



September 2013

MEDIA  
PLANET

# THE BLUE ECONOMY

3

WAYS TO  
IMPROVE  
CANADA'S WATER  
SUSTAINABILITY

## A FRESH PERSPECTIVE ON WATER



**Nicholas Parker, Founder of the Blue Economy Initiative**, stresses the economic importance of sustaining our Nation's most precious resource.

Featuring

**WATER WORKS**  
How the mining sector redefined water use

**THE POWER OF H2O**  
Canada's leading renewable energy resource

**ALL ACCESS**  
NGO's and industry come together





By realizing our **nation's potential as a global leader in water stewardship** and the economic importance of managing our water resources, we can ensure that Canada remains water-rich for future generations.

# The glass is half full



**Bernadette Conant**  
EXECUTIVE DIRECTOR,  
CANADIAN WATER NETWORK

“Canada’s strength lies in its knowledge and capacity for addressing water management issues.”

**A**s Canadians, we tend to take water for granted. We are fortunate as a nation to enjoy a ready supply of the resource at pennies a glass. It is the fact that water is so accessible and inexpensive that we have taken advantage of it, with little thought to the future consequences of how we use or impact it. Stresses resulting from a growing and economically maturing world have become increasingly apparent and the management of water is clearly a major global issue. The question of how we will manage water in Canada going forward is critical as the choices will either put our systems, including ecosystems, public infrastructure, food production, and renewable energy alternatives, at extreme risk, or showcase Canada as a global leader. We have the potential to excel as water stewards and realize economic benefits as a result if we take a proactive, adaptive and resilient approach to water management.

**Mitigating risk**  
The catastrophic Alberta floods in June, coupled with July’s flash floods in Toronto provide a poignant example of the significant economic

risks associated with water. They are now on record as two of the costliest natural disasters both provincially and federally. A short two hours of rain in Toronto resulted in \$850 million in insured property damages; a number that doesn’t include business losses or municipal cleanup costs. The June floods that ravaged Alberta caused an economic loss estimated at \$5.3 billion. Insurance companies took sizeable losses related to the unpredictable nature of these floods. Uninsured costs are more difficult to calculate. Overland flood coverage is not offered to homeowners in Canada and most flood losses are not covered by traditional insurance policies. If necessity is the mother of invention, then the flip side of these challenges and risks is enormous opportunity. The water solutions sector in Canada—part of the blue economy—has a strong base to work from; Canada’s strength lies in its knowledge and capacity for addressing water management issues. We must manage according to the new norm—anticipating and recognizing the inevitability of increased severe weather events—and acknowledge the need to support systems that are economically, socially and environmentally viable in order to suc-

ceed. This requires a paradigm shift in water management; one that recognizes that the most efficient and economic solutions will adopt a proactive, adaptive and resilient approach to water management. **Securing the future** The ability to manage water well is an exportable expertise as are the technologies that are developed as a result. Export and international exchange involving this expertise not only yields direct economic benefit, but strengthens our capacity for environmental stewardship to be reinforced at home. Through the Blue Economy Initiative we and other water-focused organizations look to raise awareness of the huge economic value, risks, and opportunities related to water that demonstrate how this kind of management approach can lead to Canada’s water prosperity. We encourage Canadians to look to the future as we discuss water management, conservation, public infrastructure, food production and renewable energy alternatives as they relate to strengthening Canada’s blue economy.

**BERNADETTE CONANT**  
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# Canada’s best way to make electricity

**Canada’s biggest and best way of generating electricity is hydropower. It provides more than 60 percent of our electricity and makes our generation system one of the cleanest and most renewable on the planet. Canada is number three in hydro generation but we could still more than double our current hydro capacity.**

In a world that demands zero air pollution and reduced greenhouse gas emissions, hydropower is a proven solution. Life cycle GHGs from hydro are as low, if not lower than wind power. Hydropower is reliable and can dispatch power more quickly than any other source. This makes it the best option for smoothing the integration of clean electricity



**Jacob Irving**  
PRESIDENT,  
CANADIAN  
HYDROPOWER  
ASSOCIATION

from newer variable renewables like wind and solar. With more than 130 years of history in Canada, hydropower is an environmental leader and a proven economic performer. There are distinct economic advantages when developers can amortize capital investments over hydro’s 50-100 year operating life. Manitoba and Quebec use over 95 percent hydropower and enjoy the lowest electricity prices in North America. Hydropower exists across Canada and so does undeveloped potential.

