

- **North American Electricity: Charting Our Shared Future**

"North American Electricity: Charting Our Shared Future"

Presented to The Economic Club of Toronto by Hans Konow, President and Chief Executive Officer, Canadian Electricity Association, May 1, 2003

Summary: Canada's long-term electricity needs will be significant over the next twenty years. To address this critical demand, the Canadian Electricity Association (CEA) has developed an action plan designed to promote cross-border regional markets for greater efficiency and to improve the functioning of electricity markets throughout North America.

Good morning and thank you for that kind introduction. It is a pleasure for me to be able to join you here today and give you both an overview of the North American electricity picture and some insight into the messages CEA has been bringing forward to decision makers in Ottawa and Washington with respect to how we think we can maximize efficiencies of regional electricity markets in North America to the benefit of Canadians and Americans.

No one here this morning will be surprised to hear that currently, U.S./Canada relations are facing very significant challenges. And while the original source of the current friction between the two countries was different views concerning how to respond to geopolitical events, the situation was further exacerbated by injudicious, in some cases downright insulting, comments by politicians and commentators on both sides of the 39th parallel. I have had a number of opportunities over the past month to meet with and discuss our relationship with American officials both

in Washington and at the U.S. Embassy in Ottawa and have come to two conclusions.

The bad news is that they are annoyed with Canada. The good news is they still value our energy relationship highly.

Much has been made recently of the potential fallout from this rift between Ottawa and Washington. In my view, while there may be impacts over the short term, the long-term picture is still bright. The relationship between the two countries is simply too deep, too important and too mutually advantageous. From energy to foreign policy, communications to defense, environment to the economy, our future is a shared one. Lester B. Pearson had it right when he said:

"To live alongside this great country is like living with your wife: At times it is difficult to live with her, but at all times, it is impossible to live without her!"

The economic inter-dependence between our two countries is extensive, and has benefited both. From a Canadian perspective, 85 percent of the goods we export go to markets in the U.S., while 73 percent of the goods we import come from the United States. For the United States, we are also their most important foreign market: more than 22 percent of U.S. exports come to Canada, more than is exported to Mexico and Japan combined, their next two most important trading partners, while 19 percent of U.S. imports are from Canada, nearly double their imports from either of those two countries.

When it comes to the electricity relationship, Canada and the United States are the only external markets which matter to each other. And the benefits of this electricity relationship for both countries are enormous. But before



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going into the specifics about the electricity relationship, I would first like to provide you with a brief overview of the Canadian domestic electricity outlook.

What does the future of Canadian electricity hold? In short, it will be a busy future indeed, with investment in new and replacement capital stock in the order of \$150 billion over the next 20 years.

Two years ago, CEA launched a study of the future needs for electricity in Canada, a project we called the "Bird's Eye View", which we have since updated to reflect the changing economic circumstances and changing projections from Natural Resources Canada and the National Energy Board. Our study looked at the future needs of Canadians for electricity, took into account projections by NRCAN and the NEB, considered population and GDP growth patterns, and the current and projected growth in electricity demand. We took into account savings from energy efficiency programs, but also accounted for plant retirement over the next 20 years. Even accounting for a reduction in electricity exports, we were still left with the need to increase electricity supply by 205 terawatt-hours from some 40,000MW of new capacity over the next two decades.

It is within this context of future Canadian electricity requirements that CEA has been reviewing and making recommendations with respect to our shared North American electricity relationship.

The North American electricity market is increasingly characterized by regionally integrated sub-markets, and continued growth in scale and scope of regional integration is part and parcel of a strategy to move towards greater efficiency. We believe that enhancing existing cross-border cooperation will help deliver continued economic and

environmental benefits to the various regional electricity markets in place today, benefiting investors, the environment, and ultimately, consumers across the continent.

A remarkable bi-lateral trading system has evolved between Canada and the United States over the last half century. What began with small tie-lines and the development of boundary waters for hydroelectricity, has evolved into extensive cooperative arrangements for managing transmission system reliability, major inter-ties across the Canada-U.S. border coast-to-coast, and growing energy transactions.

