



OPG Hosted Dinner for World Nuclear University Summer Institute
Toronto, Ontario
July 21, 2008

NOTES FOR REMARKS¹

Good evening. On behalf of OPG, I want to welcome all of you tonight. OPG is proud to be a major host of this year's Summer Institute. We are holding this dinner in your honour to underscore the important role all of you are playing – and will play in the years ahead as leaders in our industry.

[Bonsoir à toutes et à tous. Je vous souhaite à tous la bienvenue ce soir au nom de l'Ontario Power Generation. OPG est fier d'être l'un des organisateurs principaux de l'Institut d'été de cette année. Nous avons organisé ce dîner en votre honneur afin de souligner l'importance du rôle que vous jouez tous - et allez jouer dans les années à venir - en tant que leaders dans notre industrie.]

This is an exciting time for our profession. Opportunities are emerging that promise to advance nuclear energy to a level of importance not seen in decades.

I want to talk more about these opportunities – including some of the challenges they're creating -- in a moment.

But before I do, I'd like to give a brief overview of Ontario Power Generation for those of you who are just getting to know us.

¹ Check against delivery

OPG Overview

OPG is a major generating company based in Ontario -- Canada's largest province, with a population of over 12 million people.

We are a commercial company owned by the Province of Ontario, which is our sole shareholder. Every Ontario resident has a stake in our company

We produce about 70 per cent of the electricity consumed in Ontario and have almost 12,000 employees

OPG was created in 1999 to operate the generating assets of our predecessor, Ontario Hydro.

I understand that some of you visited one of our assets earlier today – the Darlington nuclear plant.

Darlington is one of a balanced portfolio of stations in OPG's fleet.

We operate five fossil-fuelled stations (4 coal and 1 oil/natural-gas) and co-own two gas-fired generating stations, one of which just began its "single-cycle" operation here in Toronto.

We also operate 64 hydroelectric stations – including major hydro facilities on the Niagara, St. Lawrence and Ottawa rivers in Ontario.

We are expanding our hydroelectric capability through several new supply initiatives. Near Niagara Falls, we are building a 10.5 kilometre tunnel to bring more water to our Niagara plants, thereby increasing their energy output.

We also and have several hydroelectric initiatives in northern Ontario that are in various stages of development.

Turning to our nuclear portfolio, we operate three nuclear generating stations – consisting of 10 CANDU nuclear units.

Pickering A, our oldest nuclear station, consists of two recently refurbished operating units. It also has two units that we are placing in safe storage after determining that it was economically impractical to restart them.

Our Pickering B nuclear station consists of four 500 MW operating units and has been operating since 1983.

The Pickering stations combined have produced more than 640 TWh of electricity over their lifetimes -- enough to power Ontario for more than four years.

We are currently exploring the economic feasibility of refurbishing Pickering B and expect a decision from our Board on whether or not to proceed with refurbishment by the end of this year or early 2009.

Our newest and largest nuclear station, Darlington, also consists of four units which were placed in service by 1993. Each of these units has a capacity of about 880 MW

Like Pickering, Darlington is a candidate for refurbishment, and we began preparatory work on a feasibility study for refurbishment earlier this year.

In addition to our nuclear generating stations, we have extensive operations in nuclear waste management. We have state-of-the art facilities on site to store our used nuclear fuel. We store low and intermediate nuclear waste at our Western Waste Management facility near the eastern shore of Lake Huron and are currently in the approvals process to build a new, Deep Geologic Repository to store this waste.

With respect to used nuclear fuel, the Canadian government has approved a process for the long-term isolation and containment of used fuel in a deep repository constructed in a suitable rock formation. The plan was developed by Canada's Nuclear Waste Management Organization and will unfold over several decades. It will be based on collaboration and flexibility, with extensive oversight and regulatory approvals.

Collectively, OPG's nuclear stations represent about one third of OPG's total capacity. In 2007, these stations produced roughly 44 per cent of our total electricity production.

In addition, almost two-thirds of our employees – over 7,500 – work in nuclear. They are highly trained and skilled individuals. We greatly value their expertise – as we do that of all our employees.

It's obvious that OPG's nuclear operations are a fundamentally important and significant part of our business.

Going forward, we expect the proportion of nuclear in our portfolio to be even greater than it is today.

By 2014, our shareholder has directed that we must stop burning coal at our four coal-fired plants. These plants currently account for over 6,400 MW of our capacity.

At the same time, we were recently selected by the Ontario government to operate two new nuclear units at our Darlington site. These will be the first new reactors built in Ontario in over 15 years.