It’s a truly national resource. A recent Canadian Hydropower Association study identified the opportunity for over 127 billion dollars of investment and one million new jobs over the next 20 years. Much of this activity could involve aboriginal partnerships that could diversify the national economy in new, positive ways. **The bigger picture** As good as Canadians are at meeting our needs through hydropower, there is a larger continent to think about. While we have a hydro-rich electricity system, the United States relies on electricity from coal, which is their single largest source of GHGs. Less than one percent of US electricity supply comes from Canadian hydropower. Meanwhile, every terawatt hour of hydro sent from Canada to the US, can displace up to a million tonnes of CO2.

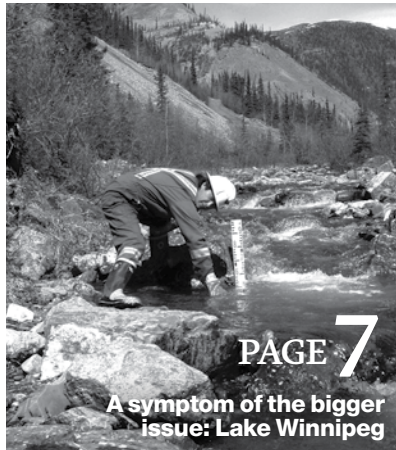
Imagine doubling Canadian hydro’s share to just two percent of the US market. The percentage might seem small but the environmental benefits would be real and global in scale. There is no perfect or easy way to make electricity and very few ways are renewable or carbon-free. While hydro is clean and renewable, its upfront investment costs can be substantial. Hydro developers must also manage their ecological impacts while meeting commercial demands and creating broad social benefits. Despite any challenges, given our expertise and potential, the Canadian Hydropower Association can confidently say that hydropower is Canada’s best way to make electricity while eliminating GHGs. **JACOB IRVING** editorial@mediaplanet.com



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**EDITOR’S PICK**



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Partners Moose Cree First Nation and OPG celebrate a milestone in the Lower Mattagami Hydroelectric project. Photo Credit: Ontario Power Generation

# POWERING OUR FUTURE IN ONTARIO

**The Lower Mattagami Hydroelectric project is a joint venture between the Moose Cree First Nation and Ontario Power Generation that involves the redevelopment of four existing hydro stations that are located 70 km north of Kapuskasing on the Mattagami River.**

**Powering Ontario's Future**  
When the project is complete, in 2015, it will add 438 megawatts (MW) of clean, emission free electricity to the output of the stations, taking the total electricity produced by the 4 generating stations to 924 MW - enough electricity to power around 700,000 homes. New units will be added to the Little Long, Kipling and Harmon generating stations, while the Smoky Falls facility will be completely rebuilt.

"It's a project that was first identified more than 40 years ago," explained the project's director, Dick Jessop. "It's been on the shelf, though, we've been waiting for the right time to proceed. With the current push for clean power, it was the right time to take the project and proceed with it."

The engineers who originally designed the stations did so with future redevelopment in mind. "But the opportunity only really came when we were able to acquire the smaller plant (Smoky Falls), which was owned by a paper mill - it was a congestion point in the river," said Jessop. "OPG acquired that facility in the 90s and it was at that point that we could seriously look at rebuilding."

**Reaching an Agreement**  
This project is about more than large-scale construction and sustainable electricity production, though. It's about a unique partnership between the Moose Cree First Nation and Ontario Power Generation; a partnership that has rejuvenated the Moose Cree community; a partnership that has enabled OPG to continue hitting their project targets.  
"The partnership is a long story," explained Chief of the Moose Cree First Nation, Norman Hardisty. "We had previously worked with Ontario Hydro, about 20 years ago, to come to some sort of agreement but that never materialized.