The diversity of our systems – the different balances of the various conventional and emerging technologies in our regional generation mixes and the differing market demands region by region over days, weeks, and seasons – has prompted a level of trade that benefits electricity consumers across the continent. When linked across the international border, our diverse systems have created opportunities for enhanced efficiencies in regional systems management, reduced environmental impact, improved reliability and better financial performance; achievements important for all involved.

Electricity is now a key and growing part of the larger energy trade picture between the two countries, and it is increasingly two-way. Electricity trade between Canada and the United States stems primarily from two sources. First, generators in Canada are key suppliers to certain regional U.S. markets. The U.S. northeast, mid west and California have all benefited from access to Canadian energy. In fact we have even reached as far south as Florida and Mexico in a few cases.

The quantity of electricity exported from

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Canada has typically been 7 to 9 per cent of production. Overall, Canadian exports have remained relatively stable over the past four to five years. However, electricity imports to Canada have increased significantly of late. Why? Well, to some extent weather and technical problems have contributed to this development. For example, the "lay up" of a significant portion of the Ontario nuclear fleet and low water levels in key hydro-rich regions, coupled with a hot summer last year is part of the explanation. But another more profound reality is at work as well. Canada is experiencing a decline in the input resource advantage for manufacturing electricity that it has enjoyed for the last one hundred years.

What do I mean by that? Electricity is manufactured from a rich mix of natural resources and capital. We have no inherent advantage in the latter and a declining one in the former. Our access to capital is no better than that available to investors in the U.S. and our fiscal regimes, while much improved, are still not fully competitive with those in the U.S. But most important, our natural resource base, while still attractive, is not as advantageous as it once was.

Put simply, we have harvested the "low hanging fruit" and now we have to climb higher up the tree to get what we want. This changes the risk /reward profile of our sector. If we take hydro-power as an example, our new projects are more remote, requiring longer transmission lines and costing more per unit of output to develop. Our coal resources are uneconomic in the east and face challenging environmental requirements everywhere.

These have been our mainstays for the last century. Indeed they will likely remain so for some time to come. But

over the last half decade or so natural gas emerged as the input resource of choice in North America with the advent of highly efficient, modular, and therefore flexible, combined cycle gas turbine technology. These units can be manufactured in large numbers using standard designs and most importantly can be located close to demand and fed off existing pipeline systems. And natural gas is, to all intents and purposes, a North American commodity when it comes to price. When combined with an oversupply of natural gas resulting in \$2 a thousand cubic foot (mcf) price levels, was it any wonder everyone jumped on the "bandwagon" and Canadians found themselves facing formidable competitors for traditional export markets and a rising tide of new players in domestic markets?

But then along came the California debacle and, not long after, the implosion of Enron to wreak havoc on the emerging competitive marketplace and its leading corporate exponents. At the same time the gas glut dried up, just as many had predicted, and here we are today. Natural gas prices have more than doubled and hydro and coal look both attractive and perhaps even more important, reassuringly stable. What is not stable, however, is the regulatory uncertainty and timing questions involved in getting projects approved and the ever changing environmental requirements facing large projects, particularly those involving coal.

While this may seem a confusing picture and it is to some extent, there are some conclusions to be drawn with implications for our trade story. First, the clear cost advantage we have taken for granted with respect to electricity vis-à-vis the U.S. is no longer so certain. In the future, we will have to earn it the

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old fashioned way-by being quicker, smarter and by using all our resource options efficiently and creatively. Second we need to build on the excellent base we now have for continental trade- a system which has evolved to become a model of stability for both Canada and the United States as well as, increasingly, Mexico. But, it is also a system facing its own challenges. Three of the most important of which are: lack of clarity around market rules, environmental challenges, and the current very poor investment climate.

CEA's North American electricity policy takes these three factors as both the context and the rationale for our principle thesis. That thesis, stated simply, is that the evolving North American market is increasingly a regionally integrated one, and that continued and growing regional integration will be beneficial.

