CME Interrogatory #1

Ref: Ex. A1-T3-S1

Issue Number: 2.1
Issue: What is the appropriate capital structure for OPG's regulated business for the 2008 and 2009 test years? Should the same capital structure be used for both OPG's regulated hydroelectric and nuclear businesses? If not, what capital structure is appropriate for each business?

Issue Number: 2.2
Issue: What is the appropriate return on equity (ROE) for OPG's regulated business for the 2008 and 2009 test years? Should the ROE be the same for both OPG's regulated hydroelectric and nuclear businesses? If not, what is the appropriate ROE for each business?

Issue Number: 5.1
Issue: Are the Operation, Maintenance and Administration ("OM&A") budgets for the prescribed hydroelectric and nuclear business appropriate?

Issue Number: 5.3
Issue: Are the 2008 and 2009 human resource related costs (wages, salaries, benefits, incentive payments, FTEs and pension costs) appropriate?

Issue Number: 7.1
Issue: The proposed rate base includes the estimated net book value of OPG's nuclear fixed assets, which in turn includes amounts related to OPG's obligations to decommission the nuclear plants and manage nuclear waste. Do the amounts fall within the parameters of O. Reg 53/05? The proposed revenue requirement includes depreciation of those nuclear fixed asset costs and a return on rate base. Is this method of recovering nuclear fixed asset removal and nuclear waste management costs appropriate? Or should alternative recovery mechanisms be considered?

Interrogatory

OPG has forecast a total revenue deficiency of $1,029.2M for its prescribed facilities for the 21 month test period starting April 1, 2008, to December 31, 2009. This consists of $244.6M for the regulated hydro electric facilities and $784.6M for the nuclear facilities over the test period. OPG has highlighted a number of key drivers of this revenue deficiency, including capital structure and return on equity ("ROE"), nuclear liabilities and various operating cost increases.

(a) Please produce a spreadsheet which shows, on a segmented basis, all of the drivers of the revenue deficiency for both the regulated hydro electric facilities and for the nuclear facilities. In order to assist with the general format of this spreadsheet, we attach as an example, a spreadsheet entitled "2007 Test Year - Drivers of

Sufficiency/(Deficiency)" that was prepared by Enbridge Gas Distribution Inc. ("EGD") in EB-2006-0034.

Response:

Please see response to L-3-49.

CME Interrogatory #2

Ref: Ex. A2-T2-S1

Issue Number: 3.1
Issue: Issues: Are the costs and financial commitments OPG is seeking to recover under section 6(2)4 incurred to increase the output of, refurbish or add operating capacity to a prescribed facility?

Issue Number: 3.2
Issue: If so, are the costs and financial commitments within project budgets approved for that purpose by the Board of Directors of OPG?

Issue Number: 3.5
Issue: Is the additional capital spending (beyond the levels being recovered under section 6(2)4) appropriate?

Issue Number: 5.1
Issue: Are the Operation, Maintenance and Administration ("OM&A") budgets for the prescribed hydroelectric and nuclear business appropriate?

Issue Number: 5.3
Issue: Are the 2008 and 2009 human resource related costs (wages, salaries, benefits, incentive payments, FTEs and pension costs) appropriate?

Interrogatory

At Ex.A2, Tab 2, Schedule 1, OPG presents an overview of its business planning and budgeting process. This process applies to Revenues and all expenditures, including capital, operating, and provision-funded expenditures. OPG states that it established "a consistent framework of corporate strategic objectives, resource guidelines and costing assumptions" and that the "key elements of this planning framework are identified to the business units through business planning instructions provided by the Financial Planning Dept. in Corporate Finance". With respect to this business planning and budgeting process for the fiscal years 2008-2009:

(a) Please produce the "corporate strategic objectives, resource guidelines and costing assumptions" referred to at Ex.A2, Tab 2, Schedule 1 page 1 of 13.

(b) Please produce the planning instructions provided by the Financial Planning Dept. to the business units.

(c) Please produce the preliminary business plans and final business plans (if different) prepared by the business units.

(d) Please provide the consolidated financial outlook prepared by Corporate Finance.

