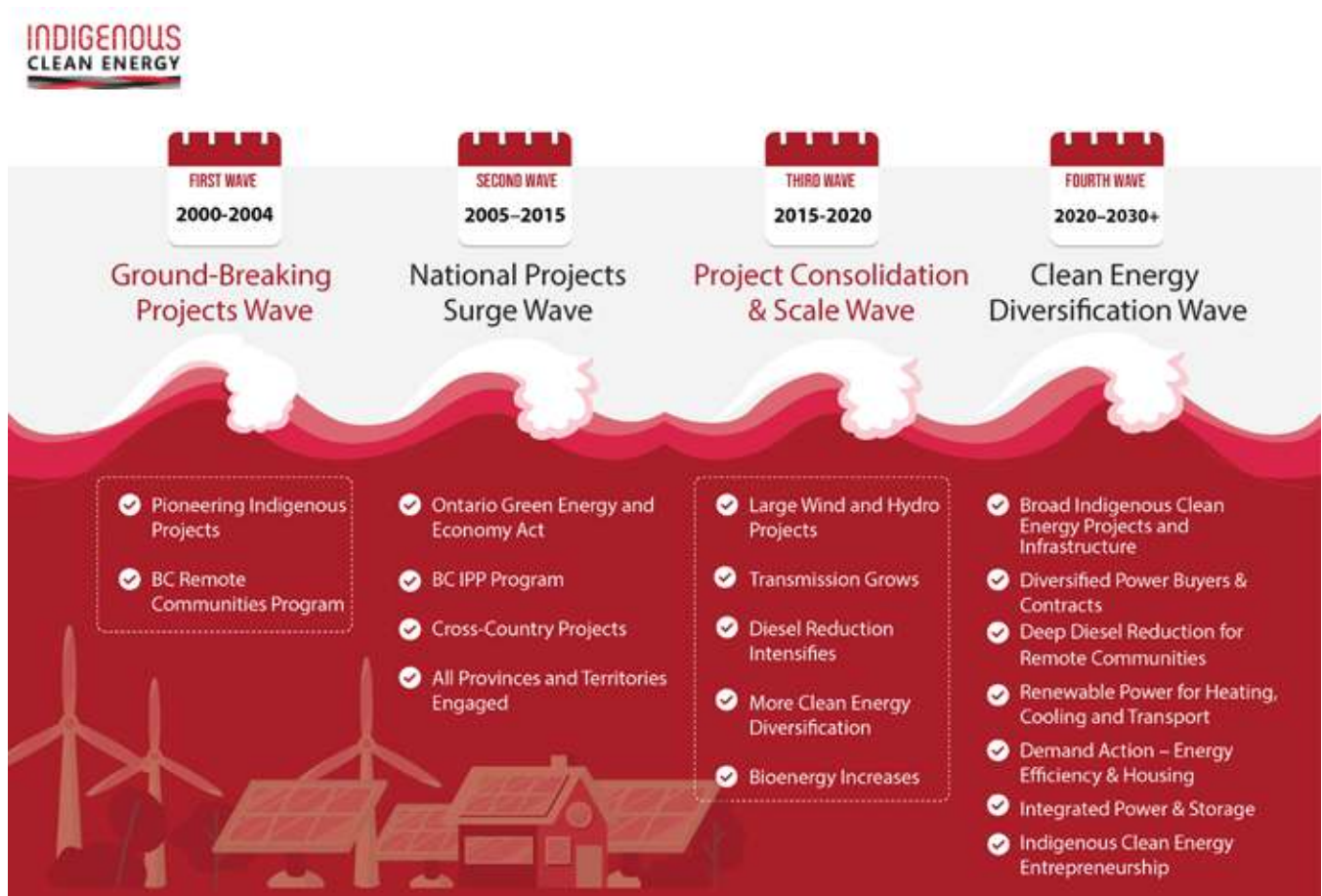
The 2015–2020 period also saw a significant rise in Indigenous participation in electricity transmission projects. A total of 19 such projects are now completed or in construction, including some linked to grid access for major projects (e.g., La Romaine Hydro, Quebec), off-grid community interconnection (e.g., Wataynikaneyap Power, Ontario), and grid strengthening (e.g., Bipole III, Manitoba).

A very positive development during this third wave was a dramatic acceleration in renewable energy projects in remote and Northern communities, contributing to reduced reliance on diesel-fueled generators. The Giizis solar project in the Ontario community of Kiashke Zaaging Anishinabek began operations in 2020 as Canada's first fully integrated solar-storage project, tied into the local powerhouse and distribution system. Many more such projects are in development, a trend that will continue through the fourth wave.


Figure 2 illustrates how each period of Indigenous clean energy over the past two decades has built on the previous wave. The effect is cumulative and aggregative. Looking forward, the crucial question is how much broader and more diversified the fourth wave might be, as Canada's clean energy economy matures and accelerates.

Figure 2:

Four waves of Indigenous clean energy participation



By the end of 2020, Indigenous communities, governments, organizations, and businesses have become among the most powerful clean energy proponents across Canada, on par with utilities and renewable energy development companies. The scale, diversity, and geographical spread of Indigenous clean energy projects across the country mean that First Nations, Métis, and Inuit Peoples are increasingly essential players as the country accelerates towards a clean energy future.



In Métis and First Nations cultures, Bison is a symbol of strength, abundance, and prosperity.

THE FOURTH WAVE: INDIGENOUS LEADERSHIP FOR A CLEAN ENERGY FUTURE

2

The bigger picture of clean energy transition

This section begins with a look at the scope and scale of fourth-wave opportunities, followed by an examination of the shared challenges that come with energy and electricity policy regulation, capacity, and market access. These challenges are not unique to Indigenous governments, Peoples, and entities—they have broader national relevance that can benefit from Indigenous viewpoints.