While increased regional integration alone cannot solve all the problems that currently plague the industry, it can contribute to greater efficiency, increased reliability, more predictable regulation and policy, lower costs and greater environmental benefits overall, thereby increasing investor confidence and reducing uncertainty in the marketplace.

Let's first look at the uncertainty. The North American electricity industry is in a state of flux unlike anything it has experienced in it's over 100 years of existence.

With respect to lack of clarity around market rules, the model of state-owned or sanctioned integrated monopolies, while still the standard in many jurisdictions, has been undergoing a change at the hands of state/provincial and federal governments and regulators. New sub-sectors – independent generation, merchant transmission, and power mar-

keting entities – have emerged and in some cases are disappearing again. Nevertheless, a pronounced change in the structure and make-up of the industry has required regulators to rethink how they treat the sector. In fact, at times, regulators have helped facilitate the evolution of the marketplace. Of particular note is the role played by the U.S. Federal Energy Regulatory Commission or FERC as it is more commonly known. Over the last few years it has taken steps to pursue a vision of large regional, open wholesale markets in North America first through its famous orders 888, 889 and 2000, as well as more recently when it issued a notice of proposed rulemaking last year to establish standard market design rules. FERC would like to encourage the establishment of large area regional transmission organizations, or RTOs. The precise scale and scope of such RTOs remains undetermined and has resulted in considerable dispute at both the federal/state level and among industry interests. The transition to competitive markets has been uneven with higher cost jurisdictions moving earlier and further. And while competition at the wholesale level has been widely embraced, many provincial and state decision-makers have expressed concern regarding the implementation of competition in retail electricity markets. In fact, a few have taken steps to either slow or stop the movement to competitive markets in their respective jurisdictions and in California the Governor has introduced legislation to roll back the existing competition law.

At the same time, electric utilities are feeling the pressure of environmental challenges unlike anything seen to date. In Canada, this is especially the case as a result of the Government of

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Canada's ratification of the Kyoto Protocol. That decision leaves Canada obliged to reduce greenhouse gas emissions by six percent from 1990 levels for the period 2008-2012; the Canadian electricity industry will face an onerous task in helping meet that goal. In the United States, while the Bush Administration has chosen to pursue a voluntary approach that focuses on improving the carbon intensity of industrial processes, rather than Kyoto, several U.S. States have enacted their own legislation to control GHG emissions. The current lack of a coordinated North American approach to addressing Climate Change is both inefficient and potentially disadvantageous to Canada. Above and beyond GHG emissions, companies on both sides of the border anticipate increased pressure to further reduce other air emissions.

Apart from air emissions, interest in "green" generation portfolios is increasingly evident through proposals for renewable portfolio standards and restrictions on the building of new conventional generation projects. Moreover, and not to be underestimated, obligations with respect to the protection of species at risk and – fish, bird, and other wildlife habitat – are more and more demanding.

Lack of clarity around market rules and environmental concerns are compounding the third cause for market uncertainty: a very poor investment climate. Investors have become wary of investing in an industry affected by the Enron debacle, the telecom market deflation, and the continued fallout from September 11th. This lack of investor confidence places an additional hurdle in the path of raising the necessary capital for the construction of needed generation and transmission projects and could affect meeting the future needs of customers.

These regulatory, environmental and investment issues are all cause for concern. They are also evident across the North American marketplace. Equally evident across the market is an emerging opportunity that, I am convinced, can make a material contribution to moving past such environmental and investment concerns: the potential for efficiency gains from well functioning large, north-south regional markets.

Cross-border electricity trade provides the opportunity to optimize the use of generating resources to the benefit of U.S. and Canadian market participants. For example, when linked across borders, the diversity of our systems, our climates, and our demand profiles allow for efficient power flows north or south. The resulting regional market efficiency gain minimizes the need for additional generating facilities and results in lower overall generation costs to consumers. Moreover, electricity companies can derive environmental benefits through such efficiencies – for instance, coordinating exchanges between "must-run" fossil fuel-fired generation facilities and hydroelectric facilities. This involves a generator selling off-peak power to a hydro generator, allowing the latter to "bank" energy (in the form of stored water) in its reservoirs. During periods of high demand, the hydro generator releases enough water to meet its own needs and to assist in meeting the peak demand of its partner in this diversity exchange, thereby avoiding both emissions and higher costs from fossil peaking units. Such opportunities exist in each of the regional markets across the continent – western, central, and eastern.