But, we came back to the table in 2005 to finally begin talking about a new project, and from there it took about 4 years until we reached an agreement."  
The negotiations were extensive. Fairness was the key and it was imperative that both groups came out of discussions feeling that the other side understood their needs and motivations.  
"Reaching an agreement involved a lot of education on both sides," said Chief Hardisty. "The Moose Cree had to learn about the hydroelectricity trade, and in turn OPG had to learn about our culture and how we live as a people."  
"It's been a learning curve for both sides, and, in the last year especially, we've progressed to a point where each party now truly understands what we're trying to achieve."

**Mutual Benefits**  
The \$2.6 billion project - the biggest in northeastern Ontario for 40 years - has breathed fresh life into the Moose Cree economy. As well as filling many of the construction jobs created on the redevelopment side and negotiating a 25 per cent equity stake in the project as part of the Amisk-oo-skow agreement, the Moose Cree have been awarded over \$300m worth of sub contracts since the project began 3 years ago.  
"The partnership has really helped my community, where a lot of people are employed today," said Chief

Hardisty. "It's really turned things around for us. Each community in Canada, whether you're First Nations or not, is trying to build an economy, and I think that's where we're heading."  
"The project has been a big part of helping to make sure that we move forward and build a healthy economy for our people."

**"The partnership has really helped my community, where a lot of people are employed today"**

- Chief Hardisty

But, the Lower Mattagami Hydroelectric project hasn't only been of benefit to the Moose Cree people. For OPG, having the Moose Cree as a partner was a significant help in getting the various legal, governmental and environmental approvals that are required to start a project of this nature and size.  
"Having a First Nations partner spoke very loudly to the regulators about our intentions of working together, and I think they respected that," explained Jessop. "It allowed us to develop really good relationships with the regulators, the government agencies, the local communities and the Moose Cree."  
But, economic incentives aside, the most important factor for the Moose

Cree people was knowing that this project was going to promote, adopt and embrace environmental sustainability.  
"Towards the end of our consultations, our elders, whose main focus is the environment, came to us and said, 'we think it's time that we move on with the ratification process,'" explained Chief Hardisty. "In hearing the details about this new energy, this clean, green energy, they were very supportive about moving forward."  
**Logistical Targets**  
After being active for 3 years the project continues to achieve a rare goal for a redevelopment of this size: it's running on schedule and to budget.  
"Our success is really down to good planning," said Jessop. "We did a lot of the design work before we sought approval for release of the project, and we did about 25 per cent of the engineering work - 300 detailed engineering drawings - over a 12 month period so that we could get a detailed estimate of the project."  
A significant amount of time was spent doing risk assessments, looking at the po-

tential for things that could go wrong and doing analysis to calculate how much contingency might be needed to accommodate those events.  
"We've had significant geo-technical problems that have increased the cost of the project, as well as some delays when getting our environmental approvals, which always increases cost," explained Jessop.  
"But these issues were all contemplated when we did our risk analysis and money was put aside, which we hoped we didn't have to spend, but when we did it was there."

**A Model for Success**  
Hopefully the success of this project can make the partnership between OPG and the Moose Cree a model for other communities and businesses to work by. But, success in this sort of partnership requires understanding, patience and teamwork, skills that both OPG and the Moose Cree have displayed in abundance.  
"There have been so many positive things that have come out of this," said Chief Hardisty. "The Moose Cree people are very appreciative of the partnership that they have with OPG and all of the other First Nations people that have been involved - it's been a great project."



## PARTNERING TO POWER ONTARIO

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Spillway of a hydro electric dam in the Rocky Mountains.

# THE POWER OF H2O

PROVIDING ENERGY TO OUR COMMUNITIES AND BUILDING OUR NATION’S COMPARATIVE ADVANTAGE

### Renewable

■ **Ninety percent efficiency:** Converting almost all available energy into electricity, hydropower is one of the most efficient sources of electrical energy.

■ **Hydropower** is the world’s leading renewable energy source.

### Sustainable

■ **Hydropower draws energy** from falling or flowing water and converts it into electricity, without consuming, wasting or depleting water in the process.