Aligning Canada's electricity systems with net zero is a multifaceted transition, rather than solely a matter of increasing the supply of renewable energy. As such, Indigenous communities

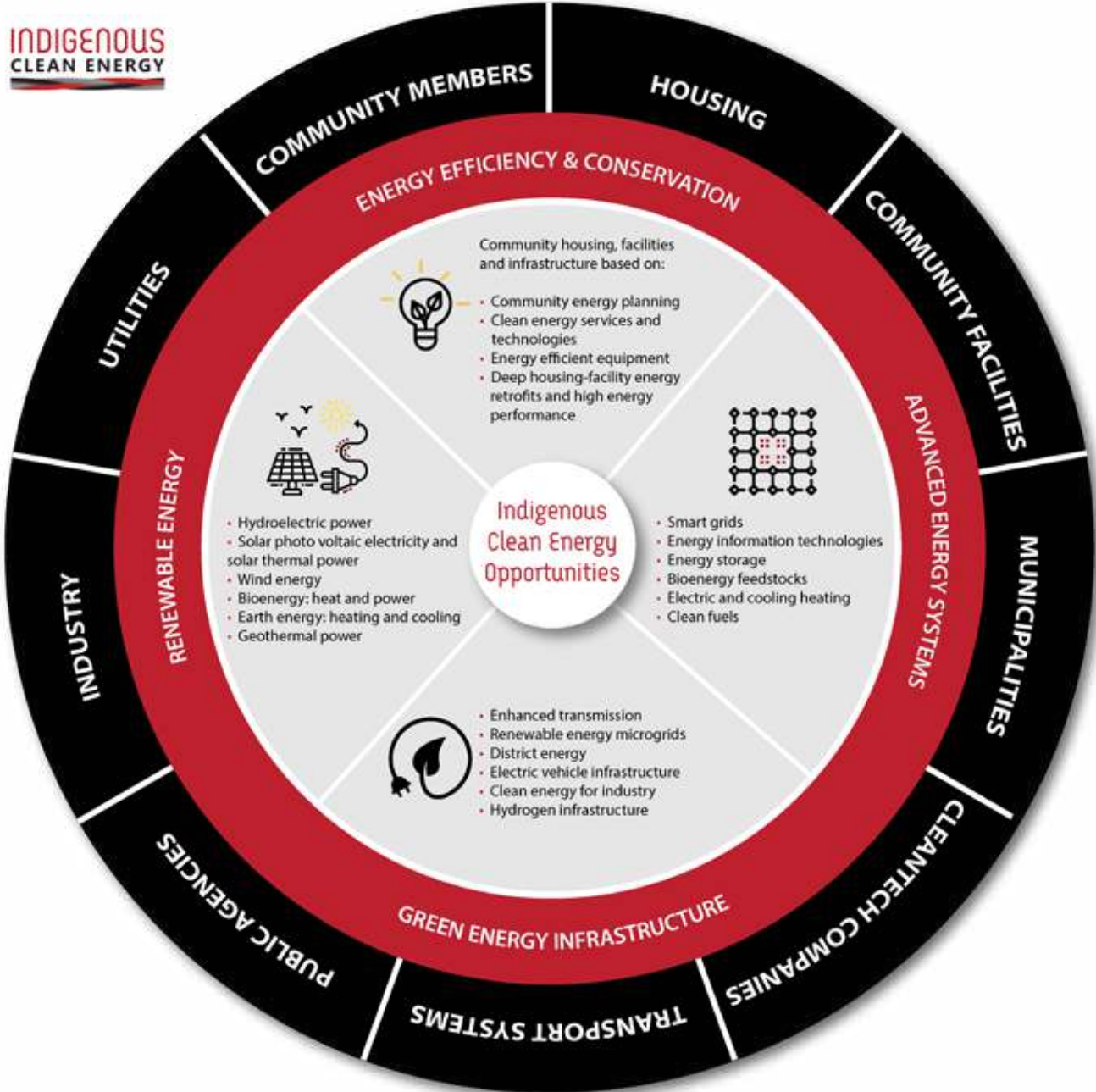
view clean energy holistically: a clean electricity system and market structure should support not just renewable energy expansion but also energy efficiency and conservation, advanced energy systems, and clean energy infrastructure. Figure 3 illustrates the range of clean energy opportunities that Indigenous communities, organizations, and entrepreneurs are pursuing, reflecting the diversified nature of the next stage of clean energy evolution.



These challenges are not unique to Indigenous governments, Peoples, and entities—they have broader national relevance that can benefit from Indigenous viewpoints.

Electricity relationships underlying this bigger picture are also more diverse than in the past. Whereas the first three waves, and conventional electricity markets, involved direct sale of power from generators to provincial or territorial utilities or designated purchasing agencies, a new dynamic is emerging that allows for supply/demand and partnering relationships between Indigenous generators and Indigenous community members, housing agencies, and community facilities, as well as municipalities, corporations, transport systems, public bodies, commercial/institutional operations, industries, and utilities.

Figure 3:
 Circle of Indigenous clean energy opportunities



Red circle and interior: Four main types of Indigenous clean energy opportunities: renewable energy, energy efficiency and conservation, advanced energy systems, and clean energy infrastructure

Black circle: Multiple Indigenous clean energy needs, services, customers, buyers, and partners including Indigenous community members, housing agencies, community facilities, as well as municipalities, corporations, transport systems, public bodies, commercial/institutional operations, industries, and utilities.