In short, nuclear energy will play an increasing role in OPG's mix as we phase coal out of our portfolio and move ahead with the Darlington new build project.

The Rebirth of Nuclear Energy

Our experience here in Ontario and at OPG mirrors what's happening across many parts of our industry.

Around the world, countries and governments increasingly see nuclear energy as a positive and viable option. There are currently 439 nuclear reactors operating in the world today. In 2007, at least 30 new nuclear plants were being built.²

Going forward, estimates predict that as many as 250 to 300 more units will be constructed.³

New reactor designs are emerging from France, the U.S., South Africa and Canada – to name just a few.

In addition, virtually every nuclear plant operating today will need to be refurbished or decommissioned sometime in the near future. The average age of these plants is 20 years. Over 100 of them are more than 30 years old.⁴

Public opinion also seems to be recognizing the importance of nuclear.

Here in Canada, for example, support for new build is rising in many provinces. This is especially true in Ontario, where 61 per cent of residents support building new nuclear reactors

These are significant opportunities for our industry and organizations.

And the opportunities are only going to multiply, thanks to several powerful drivers. You may have been discussing some of them among yourselves these past few weeks.

² Nuclear Energy Institute, Work Force Report, December 2007, page 45; see also Canadian Energy Research Institute, World Energy 2007, page 60

³ Hugh MacDiarmid, President and CEO, Atomic Energy of Canada Limited, speech, Regina & District Chamber of Commerce, June 18, 2008

⁴ Canadian Energy Research Institute; World Energy 2007, page 60

A key driver is the impressive strides our industry has made in terms of safety and predictable performance.

Overall, our industry operates at consistently high levels of safety that are the envy of other industries.

In many plants, capability factors are substantially better than they were 20 years ago. The World Energy Council estimates that “average planned unavailability” for nuclear plants worldwide has been decreasing continuously from about 20 per cent in 1990 to 12 per cent in recent years.⁵

Plant condition has also improved.

Licensing is becoming more predictable -- including licenses for life extension.

Plants are experiencing fewer events, and public safety continues to be very high.

Outage performance has improved and continues to improve.

Organizations such as WANO and INPO help nuclear plants benchmark themselves against the best of their peers so that they can better understand their strengths and how they can do better.

There's also the economic driver. The price of energy generated by fossil based fuel has been extremely volatile driven by market and political conditions in the oil producing countries.

In contrast, despite the price increase for uranium, the price of electricity produced from nuclear has been relatively stable.

⁵ World Energy Council, Performance of Generating Plant: Managing the Changes, 2007, Executive Summary, page 7.

Here in Ontario, the production cost of nuclear generation is about 5 cents/kWh. This is about 2-5 cents cheaper than the established gas plants.

Even at today's high construction cost, new nuclear build will still be more economic than new gas plants or hydro or renewable sources under consideration.

Finally, there's the environmental driver. Climate change has become *the* issue of our time. Reducing the CO2 emissions that cause climate change is now a priority for almost every major country on the planet.

Alone among the major sources of electrical power, "nuclear energy is the only large-scale, cost-effective energy source that can reduce CO2 emissions while continuing to satisfy a growing demand for power."

Those aren't my words. They belong to Patrick Moore, the co-founder of Greenpeace, and they underscore the opportunity available to nuclear energy as a significant contributor to solving the climate change problem.

OPG is part of this upward performance trend in many areas of its nuclear operations, as this slide on Darlington's performance shows.

Darlington has achieved excellent performance over the past several years. This was recognized in 2007 by the Institute of Nuclear Power Operations, which awarded Darlington its Performance Improvement Award – a "first" for a Canadian nuclear plant.

In the area of safety, *all* of OPG's nuclear stations have achieved excellent safety results. Our Pickering stations ended 2007 with nearly six million hours worked without a lost time accident; and Darlington recently achieved five million hours without an LTA.

Our human performance has also dramatically improved – dropping from 40 event-free day resets a year in 2004 to 16 in 2007.

All of our nuclear stations have also received 5 year operating licences from the regulator. This is the maximum duration for a nuclear licence in Canada.

Challenges

As leaders and potential leaders, we should all feel optimistic about the developments in our industry. They bode well for the long-term success of the industry.

But we must also be realistic. Economist Milton Friedman said there is no such thing as a free lunch. He was right.

While these developments are positive and encouraging, there are also challenges we must address.

These include:

- the absolute necessity of continuing our industry's strong record in achieving high levels of public, workplace safety and predictable economic performance;
- bringing forward solutions for nuclear waste accepted by society; and
- the need to have sound public policies and regulatory processes in place to encourage the economic development of next generation nuclear.

