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**OPPORTUNITIES IN CANADA'S  
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# Building a North American Supply Chain: Challenges and Lessons Learned

For a number of North American companies—from component suppliers to assembly and transport companies—the supply chain represents a significant opportunity. Yet according to a panel of experts who spoke at the *Opportunities in Canada's Wind Energy Supply and Value Chains* seminar in Toronto on February 18, 2009, the North American supply chain for the wind industry is underdeveloped. This makes it all the more challenging for manufacturers to compete effectively.

A number of factors create barriers to entry for potential Canadian and North American component suppliers, leaving original equipment manufacturers (OEMs) with the task of balancing high transportation costs for imported goods and competitive pricing.

“Currently we are using European suppliers for components,” explains Jessica Reiter, strategic purchaser for Vestas Nacelles, Americas in Chicago. “While we expected cost structures would be favourable for localization, after working with suppliers, we find that getting the proper pricing has been a constraint and a challenge.”

Despite the constraints, panelists agree on the need to source materials closer to home. Speaking on behalf of Acciona Windpower North America, Perry Wozney, director of strategic procurement, says the focus for the industry in the coming years is developing a North American supply chain that includes regional manufacturing resources. “The North American supply chain is in its infancy at the moment. We’d like to look more to regional manufacturing to reduce costs, simplify supply chain processes, and reduce lead times. Then we’ll be able to manage costs better than we are today.”

With Europe representing a major source for turbine components, North American suppliers must immediately start developing the ability to produce and deliver them at a regional level to meet projected production goals. However, panelists say they’ve seen no widespread commitment on the part of



**Lars Moller - Chief Operating Officer and Executive VP of Broadwind Energy - opens the first-ever seminar on Supply and Value Chains in Canada's wind energy industry.**

suppliers. They cite roadblocks that include long lead times for prototyping and product development, understanding and meeting industry specifications, the ability to meet vendor certification requirements, and the upfront capital investment requirements.

Transitioning technology and product development expertise from one industrial sector looks like a natural fit, but panelists say the highly specialized requirements for wind technology make it surprisingly difficult.

“Even if you are a maker of gearboxes for the oil and gas industry, it’s difficult to convert to a wind gearbox maker. The capital and labour involved are intense,” says Lars Moller, executive vice-president and chief operating officer for

Broadwind Energy.

But in an industry where transportation requirements are extremely demanding, complex, and costly, localized supply is crucial to survival, Wozney says.

“Because of the size and weight of the equipment, the industry can’t use conventional transit. In our case, 40% to 50% of our towers are imported from Asia and Europe, so the logistics of getting them to sites is expensive. As a point of reference, it costs \$20 for a large truck to travel a single mile. If you’re transporting four sections per unit from Wisconsin to Texas, you can imagine the costs of transportation.”

As the sole Canadian turbine OEM on the panel, Daniel Charette, vice-president of Sales and Business Development for AAER Inc. in Montreal, is an exception in a market that is characterized by “15 years of Danish and German supremacy.” Since signing its first agreement in 2004, AAER now sources 55% of its components in Canada. While margins are generally favourable, Charette says, more supply chain integration with North American suppliers would increase those margins and allow OEMs to improve cost control.

The panelists agreed that long-term partnerships and timely delivery are critical considerations in the selection of suppliers.



**A discussion on the North American Wind Energy Market (left to right): Robert Hornung, president of CanWEA; Marc Rousseau, Sales Manager, Eastern Canada, GE Energy; Lisa Leipzig, Project Developer, Acciona Windpower North America.**

“The key to achieving success is reaching long-term agreements with partners so you can secure the supply chain up front for the next three to five years,” Charette says. “You also need to ensure your suppliers are well financed and have a proven history in producing and delivering strategic components. That will bring a comfort level to customer and financiers.”

Providing a European perspective, Michael Stegelmann, director of global sourcing for Germany-based REpower, points out that to fulfill global demand, “We need suppliers all over the world who can come up with the qualifications, quality products, and performance, as well as be willing to invest in this industry. As we move from 2MW- to 6MW-class technology, it’s going to get even harder to find suppliers capable of



**Above, delegates ask questions of the panelists. More than 370 delegates attended the first-ever seminar on opportunities in Canada’s wind energy supply and value chains, held Feb. 18-19, 2009, in Toronto.**

supplying the goods we need.”