An example of Canada's changing electricity market is a bioenergy plant in the final stages of construction by the Meadow Lake Tribal Council in Saskatchewan. Utilizing an Organic Rankine Cycle (ORC) technology supplied by Turboden of Italy, the project will generate electricity from biomass fuel derived from residual wood waste, producing 6,600kW (net) of carbon-neutral baseload electricity to power approximately 5,000 homes. The cogeneration system will also provide heat to buildings of the NorSask sawmill facility and a high-efficiency lumber dry kiln, reducing natural gas consumption and improving the economics of Canada's largest entirely Indigenous-owned sawmill.

From the vantage point of First Nations, Métis, and Inuit communities across the country, the main areas for Indigenous leadership and action are:

1. integrating power generation and energy storage,
2. leveraging the potential of hydropower to unlock direct-to-market renewable electricity,
3. reducing diesel reliance in remote Indigenous communities,
4. right-sizing electricity demand,
5. proactively pursuing renewable power procurement,
6. community-scale clean energy, and
7. supporting Indigenous net zero entrepreneurship.

Action in these areas will ensure that Canada's clean energy future will go beyond simply meeting emission-reduction targets, by simultaneously advancing a just transition for Indigenous Peoples and communities.

The fourth wave

The fourth wave of Indigenous clean energy, *clean energy diversification*, kicks off a period of exponential growth that will likely last for a decade or more and that has the potential to substantively increase Indigenous clean energy participation while supercharging Canada's clean electrification.

The next decade of Canadian energy evolution will see a proliferation of project and market participation opportunities that will be very different from the past 20 years. The following trends will create key opportunities for Indigenous clean energy leadership and participation:

- ▶ New renewable energy project opportunities will be more targeted and more integrated with energy supply and demand configuration, compared to stand-alone generation capacity.

- ▶ New market entrants will include buyers from industrial, commercial, and institutional entities that seek to procure clean energy while providing social benefits to Indigenous Peoples.
- ▶ Efforts to reduce diesel reliance in remote and Northern communities will accelerate and include making demand-side infrastructure more efficient.
- ▶ Canada's clean electricity future will require reliable renewables for heating, cooling, and transport, though the related transition challenges are immense.
- ▶ More energy-efficient Indigenous housing—existing stock and new builds—is badly needed as a key part of alleviating the crisis of a lack of sufficient, safe, affordable, and healthy Indigenous housing in every region of the country.
- ▶ Providing energy storage capacity to address the intermittency of renewables and meet demand fluctuations, primarily peak demands, is essential to Canada's clean electricity future.
- ▶ Unleashing and equipping Indigenous entrepreneurs, particularly young people, to lead clean energy innovation and business opportunities will augment the process of change.

These trends have the potential to drive significant change, but key challenges remain. These challenges will be covered through the remainder of this section.

Power generation and energy storage integration

Energy storage is essential to decarbonization as it allows for non-emitting renewable power to supply a greater portion of electricity baseload and peak demand. Innovative energy storage projects are being pioneered by some utilities and electricity-planning agencies. Grid planning, infrastructure investment, and systems management are poised for a major evolution—integrating power generation and energy storage. Ontario's Independent Electricity Systems Operator (IESO) has several demonstration energy storage projects in progress. Indigenous communities have also begun to construct energy storage projects. The Oneida Energy Storage Project proposed by Six Nations of the Grand River Development Corporation and partner NRStor, for example, would provide battery power supply for grid peaking. Moon Lake in northern British Columbia, on the traditional territory of the Taku River Tlingit and Carcross/Tagish First Nations, is a potential pumped storage site for the Yukon.

The sectoral challenge is to integrate storage with power generation as a fundamental component of electricity system planning and management. Such integration facilitates a higher level of renewable energy supply for the market, supplying consumers with electricity on a timely basis. It begins to address the intermittency of renewable energy generation.