(e) Please produce the overviews of the consolidated preliminary results prepared by Financial Planning. If not provided in the overviews, please identify material changes made in the financial outlook and the underlying drivers.

(f) Please produce reports or power point presentations addressing the business planning and budget process presented to OPG's President, CEO and/or senior management. If subsequent to those reports or presentations any material modifications were made by, or on the basis of input received from, OPG's President, CEO and/or senior management, please provide a description of the modifications and produce the revised business unit plans.

(g) Please produce the draft consolidated business plan (that was based on updated November submissions) that was reviewed by OPG senior management and shareholder representatives.

(h) If material changes were subsequently made to the finalized consolidated business plan submitted to the OPG Board of Directors, please describe those changes and provide a copy of the finalized consolidated business plan.

Response

a) This information is included in the 2007 Business Planning Information and Instructions provided in response to L-14-045.

b) See L-14-045.

c) Attached are the nuclear and hydroelectric plans that were approved by OPG's Board of Directors in December 2007 as part of the 2008 business plan and which underpin this Application. These provide the relevant basis for assessing OPG's plans for its regulated facilities. Information that is either commercially sensitive or specifically relevant to the unregulated hydro facilities has been redacted.

   OPG declines to provide the preliminary plans, as they are draft in nature, with changes and amendments expected as part of the finalization process. As such they have been superseded by the plans that are being provided in response to this interrogatory. L-14-53 provides an overview of the series of reviews and assessments that occur throughout the business planning process. L-3-54 discusses the minor changes that were made to the Regulated Hydroelectric and Corporate Support function plans as a result of the CEO and CFO reviews. There were no changes made to the Nuclear plan for 2008 and 2009.

d) OPG is not providing consolidated financial results as they represent a consolidation of all of OPG's business segments, including its unregulated operations.

e) See the response to part (c).

f) See the response to L-3-54.

g) See the response to part (c).

h) See the response to part (d).

Hydro Business Plan
2008 to 2010

John Murphy
EVP Hydro Generation

ONTARIO POWER GENERATION

December 2007

Business Plan Outline

1. Major Initiatives
2. Key Planning Assumptions
3. Performance and Cost Summary
4. Plan Over Plan Changes - OM&A & Capital
5. Year Over Year Changes – OM&A & Capital
6. Energy Production & Reliability
7. Hydroelectric Development Plan
8. Project Expenditures to Maintain and Improve Existing Assets
9. Project Expenditures - Safety and Environmental Programs
10. Runner Upgrade Program
11. Benchmarking
12. Key Business Risks

Appendices:

A - General Hydro Information – Station Data, Regulated/Unregulated
B - Cost Increases in labour, materials, equipment , contracts and consultants
C - Environmental Initiatives
D - Safety

Hydro Business Plan continues to build and improve on the strategy and initiatives laid out in last years plan:

- Invest in new developments per Government Mandate
  - Continue execution of Niagara Tunnel and Lac Seul Projects.
  - Identify, study, design and execute other new developments such as Upper Mattagami, Lower Mattagami, Mattagami Lake Dam, Healey Falls, Ranney Falls, Long Lake and Little Jackfish.

- Re-invest in existing assets to maintain/improve their condition, reliability and efficiency
  - EFOR is targeted at 1.6% and availability will range from 92.6% to 94.5% depending on the number and duration of outages in each year of plan
  - Continue replacement/refurbishment of major “power train” equipment and civil infrastructure
  - Complete rehabilitations at Otto Holden, Chats Falls, Chenaux and Otter Rapids and start rehabilitations at Des Joachims, Mountain Chute, Sir Adam Beck 1, Little Long, Harmon, Pine Portage, and Alexander Falls
  - Continue runner upgrade program (adding [redacted] and [redacted] from 2008 to 2010).

- Invest In People

  More aggressive, multi-pronged staffing and training strategy will be utilized to address existing demographic problems, new work programs, and additional regulatory and internal governance requirements.