In addition to these challenges, what's most disconcerting for me is what's happening with the human supply chain. The resurgence in nuclear activity is occurring at almost exactly the same time as large numbers of nuclear workers are scheduled to retire.

Over the next five years, OPG expects 30 per cent of our nuclear skilled trades and technical staff to retire and 40-50 per cent of our nuclear engineers to retire. Our situation is not uncommon to the industry.

Replacing these older, experienced workers with highly qualified individuals will be an absolute priority to maintain the momentum we have established.

In addition, nuclear companies will also need greater numbers of workers with certain kinds of skills. For example, many companies involved in new build and refurbishment – and OPG is one of them – need to enhance their strength in areas like project management and oversight.

These and other resourcing issues will be major challenges for our industry over the next several years. Effectively addressing them will be a key test for the nuclear leaders of both today and tomorrow.

With this in mind, it may be useful to briefly look at some of the ways OPG is working to replenish its workforce. Our strategy focuses on four areas:

- Recruiting new staff
- Training and re-training
- Knowledge transfer; and
- Staff retention.

Our new-staff hiring targets recent graduates from college and universities as well as experienced staff.

We also operate an internship and apprenticeship program.

In 2007, OPG Nuclear hired 72 new, nuclear engineering grads and 37 experienced staff for a total of 109 new hires. Over the next five years we will gradually increase the number of experienced hires while maintaining the current level of new hires.

This should enable us to cover the projected attrition we foresee in our workforce.

To attract new workers to OPG we run a number of recruitment campaigns during the year. These include a Graduate Engineering program which targets 13 universities across Ontario and Eastern Canada, and a Trades Recruitment Program that focuses on 17 community colleges.

We also have a student hiring program that allows young people still in college or university to work at OPG on a temporary basis. When these students go back to school they make excellent ambassadors for OPG. Many are also keen to return to OPG once they graduate. Over 500 students took part in this program in 2007 and 35 per cent of the Nuclear Engineering Grads whom we hired last year came from this program.

The second area we focus on is training and retraining. Our goal is to develop leaders at all levels. To this end, we have created several leadership initiatives including a Senior Nuclear Plant Manager program and a Nuclear Professional Leadership program. In addition, all of our First Line Managers enrol in a two-week course at our Leadership Academy.

We also make use of structured on-the-job training to provide initial orientation and basic training to new hires.

A third area is knowledge transfer. This is critical for any nuclear organization. Veteran nuclear employees have a level of skills, experience, corporate memory, and an intuitive understanding of their work that has been built up over decades.

Shifting this knowledge from one generation to another is a lengthy process – and also an urgent process, given our demographics and retirement trends.

OPG has multiple approaches to knowledge transfer, including:

- Capturing this knowledge in procedures and practices;
- On-the-job training and job shadowing; and
- a structured knowledge-retention process that identifies critical knowledge possessed by key employees and determines ways to capture or transfer that knowledge

Our final objective is to retain the staff we hire. This will be increasingly problematic as opportunities for employees expand due to anticipated new build, refurbishment and decommissioning activities.

One way we retain staff is to encourage experienced employees to stay beyond their retirement dates. We are very much focussed on creating a workplace that gives employees the opportunity to grow professionally, broaden their careers, receive adequate compensation and benefits, and balance their work and family needs.

Our efforts in this area were recently recognised when OPG was named as one of the top 100 employers in Canada. We have also been named twice as one of the top 50 employers in Toronto.

Our reputation as a good employer contributes significantly to our employee retention goals. About 89 per cent of the nuclear employees we hired in 1989 continue to be with OPG -- as do 92 per cent of the nuclear employees hired in 2003.

Our recruitment and retention efforts are complemented by a wide network of partnerships with post secondary and other institutions.

These include Durham College, the University of Ontario Institute of Technology (UOIT), and the University Network of Excellence in Nuclear Engineering. To help develop the next generation of energy professionals, we provide support to a number of these educational institutions. For example, we have invested \$10 million over five years in UOIT. This support helped provide state-of-the art equipment for the OPG Engineering Building at UOIT – which has become one of Ontario’s premier engineering training facilities.

Leadership Qualities Required for Nuclear Energy Professionals

I’d like to conclude with some observations on what it takes to be a leader in our business.

For companies, I think it’s important to know where you are going and know how to get there. In other words, have a clear strategy.

Once you have the strategy, communicate it to employees often and give them context -- so that the strategy is clear in their minds and they know why it’s important.

Everyone has to buy in.

I can’t emphasize enough how critical it is to have every person and every part of your organization aligned to your strategic goals – whatever they may be.