Releasing the potential of hydropower

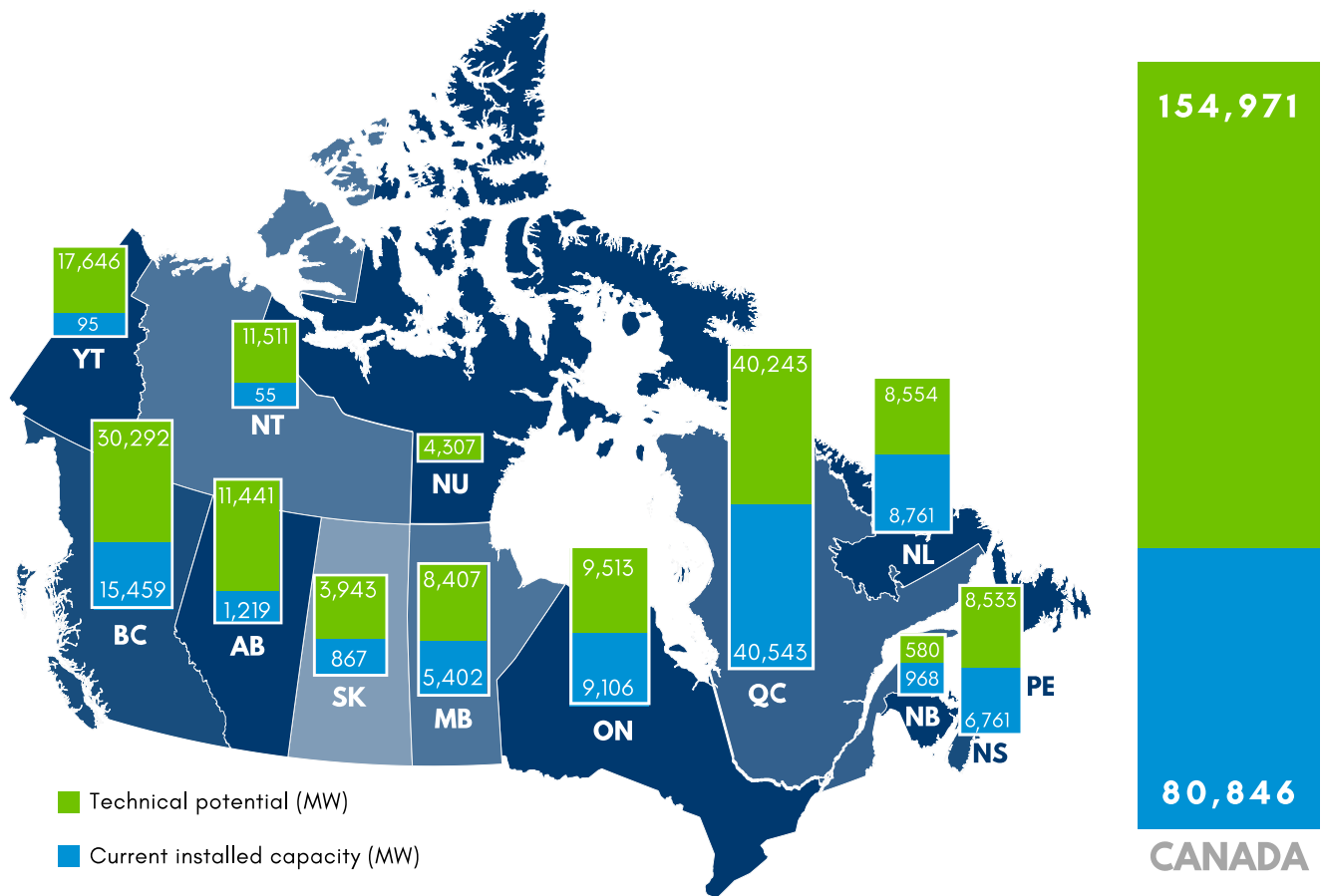
Vast hydro power resources supply almost 60 per cent of Canada's power requirements, and Indigenous communities are of the unequivocal view that the economic value of hydro power assets on traditional territory should be shared with their communities and peoples. BC Hydro's Electrification Plan, released in September 2021 with the subtitle "a clean future powered by water," is prescient. In effect, hydro is the country's primary source of dispatchable power and, in effect, the country's clean electricity battery. Water stored in hydro reservoirs represents the largest source of renewable energy that can respond to electricity demand peaks and seasonal variation across the country.

There is untapped potential to do more. This would involve enhancing the baseload and variable generating capacity of hydro power through more local and sub-grid renewables integration. Refurbishing and rebuilding hundreds of rapidly aging medium-to-large hydro facilities and reservoirs across the country will require a massive investment. In both of these areas, Indigenous communities have major interests: firstly, to be project co-owners of integrated hydro-storage projects, and secondly, to correct grievances of the past related to hydro development. Indigenous communities should decide where and how these hydro refurbishments and rebuilding are undertaken. Not only would this respect ancestral Indigenous rights and treaties, it would also offer processes that would support a restorative approach, healing the land and waters and mitigating impacts on wildlife, fisheries, and traditional foods and medicines.

As Figure 4 illustrates, Canada is already a hydro superpower but could do much more to maximize this source of clean, reliable baseload power, which is needed to power Canada's clean electricity future. To realize this opportunity, the challenge is to integrate other renewables with hydro in a more interconnected manner and adopt an inclusive, shared-benefits relationship with Indigenous Peoples and governments. The calibration required is straightforward. Hydropower is our largest source of electricity. It is clean, and it is reliable. If the drawbacks of hydro can be addressed through a process of energy reconciliation with Indigenous communities, which should address historical grievances and a sharing of the value going forward, there is major potential to refurbish hydropower plants and systems as the foundation for Canada's clean electrification.

Figure 4:

Canadian hydro capacity and potential (MW)



Source: Natural Resources Canada, 2020.

Unlocking direct-to-market renewable electricity

Electricity market regulators, systems managers, and utilities seek to control the supply of renewable power into provincial and territorial grids in order to maintain reliability, control costs for ratepayers, and match supply and demand. Thus, in most jurisdictions, new renewable power projects undergo stringent clearance and can be prohibited from directly supplying power to electricity consumers, notably large industrial users, campus-like institutions, and commercial operations, especially if provincial and territorial transmission capacity is utilized. Such regulatory parameters recognize that current grid assets retain revenue-generating value. However, the growing potential of new renewable and digital technologies and the interests of large-scale energy buyers are compelling reasons to unlock direct-to-market renewable electricity supply. Indigenous communities have demonstrated interest in supplying large end-users with renewable power.

Given the urgent need to rapidly expand the supply of clean electricity, regulators and utilities should embrace a more open approach to renewable power generation that would allow clean power, independently generated through Indigenous partnerships, to supply large-scale industrial, institutional, and commercial electricity consumers. Subjecting potential direct-to-market renewable power projects to less red tape and creating more streamlined approvals processes and fairer pricing for the use of provincial-territorial transmission capacity is a reasonable evolution in the responsible management of Canada's electrical grids. A simple example is allowing an Indigenous community and project partners to develop a renewable energy project that could directly serve the needs of adjacent large electricity consumers such as colleges and universities, institutional facilities, or industrial operations.