Major Initiatives (cont'd)

- Improve Dam and Public Safety through investments and improved processes:
  - Rehabilitate/upgrade/repair civil works and maintain/improve safety of dams to address deterioration and deficiencies in ageing structures and sluice gates
  - Improve public safety through the addition of safety booms, fencing, signs, cameras, special structures at certain sites, and enhancement/integration of existing procedures. (+$6 M in 2008)
  - Implement recommendations of Independent Panel
  - Continue to participate in development of provincial regulations with the MNR

- Improve environmental performance in the area of spills risk identification and management

- Maintain excellent ASR safety record and strive for continuous improvement in All Injury Rate

- Strengthen relationships with First Nations
  Continue to build relationships, consult and partner with First Nations, and implement new Aboriginal Relations Policy

- Maintain/improve relationships with provincial and federal government agencies and community stakeholders

Key Planning Assumptions

- It is assumed government approvals and directives for new developments that are presently in definition phase will be obtained within a reasonable time frame (ie, next 6 months). New development projects in the plan will proceed per the timelines/in-service dates shown on page 9 of this document.

- Existing hydroelectric assets (64 stations and 238 dams) are assumed to be viable for the long term and expected to continue safe and reliable operation well beyond the business plan time horizon (exceptions: end-of-life small stations such as Upper Mattagami 25 cycle plants, Hound Chute, and 25 cycle units at Sir Adam Beck 1).

- Major Capital and OM&A Project cost estimates in the plan have been escalated an average of 10% compared to 2007, to reflect recent cost information and emerging shortages of labour, materials, contractors, and engineering firms expected in next few years.

- Hydro will maintain registration in ISO 14001 (environment) and OHSAS 18001 (employee safety), and maintain managed systems/programs in the areas of dam and public safety and asset management.

- Hydro will maintain/improve programs in the areas of public relations and stewardship.

- Potential costs associated with proposed provincial Dam Safety regulation are not included in the plan ([redacted]
[redacted]

Performance and Cost Summary

	2007 (Proj'n)	2008	2009	2010
OPERATIONS				
Capacity (MW)	6,972	6,988	7,031	7,101
Energy (TWh)	**32.3**	**32.7**	**33.7**	**34.9**
Availability (%)	**94.0**	**93.4**	**94.5**	**92.6**
EFOR (%)	1.5	1.6	1.6	1.6
REVENUE ($M)	[redacted]			
RESOURCES				
OM&A (M$)	[redacted]			
Capital - Operations ($M)				
Capital - Lac Seul GS ($M)				
Capital - Niagara Tunnel ($M)	63	171	347	165
Capital - Other New Developments ($M)	[redacted]			
Staff	966	1,020	1,027	1,014
GROSS REVENUE CHARGE/WATER RENTALS	327	319	334	339
CONTRIBUTION MARGIN ($M)	[redacted]			
PRODUCTION COSTS				
OM&A UEC ($/MWh)	[redacted]			
GRC/Water Rentals UEC ($/MWh)	10.1	9.7	9.9	9.7
PUEC ($/MWh)	[redacted]			
ENVIRONMENT	**Meet all Environmental Regulatory Limits & Targets**			
HEALTH & SAFETY	**Meet all Health and Safety Targets (ASR=4.5 & AIR=3)**			

The staffing and financial resources requested in this Business Plan are required to allow Hydro to deliver high levels of availability, production, safety and environmental compliance, and will generate annual profits (contribution margin), averaging approximately [redacted] million per year over the planning period.

ONTARIO POWER GENERATION

Plan Over Plan – OM&A & Capital

OM&A - Plan Over Plan	2007 Proj'n	2008	2009	2010
Last Year's Plan ($M)	[redacted]			
Changes				
Labour Burden Rate Reduction	0.0	-4.1	-4.3	-4.2
Support Function Review Savings (Low Risk Activities)	0.0	-0.4	-0.6	-1.1
Cybersecurity Implementation and Ongoing Support	0.0	2.6	1.6	1.1
Mechanical, Civil, Electrical Work Program (Increased Cost in OM&A projects)	0.0	7.3	5.5	2.1
Material Escalation (OM&A Base)	0.0	2.2	2.1	3.6
Public Safety Increases	0.0	3.3	1.0	0.5
Support for Operations & Maintenance (environment, public safety and operational support.)	0.0	2.0	2.0	2.2
Small Hydro Re-Investment & Dam Safety Changes	0.5	-0.9	1.2	3.1
First Nations Provision (2007) & Remediation Work	[redacted]			
Miscellaneous Changes (Timing and Other Changes)	-15.9	-11.4	-4.3	2.8
Hydro OM&A Submission	[redacted]			
Change in OM&A From Previous Plan				

