IRC Media Briefing – CEO Remarks

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"Progress of Organized Wholesale Electricity Markets in North America"

Gordon van Welie, President and CEO of ISO New England Inc.

Good morning. My name is Gordon van Welie and I am president and CEO of ISO New England, the regional transmission organization serving the six New England states.

On behalf of all the North American independent system operators and regional transmission organizations, I thank you for joining us here today. As separate organizations, we are responsible for operating bulk power systems and managing wholesale electricity markets in various regions across both the United States and Canada.

Today we present our organizations as a collective group, under the aegis of the ISO-RTO Council, to provide information and perspective about who we are, what we do, and the potential we offer as ISOs and RTOs for industry innovation and public policy development.

Independent system operators and regional transmission organizations serve two-thirds of population in the United States and more than half of the population in Canada. All of these consumers are served through organized wholesale markets that were launched by the ISOs and RTOs, beginning as early as the mid 1990s.

The ISO/RTO Council, or IRC, was established by the ISOs and RTOs in 2003. Since then, the IRC has been working cooperatively to share ideas, benchmark best practices, and benefit from our individual experiences by implementing efficiencies whenever possible.

After my introductory remarks, Paul Murphy, CEO of Ontario's Independent Electricity System Operator will discuss the how organized markets have increased the amount of demand response participating in them. Following Paul, Nick Brown, CEO of Southwest Power Pool will review how ISOs and RTOs are facilitating the growth of renewable resources.

As you may know, ISOs and RTOs are a relatively new and unique type of organization, just a little over a decade old. We are neither a for-profit company nor a government entity, yet we interact with both sectors on a daily basis. The power systems and electricity markets we run affect all consumers in our respective regions, yet we are not very well known.

As wholesale competition for electricity was established in the 1990s, groups of utilities and their regulators began forming independent system operators to ensure equal access to the power grid for new, non-utility competitors.

ISOs and RTOs were developed to ensure that power systems were operated reliably and the emerging wholesale power markets were efficient and fair for all market participants—from the traditional investor owned utility—to the generation owner—to the municipal electric company. As a result, we have been busy since our creation a little over a decade ago.

We have established highly competitive wholesale markets, developed effective regional planning processes, and have improved operating efficiencies. And, we have done so in a cost effective manner. ISOs and RTOs will ensure that non-traditional generation, such as renewables, demand response and energy efficiency will have clear and equal access to both the transmission grid and the electricity market.

All of these changes have accrued consumer benefits and our summary report on 2006 wholesale markets provides you with a few examples.

In areas that we serve, peak demand has grown consistently, reaching record levels in 2006. ISOs and RTOs served this record-breaking demand reliably. Last year, the increase in peak demand ranged from 3.2 percent in Ontario to a 10.7 percent increase in California. Despite this unprecedented consumer demand, we were all able to maintain reliable grid operations.

ISOs and RTOs provide extensive, and relatively new, grid reliability services and transmission support services that did not previously exist. Our range of services has indeed expanded over the years to meet requirements in federal and state legislation as well as to accommodate the growing number of market participants. System operators use a suite of reliability tools to assure real-time grid security. One such tool is five-minute dispatch, which provides responsive and accurate control of power flows across the transmission system. Another tool is contingency reserve sharing, which allows the sharing of reserves across larger areas than a single control area.

Power system reliability is also due in large part to a robust planning effort. ISOs and RTOs all conduct extensive regional system and interconnection planning. Our planning processes accommodate new generation and transmission in appropriate locations.

Between 2001 and 2006, regions with organized wholesale markets have seen significant investment in new generation, for example, from an 11.7 percent jump in New York to a 34 percent increase in New England. Across all ISO and RTO regions, amounts of generating resources have increased, totaling more than 100,000 megawatts of new generating resources.

Accordingly, ISOs and RTOs' regional planning processes have proved invaluable in the identification and construction of much needed transmission infrastructure. Across the board, our transmission systems have witnessed significant investment—and the dollar amounts are impressive.

Since 2000, PJM's Board has authorized construction of $7 billion of new transmission that was identified in its regional transmission planning process. The Midwest ISO has brought nearly $1 billion of new transmission online, with $2.1 billion of additional investment committed by transmission developers in the MISO territory.