Reducing diesel reliance in remote Indigenous communities

Using diesel fuel for power and heating is dirty, damages environments, emits greenhouse gases, and is expensive. Thus, there is a confluence of interests mobilizing to help remote and Northern Indigenous communities in Canada reduce diesel reliance through renewable energy and efficiency efforts. New solar and wind projects that include battery storage are in construction or undergoing feasibility studies in over 30 diesel-reliant communities. These initiatives are being led by Indigenous communities and governments, often in collaboration with technology developers or utility partners. The federal government is providing crucial project development funding for these efforts through the Clean Energy for Rural and Remote Communities (CERRC) program led by Natural Resources Canada (NRCan), and the Northern Responsible Energy for Community Heat and Electricity (REACHE) project of Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC).

Diesel-reduction projects face significant regulatory and economic implementation barriers, however. In certain jurisdictions, such as Nunavut, there are limits to the size of such projects stipulated by Qulliq, the territorial utility, which makes project investment uneconomic. In addition, as highlighted in a July 2021 report from the Pembina Institute, *Reducing Emissions from Diesel Generators in Remote Communities*, the price paid for power from remote renewable energy projects by utilities or jurisdictional electricity agencies does not appear to recognize the full value of such innovations in some provincial-territorial jurisdictions. Pembina has been advancing a Fair and Inclusive Rates (FAIR) initiative for renewable energy to replace diesel in remote and Northern communities. It's an initiative that's long overdue, as it recognizes the true value of renewable energy, including improving long-term systems efficiency, reducing environmental externalities like fuel spills, and laying a foundation for continued reduction of greenhouse-gas-emit-

ting diesel fuel. The Government of Yukon adopted a more proactive approach two years ago when it used order-in-council powers to kickstart renewable energy projects in four remote, largely Indigenous communities in the territory.

Reducing diesel in remote communities also requires a more holistic demand-and-supply lens than is currently applied. Heating homes and facilities consumes more diesel fuel than power generation does in remote and Northern Indigenous communities. A comprehensive community energy planning approach would be more effective, placing a premium on both energy-efficient housing and local renewable power generation. The lack of affordable heat is a major concern amongst Indigenous families, especially for the well-being of children and Elders.

Dramatically reducing Northern and Indigenous communities' reliance on diesel is a pressing issue for Inuit, First Nations, and Métis people. A new sustainable energy future must include comprehensive community energy planning and capacity building, policies supporting widespread electrification, and fairer pricing as articulated in Pembina's Fair and Inclusive Rates campaign.

Placing a priority on reducing energy demand

In *Energy Foundations: The Value Proposition for Financing Energy Efficient Homes in Indigenous Communities Canada-Wide* (2021), Indigenous Clean Energy found that the total cost of upgrading or retrofitting existing homes for energy efficiency and building new homes that meet advanced energy-efficiency standards in all Indigenous communities would total \$5.4 billion by 2030. While the cost is substantive, so are the benefits. This level of investment would create over 65,000 full-time-equivalent jobs, \$1 billion in household expenditure savings over 10 years, and \$11 billion in asset enhancement. The analysis also concluded that such investment would have major indirect and induced impacts, such as stimulating over 26,000 additional secondary jobs, avoiding an estimated five million tonnes of carbon dioxide equivalent of greenhouse gas emissions over 10 years, and important health outcomes for community members. The Indigenous Clean Energy report highlights that intelligently reducing energy demand is a core feature of a low-emissions, high-value energy future.

For Indigenous communities, catalyzing investment in energy-efficient housing is the most important clean energy strategy Canadian governments can pursue, with social, economic, and environment benefits, but the issue has not yet received major policy attention. It is imperative for governments across Canada to work with Indigenous leaders and National Indigenous Organizations to consider the sources and structures required to deploy large-scale investment in energy-efficient Indigenous housing.

Proactive renewable power procurement

In our 2020 analysis *Accelerating Transition: Economic Impacts of Indigenous Leadership in Catalyzing the Transition to a Clean Energy Future Across Canada*, Indigenous Clean Energy described the considerable number of renewable energy projects with Indigenous leadership and participation that are currently in development. Among the important factors that drove this development was energy authorities prioritizing proposals with Indigenous participation when procuring new renewable energy supply. Proactive procurement needs to play a key role as power authorities, utilities, and governments consider new renewable power purchasing arrangements. In November 2021, Public Services and Procurement Canada issued a request for interest for renewable power supply in Alberta and included terms supporting Indigenous participation. This is a positive development and supportive of Indigenous clean energy partnerships.

A more open sharing of clean energy procurement practices on the part of utilities, electricity market authorities, governments (including Indigenous governments), and clean energy leaders across the country would help drive the proliferation of Indigenous-led clean energy projects. There is much we can learn from each other across the country. Currently, governments, industrial energy customers, and even large consumers like the Departmental for National Defence are testing targeted clean energy procurement with a preference for partnerships with Indigenous communities. Yet such innovative procurement criteria and processes are not being widely shared.

Supporting clean energy careers and entrepreneurship for Indigenous youth

To help speed our way to a net zero future, talent counts. The ingenuity, intelligence, and intention of the next generation of clean energy leaders will determine our success. Thus, supporting the education and training of young Indigenous people is crucial to energy transition planning. There will be a need for skills development, training, and education programs that equip Indigenous youth and young adults to pursue clean energy careers. Building pathways for employment, work experiences, and learning will position young Indigenous people to fill leadership positions in the electricity sector, with regulators, and within government agencies. Or, to put it another way, can we aspire to a future when we have utility CEOs, heads of regulation, and deputy ministers of energy who are Indigenous? Furthermore, a clean electricity future will need innovation in services, information, and technology. This requires entrepreneurship, and once again young Indigenous people are

a huge resource to establish and grow clean energy businesses. This too needs proactive effort such that young Indigenous people receive the support, mentorship, and even access to early-stage capital to be successful clean energy entrepreneurs.