■ **350 000 000 Tonnes/year** of avoided greenhouse gas emissions in Canada and the U.S.

### Powerful

■ **A cornerstone of the Canadian economy,** we are one of the world’s few net energy exporters.

■ **Over the next 20 years** hydropower project development will benefit Canada with over 125 billion in investments and a million jobs.

### Potential

■ **There is hydropower potential** across all provinces and territories. This represents an untapped market for Canada.

■ **Already a leader** in hydropower generation, Canada has the potential to more than double its current capacity to help meet growing American energy demand while supporting clean energy objectives.

### Even with conservation efforts

that the hydropower industry promotes, electricity demand will continue to grow in Canada.

### Reliable

■ **Electricity rates are rising** in urban areas, we must look at investing in alternative renewable energy sources that are sustainable for our future.

■ **As the only renewable form** of baseload electricity, hydropower is essential to leading the transition away from unstable and volatile foreign energy sources while maximizing environmental benefit. Canada has an abundant clean, stable hydropower capacity.

### Innovation

■ **New innovative Hydro technologies** such as in-stream kinetic and Ocean wave and tidal designs are being studied and tested. So are technologies that improve the efficiency, flexibility, and environmental performance of conventional hydroelectric generation.

■ **Canadian hydropower developers** are leaders in weather and climate modeling technologies. This ensures that current and future projects can continue operating if weather and hydrological patterns do begin to change.

SOURCE: CANADIAN HYDROPOWER ASSOCIATION  
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**Question:** What can Canadians do to address looming global water scarcities and shortages?  
**Answer:** Begin to take measures today to secure a sustainable future for one of our most valuable resources.

# Canada must act now on global water woes

Population growth, increasing urbanization, and climate change are a growing threat to the sustainability of Canada’s water and energy supply. While Canada is currently a water-rich nation, we must realize that this precious commodity is not unlimited, and that we are not exempt from water scarcity concerns.

By adopting proactive solutions to these issues Canadians can ensure that there will be enough water for future generations while enjoying the economic benefits today.

**A timely investment**

Canadians can’t afford not to begin considering the ways that water affects their bottom lines, says Nicholas Parker, Founding Managing Partner and Senior Advisor at the Blue Economy Initiative (a Canadian project that works to promote water sustainability by identifying the strong ties between water management and the economy). Costly health and well-being problems are created across the board by climate change and rapidly growing urban demographics. These issues are further amplified by the continuous destruction of our surrounding natural environment, including watersheds, wetlands, and overall mismanagement of water sources.

It is time to take action, Canadian municipalities, industries, and residents can help avert these issues by making smart investments in water technology, promoting sustainable policies, and exploring new avenues of water and ecosystem management.

**Don’t wait to build the proverbial ark**

The prevalence of extreme weather patterns—like the storms that caused the recent flooding in Calgary and Toronto this summer—have tripled around the globe in the past decade alone. The costly fallout and damages associated with these extreme weather events will continue to place strain on urban centres and Canadian communities unless measures are



TOP: Lake in Waterford, Ontario.  
PHOTO: CONSERVATION ONTARIO  
LEFT: Summer 2013 flood in Calgary, Alberta. PHOTO: CANADIAN RED CROSS



presently taken to mitigate these risks.

Our natural environment is ultimately linked to our urban communities. One way that municipalities can take direct action to prepare themselves for these anticipated risks is investing in upgrading infrastructure. Within the urban environment, this includes updating water distribution and management facilities that can properly handle high volumes of storm water and wastewater. Looking past the cities, we must realize that the preservation and sustainability of natural ecosystem services such as watersheds and wetlands is essential to the well-being of our communities.

**Industrially strong solutions**

Canadian industries need to turn their attention to the economic benefits of water conservation. By adopting water sustainable solutions in practices and policies, Canada’s businesses will ultimately improve their

economic efficiency while simultaneously furthering national sustainability efforts.

This can be accomplished through the dual routes of investing in conservation, or investing in proper water management throughout all aspects of production. These investments create new opportunities for prosperity in the present while preserving that same opportunity for future generations.