Capital - Plan Over Plan	2007 Proj'n	2008	2009	2010
Last Year's Plan ($M)	**409**	**570**	**650**	**612**
Operations Changes				
Major Mechanical, Electrical & P&C Equipment Replacements (Timing, Scope & Cost Increases)	-3.0	-11.7	-0.7	20.2
Public Safety	0.0	2.7	1.0	0.8
Environmental Program Increases	0.0	0.7	2.3	2.2
New Cornwall Information Facility	0.0	0.5	10.0	0.0
Small Hydro Re-Investment	[redacted]			
New Development Changes				
Lac Seul	[redacted]			
Niagara Tunnel Project	-145.2	-51.2	126.1	70.5
Lower Mattagami	[redacted]			
Upper Mattagami and Hound Chute				
New Hydro Development Projects (Other)				
Miscellaneous Capital Program Changes				
Hydro Capital Submission				
Change in Capital From Previous Plan				

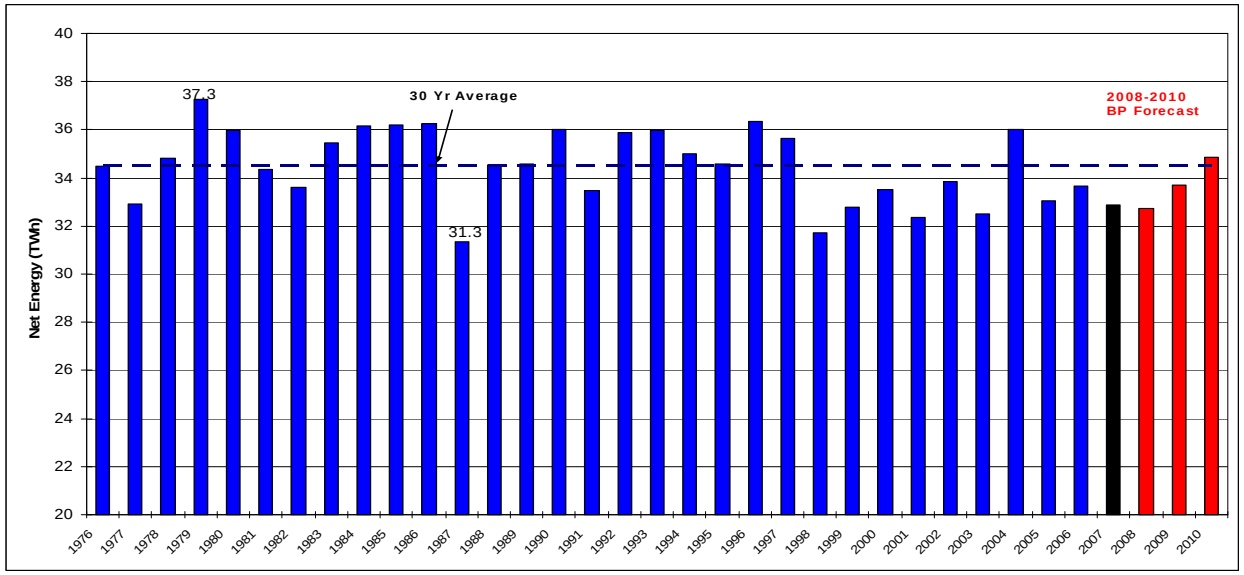
Year Over Year Changes – OM&A and Capital