Strengthening the capacity building, training, and apprenticeship systems to support young Indigenous people's participation in the clean energy workforce, today and for decades into the future, is a smart and essential strategy. Positioning young Indigenous women and men to be clean energy entrepreneurs should be a priority of sectoral associations and organizations, public policy, and programming.



In Indigenous cultures on the Atlantic, Arctic, and Pacific coasts, Salmon is a symbol of determination, renewal, and prosperity.



CLEAN ELECTRICITY STRATEGIES TO ACCELERATE AND AMPLIFY THE FOURTH WAVE

3 Key factors

It is important to acknowledge that Canada as a country is a colonial institution. Many Indigenous Peoples and communities are highly critical of the Canadian federation and the powers residing in the federal, provincial, and territorial governments. The proposed clean electricity strategies that follow are, therefore, focused on strengthening Indigenous clean electricity leadership as a step towards decolonizing power. The strategies complement the specific actions proposed in the previous section to realize clean electricity opportunities. Several key factors shape and provide context for this decolonizing process.

Firstly, legitimacy for net zero electricity systems across the country must be grounded in Indigenous engagement and participation—providing equality of opportunity for First Nations, Métis, and Inuit Peoples, governments, and organizations. This is a core pillar in the process of national reconciliation, reflective of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and linked Canadian legislation.

Secondly, while a national lens is important, the simple reality is that electricity governance, regulations, and policies are the primary domain of provinces and territories. Clean electricity strategies should speak to, and resonate with, provincial and territorial viewpoints and realities. Indigenous governments and entities seek specific actions from both the federal and provincial/territorial orders of government, and the provinces and territories may indeed be more important in driving a clean electricity future.

Thirdly, public and private utilities clearly play a pivotal role across the country and will be central to realizing clean electricity goals. The dominant Indigenous view is that utilities largely see Indigenous Peoples and communities only as customers and stakeholders or raise unfair obstacles to Indigenous clean energy project approvals. There are indications that this perception is changing. Utilities, as well as energy regulators, are beginning to appreciate that Indigenous Peoples and nations are rights holders and treaty signato-

ries, with stewardship over the lands and waters where they live. Canada's path to a clean electricity future will be smoother and more beneficial if this shift in viewpoint prevails.

Realizing new clean electricity relationships

Canada's path to a clean electricity future will be obstructed unless there is a broadening and deepening of electricity system relationships among Indigenous communities and regulatory bodies, electricity systems managers, utilities, private developers and power suppliers, and technology firms. Such a broadening and deepening of relationships should also reach out to civil society entities with sustainable energy interests, including municipalities, local communities, cooperatives, and environmental organizations.

Building a net zero economy requires engagement and participation from a broader group of change agents, innovators, and investors. The current structures are inadequate to overcome the challenges Canadian jurisdictions face and are incapable of realizing the opportunities clean electrification offers.

In effect, we need to embrace intensive collaboration. As this land's First Peoples, Indigenous governments and communities are of the view that realizing a clean electricity future should be grounded in relationships that embody reconciliation. Three key building blocks can provide a foundation for broadening and deepening electricity sector relationships:

- ▶ Proactive inclusion of Indigenous viewpoints in energy and electricity regulatory bodies and energy and electricity system planning. This would include Indigenous participation within governance structures and strategic interaction with senior management of these organizations.
- ▶ A commitment on the part of public and private utilities to Indigenous reconciliation and partnership for the future. This should include proactively recruiting Indigenous candidates for staff and management positions, addressing historical Indigenous grievances (like the flooding of traditional territory for hydro power), and establishing ongoing relationship forums with Indigenous nations.
- ▶ The imperative for National Indigenous Organizations, provincial/territorial Indigenous umbrella bodies (e.g., Union of British Columbia Indian Chiefs), and Tribal bodies (e.g., Nishnawbe Aski Nation) to enhance their governance structures, capacity, and leadership to engage with electricity sector entities. Indigenous Clean Energy can play a supportive role in this engagement.

The bottom line is that new relationships must be forged now to create a clean electricity future.

Sharing clean electricity innovations

There are some very positive and impactful clean electricity initiatives being taken across the country by provinces and territories, regulators, utilities, and Indigenous communities and partners. Yet there seems to be an aversion to looking beyond provincial/territorial boundaries to share successes and learn from innovation in other jurisdictions.

For example, for several years, Ontario's Independent Electricity Systems Operator (IESO) has organized and funded a Community Energy Champion Network. Financial support and capacity-building programming have been put in place in virtually every First Nation and Métis community in the province. Such measures are having great effect in promoting community energy planning, energy efficiency, and targeted renewable energy development. To date, no other jurisdiction has put such a program in place, though BC Hydro is now considering funding a support network for off-grid First Nations.

As a second example of a provincial initiative that other provinces have so far ignored, New Brunswick's NB Power has several arrangements to support direct dialogue with Mi'kmaq and Maliseet First Nations in the province, on topics ranging from EV charging systems to Indigenous participation in the utility's smart energy communities program to direct consideration of Indigenous-owned renewable energy generation projects.

To address this failure to share and build upon provincial success stories in the rest of the country, there is a pressing need for a clean electricity learning platform that can profile innovation in policy, regulations, systems planning, Indigenous engagement, and clean energy projects and initiatives. While national electricity bodies such as the Canadian



Association of Members of Public Utility Tribunals (CAMPUT), the Canadian Electricity Association, the Canadian Renewable Energy Association, and Indigenous Clean Energy can contribute to such a platform, it would be more impactful if provincial/territorial regulators and utilities would provide the required leadership. Perhaps consideration of a clean electricity learning platform or something similar could be on the agenda on the next national meeting of Energy and Mines Ministers' Conference.