The California ISO began transmission planning in 1998. By the end of 2006, the California ISO's Board approved more than $8.2 billion in transmission investment. This represents 400 different projects, a third of which is scheduled to go online by the end of this year. ERCOT, the Texas ISO, has built, rebuilt or reconductored more than 5,200 circuit miles since 1999, with a total capital cost of $3.5 billion. In New England, ISO New England's 10-year Regional System Plan is tracking the development of transmission projects that have a total cost of approximately $4.4 billion. By the end of this year, $1.2 billion of investment will be placed into service.

Organized wholesale markets take the mystery out of infrastructure investment because these markets offer price signals that reflect the value of electricity across time and place. These price signals, from real-time prices or numerous forward contracts and indices, support the investment in a variety of new generating and demand resources as well as transmission lines.

In 2006, wholesale electricity prices in most of the regions with organized wholesale markets decreased, ranging from 14 to 32 percent. This drop in wholesale prices is a result of different factors including decreased fuel costs,

as well as infrastructure improvements that allowed electricity buyers to access more efficient, low-cost electricity sources. Infrastructure improvements have also lowered congestion costs in ISO and RTO regions. Congestion costs occur when limited transmission facilities prevent the flow of lower cost electricity.

Consumer benefits can be measured in different ways. For some, it is purely a reduction in retail rates. This benefit is one for which we all strive, but as long as the cost of electricity production tracks closely to the cost of fuel, industry rates will continue to rise and fall in response to prices in the global fuel markets.

ISOs and RTOs measure consumer benefits not only through competitive wholesale prices as well as other market efficiencies, but also through meeting peak consumer demand reliably and providing investors with a price transparency that is unparalleled in the history of electricity industry. It is this very price transparency that has given rise to much needed investment in new generation, new transmission, and over the past few years, new demand-side resources. We are on the threshold of yet further industry progress because demand response and renewables, when cultivated in regions with organized markets, will help address rising electricity consumption, increased fuel prices, and even concerns about climate change.

While all the ISOs and RTOs have experienced progress in the past ten years, challenges remain. Solutions must be developed to meet the growing need for electricity in an environmentally sound and secure way. The markets run by the ISOs and RTOs have proven to be the best avenue to achieve industry solutions to meeting peak demand and environmental objectives in an efficient manner.

Before we turn the discussion over to Paul Murphy and his topic of demand response, I would like to leave you with a final thought. I ask that policymakers consider organized markets as the proven mechanism to achieve their public policy goals of increasing the amount of demand response and renewable resources. When energy regulations are crafted and energy legislation is drafted, keep in mind organized wholesale markets when pursuing economic and environmental policy goals.

Thank you for your time. Now, Paul Murphy from Ontario will now discuss demand response.

"Harnessing the Power of Demand"

Paul Murphy, President and CEO, Independent Electricity System Operator

My name is Paul Murphy and I am the President and Chief Executive Officer of Ontario's Independent Electricity System operator, better known as the IESO. The IESO is one of three Canadian members of the IRC, the others being the Alberta Electric System Operator and the New Brunswick System Operator.

Description of demand response

I am here today to address demand response. While you may not be familiar with the term, you're probably familiar with the concept. Demand response empowers customers to reduce their electricity consumption in response to emergency, peak load, and high price conditions on the electricity grid.

It takes many forms, including:

- Manufacturers that halt or reduce production when requested
- Mining companies that cease extraction or refining when the price of electricity becomes uneconomical
- Retailers and shopping mall owners that temporarily dim their stores' lights when electricity supply is tight
- Homeowners who allow their local utility to remotely control the settings of their air conditioning during a heat wave

Following the lead of the U.S. Department of Energy, the Federal Energy Regulatory Commission defines demand response as follows: "changes in electricity usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized."

In broad terms, demand response tends to take one of two forms: "reliability-based" programs that are activated by the central Independent System Operator (ISO) or Regional Transmission Organization (RTO) during emergency situations to maintain system reliability; and "economic" programs that encourage customers to provide immediate load reductions once the wholesale price of electricity reaches a certain pre-determined point.

A well-functioning electricity market balances supply and demand, resulting in prices that reflect the true cost of consumption as well as the marginal cost of supply. By giving customers the information required to respond to time-based electricity costs or changing grid conditions, demand response provides a way for customers to be fully engaged partners with the bulk power system operators and suppliers.

Benefits of demand response

There is a new sense of urgency to providing customers with incentives to use electricity wisely. Reducing demand is just as effective as increasing supply – plus it's environmentally and financially responsible. Reducing demand means less pollution, fewer greenhouse gas emissions, greater system reliability, and fewer price spikes.