**Water smart at home**

Attention to water security and sustainability is just as important on a residential level: water shortages will cause Canadian energy and water bills to skyrocket in the near future. We must look to renewable energy sources like hydropower as sustainable sources that can power our homes in an environmental sustainable way.

Timely action taken now to address environmental sustainability and risk mitigation is an opportunity for Canadians to improve economic efficiency and meet the bottom line. In order to ensure that water is available to future generations, we must invest today in sustainable solutions and practices on all levels—municipal, industrial, and residential.

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# HOW INNOVATIVE SOLUTIONS IMPROVE THE QUALITY OF OUR WATER

**The Government of Canada worked with the provinces and territories and engaged municipalities, aboriginal people, and others to harmonize the management of wastewater across Canada—establishing the country’s first national standards for wastewater treatment.**

The Wastewater Systems Effluent Regulations were put in place in June, 2012. They set a minimum standard of secondary-level wastewater treatment across the country. This new standard will reduce the amounts of harmful substances discharged into Canadian waters by our own wastewater systems. This new standard is aligned with the United States and the European Union.

Secondary wastewater treatment is typically a combination of physical and biological treatment that removes over 95 percent of the total mass of conventional pollutants such as solid materials and nutrients.

These pollutants degrade water quality by reducing the amount of oxygen available to sustain healthy

fish populations, and are a cause of algal blooms. Significant amounts of bacteria and non-conventional pollutants, such as personal care products and pharmaceuticals, may be removed through secondary treatment.

“Improving the quality of our water, our most precious natural resource, will benefit all of us, now and into the future.”

**Leading the way**

This year, Environment Canada is promoting compliance with the new regulations and helping wastewater system owners and operators to report required information about their systems. That information will provide a better understanding of which systems pose high, medium and low risks to fish, fish habitat, and human health.

Improved water quality will have positive impacts: healthier fish and aquatic ecosystems and fewer contaminant-related harvest closures in the shellfish industry should help the fishing and seafood industry, and result in more Canadian seafood exports, such as mussels from Eastern Canada.

There should be fewer beach closures, helping recreational uses like swimming and boating, contributing to a stronger tourism economy. In turn, property values near improved waters should also increase. Water supply costs for municipalities and industry sectors should be reduced.

The new Wastewater Systems Effluent Regulations are addressing the largest source of pollution into our waters. Improving the quality of our water, our most precious natural resource, will benefit all of us, now and into the future.

MIKE BEALE,  
ASSISTANT DEPUTY MINISTER  
ENVIRONMENTAL STEWARDSHIP  
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## Canadians need the boreal forest

THE BOREAL FOREST IS CRUCIALLY IMPORTANT  
TO OUR COUNTRY'S ENVIRONMENT,  
ECONOMY AND WELL BEING.

Boreal forest wetlands store twice as much carbon as the tropical forests of the world, hold an abundance of fresh water and provide habitat for a myriad of wildlife species.

Ducks Unlimited Canada supports a balanced approach to boreal conservation, including a combination of protected areas and environmentally sustainable resource management by working with industry and government partners to find conservation solutions.

**Ducks Unlimited Canada is a science-based conservation organization.** We have been the country's experts on waterfowl and wetlands for 75 years. We're applying our conservation knowledge to protect the boreal forest – now and forever.



**ducks.ca**

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3  
PROTECT OUR  
WATERSHEDS, AS  
THEY SERVE TO  
PROTECT OUR  
COMMUNITIES

DON'T MISS



## A million square kilometers

**Alexis Knispel Kanu, Executive Director of the Lake Winnipeg Foundation, discusses the situation facing Lake Winnipeg, and why it is important that we learn from it for the future.**

Manitoba is home to some of the most beautiful wilderness in Canada, as well as the 10th largest freshwater lake in the world: Lake Winnipeg. Unfortunately, with a watershed spanning a million square kilometers, unwanted materials are turning up in the lake.