Indigenous participation in electricity systems planning

There's just no way to say this diplomatically. Much electricity planning across Canada is flawed, and planning for a clean electricity future is fragmented, characterized by a lack of intention. That fact is not a surprise. It's a product of electricity planning systems, structures, and processes that were crafted in the 20th century, while we are in the third decade of the 21st century. Electricity planning continues to focus on shorter-term imperatives. Major forces such as climate change and the potential of new clean energy technologies merit more substantive consideration.

Simply put, most electricity decision making focuses on ensuring power reliability, protecting existing system assets, and keeping rates low. While these goals must have primacy, electricity planning should also include Indigenous interests, which offer a value-additive systems approach that would materially contribute to clean electricity futures.

We propose three key changes to Indigenous participation in electricity systems planning. Firstly, electricity planning needs to be more open and transparent, particularly in provinces with integrated utilities, such as Quebec and Manitoba. In these provinces, electricity planning prioritizes asset protection, fleet management, systems reliability, rate control, and even transfer of dividends to the provincial government as the prime shareholder. These valid systems management objectives need to be balanced with energy transition goals, however. This balance might be achieved more effectively by establishing independent electricity planning agencies separate from utilities, as Ontario and Alberta already have.

Secondly, electricity systems planning should recognize Indigenous rights, use, and occupancy of their lands and waters and adopt an approach of early-stage and substantive engagement with Indigenous nations and communities. This would foster more in-depth dialogue, facilitating actions that are protective of nature—as well as of Indigenous sustainable harvesting of wildlife, fisheries, traditional foods, and medicines. It would also accord Indigenous Peoples a seat at the electricity planning table.

An example of this enhanced approach to fostering Indigenous participation in energy planning can be seen in the territorial government-supported Yukon Renewable Electricity Panel (2020), which accorded a place of prominence to the views of First Nations. This panel charted a plan that would foster 100 per cent renewable electricity for the territory

with recognition of Indigenous rights, as well as defined opportunities for First Nations to participate in the development of new clean electricity supply.

Thirdly, new mechanisms are required that allow Indigenous Peoples and nations to be active contributors to clean electricity planning processes. These mechanisms must be accompanied by resources to ensure that Indigenous participation is substantive and effective. In effect, what's needed is a more participatory approach to electricity planning that is driven by civil society.

Harnessing the power of carbon revenue recycling

One of the truly unique features of the federal government's framework for the pricing of carbon pollution is the concept of revenue recycling—redirecting carbon revenue towards taxpayers or targeted expenditure envelopes. This is particularly the case under the carbon backstop mechanism, which sees the federal government collect and redistribute carbon revenue in those jurisdictions that have yet to introduce their own carbon pricing regimes. The federal government further committed to deploy 10 per cent of these monies to small business, municipalities, and Indigenous communities to defray carbon costs and support the process of energy transition.

Two shortcomings of these arrangements have arisen. Firstly, the federal government has yet to allocate revenue under the carbon backstop arrangement to Indigenous communities in the provinces of Alberta, Saskatchewan, and Ontario two years after these funds have been collected. The reasons for the delay are unclear. Secondly, Indigenous communities are not materially included in any revenue recycling arrangements in jurisdictions with carbon pricing regimes. These shortcomings are unfair, compromising the capacity of Indigenous communities to address the short-term costs of carbon pricing and invest in clean energy infrastructure, such as energy efficiency or renewables. As the price of carbon rises between now and 2030 these inequities will become more pronounced, especially where revenue recycling to taxpayers is implemented through tax credits or rebates or where funds are treated as general jurisdictional revenue.

The federal and provincial/territorial governments have an obligation to ensure that carbon revenue recycling, through the carbon backstop or jurisdictional allocations, includes support for a net zero transition and funding measures targeted to Indigenous communities and Peoples.

Indigenous interests regarding the environmental attributes of carbon reduction

The pricing of carbon pollution generates *environmental attributes*, or credits of various kinds generated by reducing greenhouse gas emissions as a direct consequence of producing renewable energy and large-scale energy efficiency and conservation.

A market for environmental attributes of carbon offsets and renewable energy credits is rapidly developing. Under certain conditions, Indigenous clean energy projects may validly yield carbon offsets or renewable energy credits. Buyers of carbon offsets seek to use these credits to meet regulatory or corporate targets for emission reductions. Purchasers of renewable energy credits do so in part as an expression of support for sustainable energy and climate action. Both buying carbon offsets and purchasing energy credits are linked to environmental, social, and governance norms that are becoming more important to the risk profile of corporations and the raising of capital.

The value of carbon offsets and renewable energy credits will grow as the price of carbon rises, making them increasingly relevant to clean energy projects. Thus, there are a couple of major Indigenous interests regarding the environmental attributes of carbon reduction.

Firstly, it would be ethically congruent, and consistent with the process of national reconciliation and recent UNDRIP legislation, that carbon offsets and renewable energy credits could only be generated from clean energy projects that conform and adhere to Indigenous Laws, Rights and Treaties, going well beyond duty-to-consult provisions, and incorporating Free, Prior, and Informed Consent (FPIC) practices into project development, implementation, and operations. Further, clean energy projects that generate carbon offsets and renewable energy credits should be required to protect ancestral Indigenous lands and waters, including sacred sites and ecological habitats essential for traditional livelihoods such as sustainable fisheries, wildlife, and medicine harvesting.

Secondly, the concept of environmental attributes arising from carbon reduction—and the markets for those attributes—should be expanded to cover both renewable energy generation and energy efficiency investment that reduces carbon emissions. In effect, clean energy credits would apply to renewable power and energy efficiency investment in Indigenous housing and facilities. Such an expanded approach to the environmental attributes of clean energy would provide value in reducing the need for more energy or electricity. It would also offer another economic advantage and a potential source of revenue for retrofitting existing homes in Indigenous communities, and for building new, energy-efficient ones.