Demand response yields tangible results. As you may recall, the west coast of the United States endured an extended heat wave in July 2006, with triple-digit temperatures for 11 days in a row. Cities throughout the west struggled to meet their customers' demand for electricity. However, the California Independent System Operator (CAISO) was able to meet the record-breaking demand of 50,270 MW with sufficient operating reserves to avert voltage reductions, rotating blackouts or any other involuntary load reductions.

Demand response is a powerful tool. It can address near-term reliability problems, enhance long-term system adequacy, mitigate peak prices and price volatility, reduce the need for new generation, and limit supplier market power.

Policy-makers at all levels of government have recognized its role as part of a comprehensive solution to address rising electricity demand, increasing fuel prices, and concerns over global warming. Efforts are being made around the world to increase and expand participation in demand response programs, which can support key policy goals of system reliability, fair and competitive pricing, and environmental sustainability.

Substantial gains in wholesale market efficiency can result from a relatively small amount of demand response. Load reductions by some customers can set off a ripple effect that can result in lower wholesale electricity prices, which translate into lower electricity costs for all customers.

Another IRC member, PJM Interconnection, recently conducted a study to estimate the potential level and distribution of benefits associated with price response. Simulations show that on an annual basis, $300 million in benefits can accrue to all customers with a load reduction of just three per cent from customers responsive to electricity prices. The research proved that a small decrease in load can deliver substantial energy and capacity market benefits to those customers who would respond to high prices. Collateral benefits would also accrue to all electricity consumers and society as a whole.

Demand response also contributes to maintaining system integrity. As the blackout of 2003 demonstrated, every part of an integrated, interconnected grid can be affected by events that happen in distant locations, and with little or no warning. Reducing electric load when supply is tight decreases strain on the system. This reduces the likelihood of forced outages and rolling blackouts, which can cause substantial economic, environmental and health and safety impacts.

Just as California's electricity system was challenged in July 2006, New York's system came under stress two weeks later during a heat wave that resulted in record temperatures and new peak electricity consumption across the east coast. An all-time system peak of nearly 34,000 MW was reached on August 2, an astonishing 33-per-cent increase over the peak load served just 10 years ago. To ensure grid reliability, the New York Independent System Operator (NYISO) activated its two demand response programs. In addition to stabilizing the grid locally, demand reductions also contributed to New York's ability to export 1,300 MW of emergency energy to its neighbour, ISO New England.

Leadership in demand response

Given our role as information hubs for grid and market data, ISOs and RTOs have assumed a leadership role in developing demand response programs. Through education and training programs, we have led initiatives to encourage utilities and customers to manage their consumption. We have also joined with other agencies and institutions to increase awareness of the value of demand response among other stakeholder audiences and worked with them to identify and eliminate barriers to its growth.

Wholesale energy markets have a number of important features that foster demand response. First, spot market energy prices available on public web sites provide consumers with a way to measure the true cost of the electricity they use. These visible price signals help consumers make informed decisions about what they spend on electricity in the same way they use market prices to buy other goods and services.

Second, organizations like ours encourage participation by a broad range of market participants, including individual customers, utilities, and demand response providers or aggregators.

Third, ISO/RTO markets reduce barriers to entry and lower transaction costs through the use of well-defined demand response products, standardized rules, and easily accessible communication and metering protocols.

And finally, as regional reliability coordinators, we can manage demand response programs more effectively by coordinating usage curtailment in the broader context of region-wide supply and reliability conditions.

The Ontario experience

I would also like to speak briefly about our experience with demand response in Ontario.

For those of you who are unfamiliar with the Ontario marketplace, our total wholesale market transactions last year reached $10.4 billion. The province has a population in excess of 12 million and a peak load of 27,005 Megawatts, which is just shy of the combined peak load of the six states overseen by ISO New England.

The Ontario electricity market features what are known as “dispatchable loads” or wholesale market participants that have the capacity to curtail their consumption when required or requested by the IESO.

Through market bids and offers, dispatchable loads indicate a price at which they will supply operating reserves as well as a price at which they will reduce consumption. Just like generators, they can be instructed to increase or decrease their electricity consumption every five minutes.

Last year, the IESO studied the impact of its 700MW of dispatchable load resources on the efficiency of the market. The research showed that participation of these real-time dispatchable loads in the operating reserve market resulted in an efficiency saving of approximately $7 million for the year.