Stegelmann told the audience, “We are all sharks up here. We need quantities out of you in time. But you need to be committed to this.”

Ensuring sustainable supply will be critical to determining which suppliers will succeed. “Up to now, if you could meet capacity and quality needs you

were in,” Wozney says. “But now we are in a market where demand is far, far outrunning supply. Looking at long-term sustainability, you have to prove you are scalable enough to meet accelerated growth and transition over the long term.”

## Building Balance of Plant: Challenges and Lessons Learned

As wind farm installations continue to grow throughout North America, the onus is on all parties to work together, finding more effective ways to keep construction projects on time and on budget, according to panelists in the session, *Building Balance of Plant in North America*.

A higher level of cohesiveness to project execution is critical—and can be particularly challenging in an industry where difficulties include fluctuating demand, a shortage of skilled resources, high upfront project costs, and lack of standardization in safety requirements, permitting, and approval processes.

Project management of wind farm construction is an extremely complex process that demands multidisciplinary skills, says Chris Mummery, project manager for Wind Development, Energy Projects at TransCanada Energy.

“As project managers ourselves, I can say we have experienced many challenges in our industry. Qualified contractors with experience in wind energy are a rarity out there for one thing. Anyone involved in construction is also familiar with the challenges of delivery logistics. Winter construction

is a big factor in Canada, especially in Quebec and the Maritimes. Then there are the issues of working with long lead procurement time and permitting.”

When selecting the appropriate contracting approach for any given job, whether engineering, procurement and construction (EPC) or engineering, procurement and construction management (EPCM), Mummery says, the decision is guided by project parameters, the jurisdiction in question, and the level of project knowledge.

Highlighting industry challenges, Brent Bergland, construction executive with Mortenson Canada Corporation, points to civil issues, particularly land use restrictions in some regions. “It’s always a challenge balancing performance requirements with the civil infrastructure, while managing the schedule.”

Worker safety is a major concern, judging by audience questions and reactions during the panel. Several conference participants identified a significant shortage of safety training programs specific to the wind industry, and even fewer established standards.

Carlsun Energy has had to develop its own program to address the gap in

Canada, says Jason van Geel, the company’s president and general manager.

“While there were some companies that could do on-site training for nacelle evacuation, it simply didn’t satisfy a lot of workers on the site.” Carlsun Energy proactively contacted safety certification companies across the region to develop courses, and the company built a simulator, which it now rents out to other organizations for training purposes.

Derek Praught, construction supervisor for wind projects at Hatch Energy, says that given the nature of the construction projects, companies should always be prepared to face unforeseen circumstances as well as cultural differences that could affect safety standard requirements. “What is required in Germany could be different from our own requirements.”

Regional differences can also come into play, adds Bob Livet, vice-president of Operations, Power at AMEC. “Often you end up developing a safety program that is specific to a region. For example, in a rural location, you have to establish procedures for getting fire and ambulance services to the site.”

Asked about the critical requirements for successful balance of plant (BOP) outcomes, panelists are unanimous: scheduling is a top priority. “While most wind farms in themselves are not complex, they can be logistical nightmares,” Mummery says. “If a high degree of planning is not done early in the process, every activity becomes a critical path.”

Mummery says it’s important to work early with BOP and other contractors to optimize the sequence of activities—from tree clearings and road building to foundations and construction. “A whole bunch of questions need to be answered, so we look to our BOP contractor to work with us to optimize design and sequencing and create schedules for review. You also need to build in flexibility to deal with weather conditions and delays in delivery.”

“Early involvement [of engineering] in the project brings a tremendous amount of value,” says Praught. “Together you can identify the risk and opportunities, which ultimately leads to cost savings and schedule acceleration.”

Michael Sexton, project director with EBC Inc., says that in the planning process it is essential to look at the “lesser known” elements of projects. “Speaking as a contractor, our project teams have to know every page of an environment assessment and take that into consideration in the project plan. It’s also essential to ensure continuity in personnel and leadership.”

Community buy-in must also be addressed in the very early stages of any project. “Landowners are critical to the success of any project,” Mummery says. “We have land agents out there talking to landowners to set up land lease options even prior to a project getting sanctioned. In addition, engaging community support has to be done years in advance of construction.”