Role of the federal government

As noted earlier in this paper, provincial and territorial governments have the primary role in working with Indigenous Peoples and their organizations for clean electrification. However, there are also key roles that the federal government needs to play. Without such federal leadership, Indigenous clean energy participation will be constrained. A Canadian clean electricity future should embody the imperative of national reconciliation and the UNDRIP and support Indigenous participation in clean energy projects and initiatives. In addition, it will require a huge amount of long-term capital investment that will likely require some manner of federal involvement.

The federal government's support for diesel reduction in remote and Northern Indigenous communities is crucially important. Renewed federal funding for this facet of energy transition is to be commended. As is the collaborative platform being established which integrates the efforts of the Clean Energy for Rural and Remote Communities program (NRCan), Northern REACHE (CIRNAC), the Strategic Partnerships Initiative, and the community infrastructure programming at Indigenous Services Canada (ISC).

Federal support for Indigenous clean energy capacity building and skills is essential and can be delivered through various federal government programs within NRCan, ISC, and CIRNAC. Without funding for community clean energy capacity building and skills development for Indigenous people, particularly youth and young adults, the clean energy workforce will be understaffed. This also extends to support for Indigenous people transitioning their employment from carbon-intensive to clean energy industries. Thus, there is a need for Employment and Social Development Canada to consider new Indigenous human resources skills development for clean energy opportunities.

Two very large-scale capital initiatives merit federal government consideration. The first would directly support clean energy action by Indigenous communities, and the second would establish a capital infusion to accelerate the net zero efforts of provinces and territories, which would indirectly benefit Indigenous clean energy participation. In effect, if we are to transition to a net zero economy, there is a need for major capital investment to improve energy efficiency and build cleaner electricity systems. These include enhanced and integrated storage, hydro power tied into renewables, decentralized energy generation, and advanced systems digitalization and management. Funding them requires the fiscal weight of the federal government, given that the fiscal capacity of provinces and territories to build clean electricity is constrained by accumulated deficits, and growing healthcare, social, and educational expenditures.

In the first instance, we emphasized the importance of right-sizing energy demand through Indigenous energy-efficient housing earlier in this report. The scale of investment to catalyze



this opportunity is significant, totalling \$5.4 billion, according to Indigenous Clean Energy estimates. A major federal infrastructure fund targeting Indigenous energy-efficient housing retrofits and new builds over the next decade would kickstart this hugely impactful clean energy opportunity and make a material contribution to Canada's clean electricity future.

For the last few years, the Canadian Electricity Association has stated in its annual States of the Electricity Industry Report that new capital investment is required to upgrade infrastructure, meet growing demand, and build more clean generation capacity through renewables and storage. The Conference Board of Canada has estimated that an investment of \$1.7 trillion is needed to address this challenge. However, provinces and territories have two unappealing options: add to jurisdictional debt or raise electricity rates prohibitively. The pathway out of this quagmire may be a blended financing approach combining a) cumulative long-term rate increases (CPI or more) over 30 years and b) a major federal fiscal infusion to drive decarbonization.

What's required is a national net zero energy transition fund, led by the federal government, that would provide a total of \$500 billion over, say, a 30-year period for provinces and territories to invest in clean electricity systems. While daunting, this represents the scale of investment needed. It would induce a massive transfer of energy for heating, cooling, and transport from fossil sources to clean, low-emitting electricity. An initial read may conclude that such a large-scale national investment in a net zero future is an unworkable non-starter. Consider the business case, however. Firstly, \$500 billion in investment over 30 years is an annual commitment of just over \$16 billion—large but not prohibitive. Secondly, inflation means the real cost of such capital is substantially less, especially over the long term. Thirdly, federal contributions can catalyze a national and sustained transition to a clean electricity future that drives economic growth (and public tax revenues) and employment. Fourthly, a national net zero energy transition fund can be a driver for more harmonized federal and provincial-territorial alignment towards climate action and a net zero future. Finally, the alternative is a continuation of the existing electricity system's reality, which is a patchwork of jurisdictional efforts lacking the scale of investment that would fuel a robust energy transition.

A federally supported national net zero energy transition fund would need to be designed and negotiated with the provinces and territories. It must also include national and regional Indigenous organizations at the table, particularly communities that have been at the forefront of clean energy projects across the country. Indigenous Clean Energy would be pleased to support the process of considering a national net zero energy transition fund. It is also critical that such a fund include clear parameters and conditions that ensure Indigenous and local participation in clean energy projects and investments, thus democratizing Canada's net zero future.

A national net zero energy transition fund would be bold, yes, but also needed, pragmatic, and realistic.



CLOSING NOTES

Indigenous Clean Energy (ICE) has greatly appreciated the invitation from the Canadian Institute for Climate Choices to author this scoping paper focused on Indigenous leadership and participation in a net zero future. ICE is of the categorical view that a clean energy future for Canada cannot be effectively realized without the respectful and substantive participation of Indigenous Peoples, their governments, and organizations—a process that respects Indigenous rights, gives expression to the process of national reconciliation, and embodies the United Nations Declaration on the Rights of Indigenous Peoples.

ICE is honoured to play a pivotal role as a national hub for Indigenous inclusion in clean energy projects and ventures through capacity building, education and skills enhancement, and forging new connections for a clean electricity future.

Change is a process of nurturing relationships and insight that build a foundation for new and more impactful clean energy for Canada. ICE offers its commitment, of the organization and the broader ICE community of over 1,500 individuals from coast to coast to coast, to be a central force for the *Waves of Change* driving a clean electricity future.