Our goal or vision at OPG Nuclear is called “People Powering the Future.” It underscores the fact that nuclear is a people business and that our success depends on engaged and energized employees earning the privilege to power Ontario going forward.

We developed it over a two year period and launched in late last year. We have communicated it extensively across our nuclear organization to ensure everyone understands and commits to it.

It's also important for companies to develop a consistent approach to leadership development and what it expects of its leaders.

At OPG we expect leaders to be accountable. This especially involves being accountable for the performance of their team. We expect leaders to be prepared to put their main efforts into developing, motivating and reinforcing the people whom they supervise. This means a number of things, including:

- removing barriers that may prevent employees from doing their jobs;
- ensuring that employees have the right tools; and
- holding them accountable for their work

A third thing companies can do to build and achieve leadership is to build on their internal capabilities. Grow your leaders from within.

The best performing sports teams are rarely those with the most free agents. They're those who invest in effective minor-league systems to develop home-grown talent.

This doesn't mean you avoid recruiting outside talent. Companies will always need to hire external expertise. But the bulk of your leadership should always come from within – from the people who understand your culture; are known and trusted by their colleagues; and have extensive corporate memory.

Drawing from my own experience, I have found that there are three additional things that are helpful for success in this business.

One is to focus on performance and on fixing the plant. Safe, reliable, predictable and cost-effective performance is the great advantage -- and the ultimate measurement -- of nuclear energy. Always strive to improve performance.

By the same token, you can't achieve predictable performance with poorly maintained or aging equipment. Plant condition is vital. That means:

- working to reduce backlogs;
- minimizing event-free day resets;
- permanently resolving recurring equipment problems; and
- completing planned outages on-time and on-budget.

These measures will help to significantly improve your forced loss rate.

Two, take advantage of the expertise that's available in organizations such as WANO, INPO and others. They provide valuable feedback on performance and how to improve it.

OPG's nuclear stations are peer-reviewed regularly by WANO.

To date, we've had nine such reviews.

Our Pickering B station is undergoing one at the moment. In October of this year OPG Nuclear will be involved at the corporate level in a WANO Peer Evaluation. All of our stations have been involved in WANO evaluations in the past but this will be the first time OPG will undertake a nuclear corporate evaluation.

I'd also advise sending employees on secondment to WANO and INPO. OPG has sent several employees to WANO's 18-month Liaison Engineer Program to enhance and broaden their skill sets.

We have also partnered with WANO on a six month Pilot Manager Secondment Project that started in July 2007.

Employees returning from these secondments bring with them a new perspective on a wide range of plant activities. Several now have positions of considerable responsibility in the company.

Three...a successful nuclear operation often depends on having support from top management and the Board.

Obtaining and building this support goes a long way toward advancing your nuclear agenda.

It helps too if some of these people are familiar with the nuclear sector. OPG is fortunate in having a CEO with previous experience in managing a nuclear business. Two of our Board members are former CEO's of U.S. companies that have a significant nuclear presence. At least three members of our executive committee – including myself – have nuclear experience. This can make a big difference.

Finally, on a more personal note, I'm sometime asked what human qualities are needed to be an effective leader in a nuclear organization.

The most important for me *by far* is to be passionate about safety. More so than perhaps any other industry, the nuclear industry stands or falls on the safety performance of each and every one of its members.

Just one serious incident at a nuclear plant could undo all the credibility and confidence we've earned as a profession over the past 25-30 years.

Safety – both from a public and workplace perspective – must be embedded in all our behaviours and inform everything we do. I think the quote on the slide from WANO Chairman William Cavanaugh captures this idea very well.

“The test of public confidence is like a rigorous exam on the subject of safety that all of us in the nuclear field must take every day...There will never be a time when we no longer have to take the test. It's not a school a CEO or a plant manager or any of us ever gets to graduate from. At the top of the job description sheet for all of us is safeguarding public and staff safety.”

Put safety above everything else and you will be well on the way to becoming an effective leader.

To wrap things up, let me say that I believe our industry is one of the most valuable and important contributors to the world today.

We make a huge contribution to avoiding the effects of climate change. This will continue.

We make a huge contribution to the economies of the countries where we operate – by providing affordable, baseload power to business, industry and consumers. This will continue as well.

We also have the capacity to bring the benefits of electricity to the hundreds of millions of people who still go without it in their daily lives. I hope this will be the case as well – as we embark on a new and exciting era of expansion.

As I look out at this audience and see all the talent in this room I have great confidence in our industry and the profession that we have all chosen.

I wish you all the best of success in your careers and in the service you will provide to society.

Thank you.