“What we’re seeing now is the flushing of more nutrients than would occur naturally,” relates Alexis Knispel Kanu, Executive Director of the Lake Winnipeg Foundation (LWF). For the lake-lovers who started the LWF in 2005, this is cause for concern. “We need to address nutrients in all our sewage treatment systems, whether they’re big cities, small towns or individual houses.”

### The health plan

In the last year the LWF has developed the Lake Winnipeg Health Plan, centered on four priorities: “First, we want to ensure we don’t make the problem any worse, by protecting the existing wetlands throughout Manitoba,” which act as natural filters.

“Secondly, we need to protect the Boreal forest,” because the runoff from there is significantly cleaner than elsewhere. “Third, we need to identify the point sources of pollution,” and finally, implement “a strategic and targeted monitoring program,” to learn more about non-point sources.

### Opportunity

None of these changes will happen overnight, but with the increased “public and political will to generate real change at higher levels of organization,” Alexis is confident they will happen. It is a challenge, but the LWF also sees something else.

“There is an opportunity here for Manitoba to tackle this head-on and emerge as a leader.” With the support of the community behind them, the LWF is ready to get their hands dirty and make the lake clean.

MAX JONES

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# Taking the high road: a look at the path forward in the wetlands

**In the Western Boreal forest—that gargantuan tree-dotted landscape north of the agricultural zone, annexed to the east by the Ontario-Manitoba border and extending west to Alaska—lives a sprawling and delicate ecosystem, half of which is wetlands.**

Rivers, streams, fens and bogs punctuate the surface, but that’s only part of the picture. Boreal wetlands are often highly connected systems with below groundcover subsurface water flow transporting water and nutrients to the trees, plants and wildlife, continuing the cycle necessary to sustain this delicate ecosystem.

This region is also the backbone of the forestry sector, an industry that employed 593,000 (directly and indirectly) and generated \$24 billion towards Canada’s GDP in 2012 according to the Forest Products Association of Canada.

### Old habits

In the past, much of the access required to undertake forest harvest was done in the winter, when roads were made of snow and ice—minimizing the potential impact to the ecosystems sleeping below. But as demand for forest products rose, the industry evolved which required forest management activities to take place year-round.

Resource roads, including those built by forest product companies provide all-season access to the thick backcountry. This potentially interrupts the flows of these wetlands and creates easy-use corridors for predators to hunt wildlife like the caribou, usurping that delicate balance.



**Christopher Smith**  
FOREST INDUSTRY AND  
GOVERNMENT RELATIONS,  
DUCKS UNLIMITED CANADA’S  
WESTERN BOREAL PROGRAM

“It’s not an environmental organization saying [to the industry] here’s the problem and you have to fix it... it’s about how we can help each other resolve the particular challenge.”

### The issue

The issue of roads blocking this natural flow has been an area of interest to Ducks Unlimited Canada who is working with industry partners to find conservation solutions to joint issues of concern. “But it’s not an environmental organization saying [to the industry] here’s the problem and you have to fix it,” says Christopher Smith, Forest Industry and Government Relations for non-profit Ducks Unlimited Canada’s Western Boreal program. “It’s about how we can help each other resolve the particular challenge.”

The problem is twofold. On the one hand, the roads can act as dams: “if you’re starving water and nutrients into downstream areas, you’re affecting the ability of those wetland systems to produce the ecological goods and services that those wetlands produce,” says Smith.

On the other hand, waters that are backed up by the road can lead to flooding and icing up of that road. “It can also saturate the subsurface of the roadbed and result in sinking or blocked culverts, so it becomes a cost to these companies to continue to maintain these roads,” he adds.

Major routes that the companies use year round can cost up to \$100,000 per km. Operational roads, which are usually only utilized for a few months cost between \$5,000 and \$25,000.

### The solution

Ducks Unlimited Canada was successful in securing a 3 year Conservation Grant from the Sustainable Forestry Initiative in partnership with forest research engineering group FPInnovations, and two forest

product companies—Weyerhaeuser Canada and Louisiana Pacific Canada to develop a framework for identifying the risk of impact of resource roads on wetlands and constructing low impact access roads.