Laura Dahlke, electrical analyst with Hatch Energy, says the industry needs faster interconnection processes. “If more resources could be put into transmission and distribution grid infrastructure development, it would allow projects to get online faster.”



**Top: Delegates appreciated the opportunity to spend some time networking and sharing ideas after sessions wrapped up.**

**Bottom: Delegates listen to a panel discussion. More than 370 delegates attended the first-ever seminar on opportunities in Canada’s wind energy supply and value chains, held Feb. 18-19, 2009, in Toronto.**

## Next Steps:

# Building a North American Supply Chain

More vigorous networking, along with efforts to address urgent supply chain issues, will help the Canadian wind energy industry build and maintain its competitive edge.

Panelists at the closing session titled *Next Steps for Building the Wind Turbine Supply Chain / Wind Energy Value Chain in Canada*, say conferences and workshops like Wind Matters are a step in the right direction, bringing suppliers and manufacturers together to share experiences and perspectives.

“We want to build on this event,” says CanWEA president and panel moderator Robert Hornung. “It’s important to look at how we can take additional action and move this issue forward.”

But next steps could go even further, panelists say.

Daniel Charette, vice-president of Sales and Development at AAER, Inc., says future workshops should be modelled on this one, and that they should happen “sooner rather than later.” Feedback from this event will help fuel future planning and discussion, according to Tim Karlsson, director of Energy Industries at Industry Canada.

Nathalie Boyd, North American director with the Quebec Department of Innovation, Export, and Economic Development, agrees. Drawing on her experience in the aerospace industry, she says formal matchmaking sessions could be built into future events, offering suppliers and manufacturers the chance to connect face-to-face with the people they most need to meet.

Making the effort to understand the industry in depth is critical, and will require a realistic, concrete picture of the wind energy industry—really getting into “the nuts and the bolts and the washers.” This approach will help supply chain members grapple with important questions: What are buyers are looking for? Who are the players? And where are the challenges—and the opportunities? Human resource requirements are also central to any supply chain discussion, and must be addressed up-front, panelists say.



Understanding the tools and mechanisms for funding, financing, and support is another area that needs work. Reed Barrett, director of the Sector Competitiveness Branch at Ontario’s Ministry of Economic Development, points to two current Ontario programs: the Next Generation of Jobs Fund, a \$1.15-billion fund set up to help companies transitioning their business or moving in a new direction, and the Advanced Manufacturing Investment Strategy (AMIS), a 10-year loan program.



Among the variety of federal mechanisms, tax credits, and tax write-offs, Karlsson notes two sources for financing: the Business Development Bank of Canada (BDC) for patient capital, and the National Research Council’s Industrial Research Assistance Program (NRC-IRAP). Small business enterprises can further investigate sources for potential financing through the network of business service centres across the country that provide information about pertinent government services, opportunities, initiatives, and funding. Also, a compendium of government programs offers a valuable list of grants available both federally and provincially. “And other programs are currently under development,” Karlsson says.

In Quebec, says Boyd, the government is assisting new enterprise through the

windmill project task force, a program that provides funds and support to businesses at every step of the process, from research and development to testing and certification.

Jason Myers, president of Canadian Manufacturers and Exporters, emphasizes the importance of government in supporting the wind energy industry.

“One way in which they can assist is by identifying companies globally and providing networking opportunities for Canadian companies.”

Government—whether federal, provincial, or regional—must not ignore the massive subsidies in place in the United States, says Lars Moller, executive vice-president and chief operating officer at Broadwind Energy. “We need to be competitive, and you cannot escape the fact that we will have tough competition from south of the border.” Canadian governments must step up to the plate, he says, as industry efforts will mean little without strong government support.

Ed Weston, director of the Great Lakes Wind Network, agrees. Citing an initiative taking hold in the United States, he says many state governments are getting actively involved and underwriting regional workshops.

Conference participants agreed that interacting and connecting with others within CanWEA is a priority. Echoing panelists’ comments, audience members identified a need for greater government involvement and support for this new energy sector.

Participants were enthusiastic about the benefits of membership in CanWEA, and of its ever-expanding scope. “There’s more to CanWEA than these events,” added another, while a third said,

“The smartest thing you can do is join CanWEA.”

*The Canadian Wind Energy association (CanWEA) is a non-profit industry association representing more than 410 members in the wind energy industry. CanWEA promotes the responsible development and application of all aspects of wind energy in Canada.*

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