Imports and exports balance system usage and provide reliability at the various transfer points along the U.S./Canada border. More robust transmis-

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sion capacity across the border will be essential for an increase in electricity flow between markets in the United States and Canada. Provided that the barriers and disincentives to transmission investment are successfully addressed, and the transmission grid is operated in a manner that accommodates international exchanges, reliability in electricity supply will increase as a result of this integration of markets.

Moreover, the integration of U.S./Canadian electricity markets will allow for the coordination of approaches to more effectively achieve reductions in the environmental impact of electricity facilities. No one technology is universally applicable across a national marketplace – fuel availability, geography, and a host of other factors help determine the generation mix. The objectives of reliable, affordable, environmentally preferable power require that all technologies be available. In fact, increased integration enables the larger, combined U.S. and Canadian regional electricity markets to take full advantage of various traditional and emerging technologies – from hydro to coal to nuclear to wind. And, perhaps most importantly, to coordinate their respective environmental regulations and approaches to optimize results while minimizing trade impacts.

Finally, the integrated market enables Canadian and U.S. participants to effectively work together to safeguard the North American electric grid against physical and cyber threats. By working through the North American Electric Reliability Council, Canadian and U.S. utilities and other market participants are able to coordinate responsibilities to ensure effective critical infrastructure protection of the electric power sector.

It is within this context that CEA has been delivering policy recommendations to assist the further development of these regional markets and ensure a brighter shared electricity future. Among the recommendations we have been bringing forward are the following:

- Increased participation in Regional Transmission Organizations (RTOs), and increased focus on harmonizing market rules
- Development of a North American strategy to manage GHG emissions from electricity generation
- Identification of opportunities to further harmonize management of other air emissions
- Creation of a consistent methodology for measuring environmental performance
- Enhancement of cross-border transmission transfer capability
- Coordination of critical infrastructure protection
- Support for a self-governing international organization for developing and enforcing mandatory reliability standards for the evolving electricity industry.

We believe that enhancing existing cross-border cooperation in these areas will help deliver continued economic and environmental benefits to the various regional electricity markets in place today, benefiting investors in the industry, the environment, and ultimately consumers across the continent. Maximizing the opportunities offered by our integrated markets must be part of the strategy to help secure a healthy electricity industry for the future.

If success is to be realized and the electricity industry is to play its full and

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vital role in powering the North American economy in the 21st century, the following must occur:

- Policy makers must embrace the vision of large, non-discriminatory, bi-national regional markets;
- Regulators must coordinate and collaborate in setting clear and certain rules respectful of and accommodating jurisdictional realities;
- Investors must see reasonable rates of return.

Regionally integrated markets are a reality in the Canada/U.S. electricity relationship. Recognizing these natural markets, and identifying opportunities to build on them, offers significant promise for future growth, for improved environmental performance, and for the continuing reliable supply of electricity to consumers across North America.

I hope this has given you an appreciation of the scope of our shared electricity future and a sense of some of the policy options we believe should be

pursued in order to further cultivate the relationship and to assure a brighter future for both Canadians and Americans. And while I understand the arguments of economic nationalists, we need to recognize that we are living in a world where, in many ways, borders are disappearing. And that is why we believe that with properly designed and co-ordinated policy and regulatory frameworks in place, we in North America have an opportunity to help prosperity blossom across borders.

It was more than four decades ago that Marshall McLuhan coined the phrase the "Global Village". At the dawn of the 21st century, we are indeed living McLuhan's vision. We in Canada have the option to embrace this vision and rise to its challenge or turn our back on it and risk missing an important Canadian opportunity.

Thank you.