“(The goal) is to help the company determine the specific type of wetland, identify the risk of impact of a road on the wetland and if a road needs to be built what kind of construction techniques to use,” says Glen Légère, research leader for FP’s Resource Roads program. He points to methods like running drainage culverts subsurface or building the roads on a foundation of large rocks with adequate spacing between them to usher along the subsurface flow.

“We’re also developing techniques on how to deactivate a road or build ones that can be easily deactivated,” adds Légère.

John Daisley, Timberlands Planning Coordinator at Weyerhaeuser, says decommissioning can range from removing signage and planting a few trees to physically breaking up the road with land-movers to make it unattractive for predators.

The roads also act as easy access for hunters and people looking for a direct route to the backcountry.

“Forty years ago there was very little recreational travel other than hunting season,” adds Daisley. “Between the ATVs and snowmobiles and GPS units that give people confidence they can find their way back safe again—it’s having a bigger impact on the (ecosystem) than in the past.”

ANDREW SEALE

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## DESIGNED FOR THE FUTURE

How reclamation in mining is helping to preserve Canadian water

PHOTO: KNIGHT PIESOLD, PEOPLE AT WORK · SPANISH MOUNTAIN · CURRENT METER SECTION-1 · NOV21-10 · DJA

If you drive 55 km north of Vancouver along the Sea-to-Sky highway you’ll come across the quaint community of Britannia Beach tucked beneath the elbowed mountains facing Howe Sound.

For the better part of the past century, Britannia Beach was home to a high successful copper mine held by Britannia Mine Company and later Anaconda Mining until it was deemed uneconomical and closed in 1974.

Unfortunately, that’s not where the story ends.

### The problem and solution

Following closure in the mid-70s,

this site spewed out one tonne of heavy metals into Howe Sound every day, says John Meech, Professor of Mining Engineering and Director of CERM3—The Centre for Environmental Research in Minerals, Metals, and Materials—at the University of British Columbia.

“Environment Canada called it the worst single source of metallic pollution in North America,” says Meech.

In 2001, Meech and his research group at UBC installed a plug in the 2200 Level adit—an entrance—preventing pollution from entering the water system.

“Blue mussels began repopulat-

ing the mouth of the creek within six months and pink salmon were photographed spawning in the creek about 10 years later,” he adds.

“Today a water treatment plant removes all the metals and neutralizes the effluent prior to discharge into Howe Sound—this demonstrates how fast Mother Nature can recover with a little help from us.”

Granted, the wide scale release of toxic metals into water systems is a dated practice—with mining companies utilizing technology to reduce their water use and minimize impact on the environment.

### Building trust

“Technology clearly is advancing but I think it’s also awareness that’s advancing,” says Jerry Danni, Vice President of Environment for Vancouver-based mining company Goldcorp. “There’s a lot more collaboration with local stakeholders, communities and groups like the World Wildlife Foundation than there was twenty years ago.”

Not to mention, recognition that there’s not only a need for that collaboration but there’s value in it when it comes to building trust with stakeholders, adds Danni. The NGO spent a year working with Goldcorp at its Los Filos mine in Mexico to develop

a water footprint strategy so they “could learn what the WWF’s expectations were with water not just the life of the mine but closure too.”

The collaboration is an example of an increasing sensitivity towards the needs of stakeholders—from first nation communities with cultural needs to locals using the water for recreation.

“Before we even turn over a shovel of dirt we ask how it’s going to impact our closure plan,” says Danni. “When we develop new mines we design for closure.”

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# Hydroelectric Generation – A Cornerstone of Ontario’s Electricity System



**By DON MACKINNON**  
President  
Power Workers’ Union

For over 100 years, Ontario has relied on hydroelectric generation to deliver clean, reliable and affordable electricity to our homes, businesses and industries. The development of hydroelectric sites stimulated development throughout Ontario and provided the electricity needed for the province’s economic growth.

Today, at a time when reducing greenhouse gas (GHG) emissions and affordable power are important public priorities, Ontario’s existing hydroelectric fleet provides over 20 percent of the province’s electricity and is our lowest cost form of generation.

Hydropower represents about 90 percent of Ontario’s total renewable energy supply. It can be quickly ramped up or down in response to changes in demand and it can provide continuous base-load generation.