Demand response is certainly not limited to wholesale market participants. Retail customers have an important part to play in demand response as well. Working in partnership with the Government of Ontario to deliver its Smart Metering Initiative, the IESO is playing a key role in the development of a conservation culture in Ontario.

This important project is intended to enhance the reliability of the power system by providing Ontario’s 4.5 million customers with the tools they need to shift their electricity use to off-peak hours. The initiative calls for smart meters to be installed throughout the province by 2010. Local distribution companies (LDCs) are already on track to install the first 800,000 smart meters by the end of this year.

Conclusion

Before I turn the floor over to my colleague, Nick Brown, let me sum up my remarks. Demand response is a powerful tool to achieve system reliability, competitive pricing and environmental sustainability.

In the ISO markets, there are many real-life examples where these benefits have been realized. ISOs are leading the continued development and implementation of demand response programs through our wholesale markets.

And our wholesale markets are proving to be very effective vehicles for harnessing the power of customer demand.

"Increasing Renewable Resources – How ISOs and RTOs are Helping Meet this Public Policy Objective"

Nick Brown, President and CEO of Southwest Power Pool, Inc.

To grow renewable energy in the United States - particularly wind - more transmission needs to be constructed to move renewable generation to load centers. Independent System Operators and Regional Transmission Organizations are uniquely suited to support increased access to renewable generation because we can plan for, facilitate, and implement new transmission at a regional and interregional level.

In the Southwest Power Pool footprint – especially in Kansas, Oklahoma, New Mexico, and the Texas panhandle - there is enough high-capacity wind to potentially add more than 40,000 MW to the electric grid. To give you an idea of how much electricity 40,000 MW is - Southwest Power Pool's record demand for electricity was set this summer at just over 43,000 MW. It's not practical electrically for us to rely solely on wind generation, so we'll be using measured amounts of that 40,000 MW of wind internally. But other parts of the country can or would like to - or may already have Renewable Portfolio Standards, which require utilities to obtain a minimum percentage of their power from renewable sources by a certain date.

You can't move where the sources of renewable energy are located, such as wind or rivers. Since you can't move the energy source, you must bring transmission lines to the source to carry the energy to where the demand is. RTO's and ISO's like SPP are studying how a "transmission superhighway" of extra high voltage lines would enable us to connect tens of thousands of renewable MWs into the electric grid. An extra high voltage transmission system would be like having a six lane interstate highway versus a country road – the ability to move much more electricity, more efficiently.

As Congress considers overturning National Interest Electricity Transmission Corridors and designating historical corridors or other land use protections, it should be aware that these actions will impact the development of renewable generation and the achievement of "energy independence". If transmission becomes more difficult to site, there may be a cost to renewable energy development.

ISOs and RTOs are leading the effort to find innovative ways to finance and build transmission lines and share costs among beneficiaries. FERC has approved a California proposal to develop transmission for regions with renewable generation potential. Costs will be allocated to customers until the generation is built. A $1.8 billion, 500 kV project to access 4500 MW of new wind generation in the Tehachapi area is already scheduled.

In Texas, ERCOT has successfully integrated over 3,800 MW of wind generation, and over 2,000 MW of new wind generation is planned by the end of 2008. ERCOT's competitive market - including a Renewable Energy Credit program and a set-aside to encourage the development of non-wind renewable power - has facilitated renewable projects. ERCOT is studying the development of transmission plans to incorporate up to 18,000 MW of new wind from Competitive Renewable Energy Zones, as designated by the Public Utility Commission of Texas.

Renewable resources, including hydro electric generation, supply about ten percent of the energy controlled by ISOs and RTOs. Our large, open wholesale electric markets have attracted enough new renewable energy that the amount could double by the year 2015. Renewable energy has a better chance of being marketed in a large, regional footprint – such as those of ISOs/RTOs. Many types of renewable energy are intermittent. Wind may be blowing at one wind farm, but not another. Water levels may be high in some reservoirs but not others. A large marketplace is more friendly for integrating renewables into the grid, because it can accommodate intermittent generation while maintaining electric reliability.

In conclusion, I would like to stress the importance of having a national approach to the development of renewable energy generation and associated transmission. More renewable energy will help the United States to achieve energy independence.

Regional organizations coordinate well with each other, but federal policies have not caught up with the need for the enhanced transmission system required to move renewable energy where it is most needed.