Over the last 30 years, Ontario has been maximizing the value of its hydroelectric generating stations through refurbishments and upgrades. Unfortunately Ontario, unlike other provinces such as Manitoba, Quebec and Newfoundland and Labrador, has very limited options for new hydroelectric development.

The most recent version of the government’s Long-Term Energy Plan (LTEP) calls for another 1,000 megawatts (MW) of new hydroelectric capacity by 2018. Smaller waterpower projects (less than 50 MW) will also be considered on Crown lands. The LTEP recognizes that projects in remote locations are not always feasible due to high costs, seasonal fluctuations in water levels, environmental and land use issues

and the requirement for long transmission lines.

Developing Ontario’s remaining cost-effective hydroelectric potential is a worthwhile investment. This additional capacity will make a modest but valuable contribution to expanding our province’s low-cost, low-carbon electricity supply for the future.

After maximizing its low-cost hydropower potential, Ontario looked to other forms of generation to meet intermediate and peak demand. It constructed coal and oil-fired plants in the 1950s and began building commercial scale nuclear power plants in the 1960s.

Today, nuclear and hydroelectric generation accounts for over 75 percent of Ontario’s electricity. This low-cost, reliable and GHG emission-free electricity has kept Ontario’s economy competitive and growing. More recently, hydroelectric and nuclear have helped mitigate rising electricity prices resulting from Ontario’s costly investments in intermittent wind and solar generation, and price-volatile natural gas generation.

Ontario is currently reviewing the LTEP. The decisions that are made in the short term will have long-term implications for Ontario’s environment and economy. Developing Ontario’s remaining cost-effective hydroelectric sites is sound planning. At the same time, Ontario must pursue its two other great energy advantages: nuclear and biomass generation.

Ontario hosts the majority of Canada’s \$6 billion-a-year nuclear industry, its 160 supply chain companies and 60,000 high-value direct and indirect jobs. A recent analysis by Strategic Policy Economics indicates that refurbishing Ontario’s nuclear reactors and building two new ones in accordance with the current LTEP would provide an estimated \$60 billion net incremental benefit to the provincial economy compared to building more wind generation. Due to the intermittency of wind generation, wind power

must be backed up by carbon-emitting natural gas generation about 70 percent of the time. The nuclear option would reduce GHG emissions by 108 million tonnes – 80 percent less – compared to building more wind and natural gas generation.

Utilizing Ontario’s vast renewable, carbon-neutral biomass resources – wood wastes, agricultural residues, and purpose-grown crops – would provide even more environmental and economic benefits. Ontario Power Generation could convert the Nanticoke, Lambton and Thunder Bay Generating Stations to utilize this biomass along

with natural gas generation for peak demand.

In addition to recycling these provincially-owned generation assets and reducing GHG emissions, domestically-sourced biomass fuel would improve Ontario’s energy security, create thousands of jobs in the forestry, agriculture and transportation sectors and stimulate our province’s emerging bio-economy.

Investing in the nuclear and biomass advantages today means lower GHG emissions, more affordable electricity, more jobs and better energy security for many decades to come.

## Hydroelectric, Nuclear and Biomass— Ontario’s Greenhouse Gas Busters

All countries are striving to reduce greenhouse gas emissions (GHG) while developing clean, affordable, reliable and secure electricity. It underpins job creation, economic prosperity and climate change action plans.

Ontario’s GHG - emission free hydroelectric and nuclear generation provides over 75% of the province’s electricity and at an affordable cost. Over the last 30 years, Ontario has been renewing and upgrading its hydroelectric plants but unfortunately, new, cost-effective hydropower potential is limited.

That’s why Ontario needs to refurbish and expand its number one electricity workhorse – nuclear generation. Adding carbon-neutral electricity generated from our province’s vast, renewable, farm and forest-sourced biomass would make Ontario’s future energy supply even better. For more information please go to [abetterenergyplan.ca](http://abetterenergyplan.ca)

**A MESSAGE FROM THE PEOPLE WHO HELP KEEP THE LIGHTS ON**