OM&A Year Over Year Cost Changes (2007 to 2008)	
Forecast 2007 OM&A Costs	[redacted]
Aboriginal Provision Extraordinary Costs (2007 Forecast)	
Forecast After Extraordinary Aboriginal Provision Costs	
Changes	
External Factors	
Labour Escalation & Payroll Burden Changes per collective agreements.	4.1
Cost Increases for OM&A Base & Projects (labour, material, & construction contracts)	5.7
Sustaining & Improving The Assets	
Public Safety Increases	3.0
Dam Safety Program Increases	5.0
Support for Operations & Maintenance (environment, public safety and operational support.)	1.8
Aboriginal Program Increases:Long Lac Contamination & Whitesand Erosion	[redacted]
OPG Mandate /Shareholder Direction	
New Hydro Development Program /Support: additional project support and external consulting services for greenfield developments (pre-concept/concept phase work).	
Other Changes	9.9
2008 Business Plan OM&A:	**217**
Total Changes In OM&A (excludes Aboriginal Provision Costs)	**32**

Capital Year Over Year Cost Changes (2007 to 2008)	
Forecast 2007 Capital Costs	**158**
Changes	
Sustaining & Improving The Assets Changes	
SAB 1 Frequency Conversion	16
Dam Safety	9
Public Safety	4
Automation	1
Mech /Elec (Powertrain)	-2
New Developments Changes	
Niagara Tunnel Project	107
Lower Mattagami Development	[redacted]
Upper Mattagami Development	
Other New Hydro Development Projects	
Lac Seul	
Other changes	
2008 Business Plan Capital	**411**
Total Changes in Capital Costs	**223**

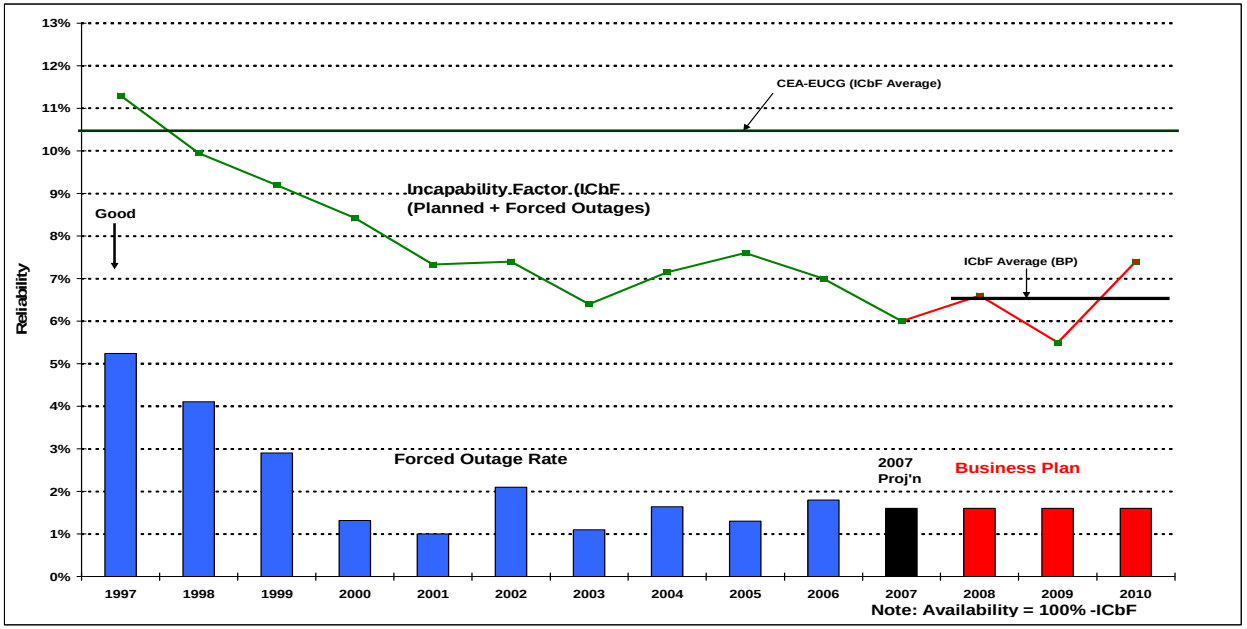
ONTARIO POWER GENERATION

Energy Production & Reliability



Major energy increases:

- [redacted]
- 2009: CNP/Fortis Water Lease terminates and reverts to OPG (+0.65 TWh)
- 2010: Niagara Tunnel Energy (mid-year in-service = +0.8 TWh)

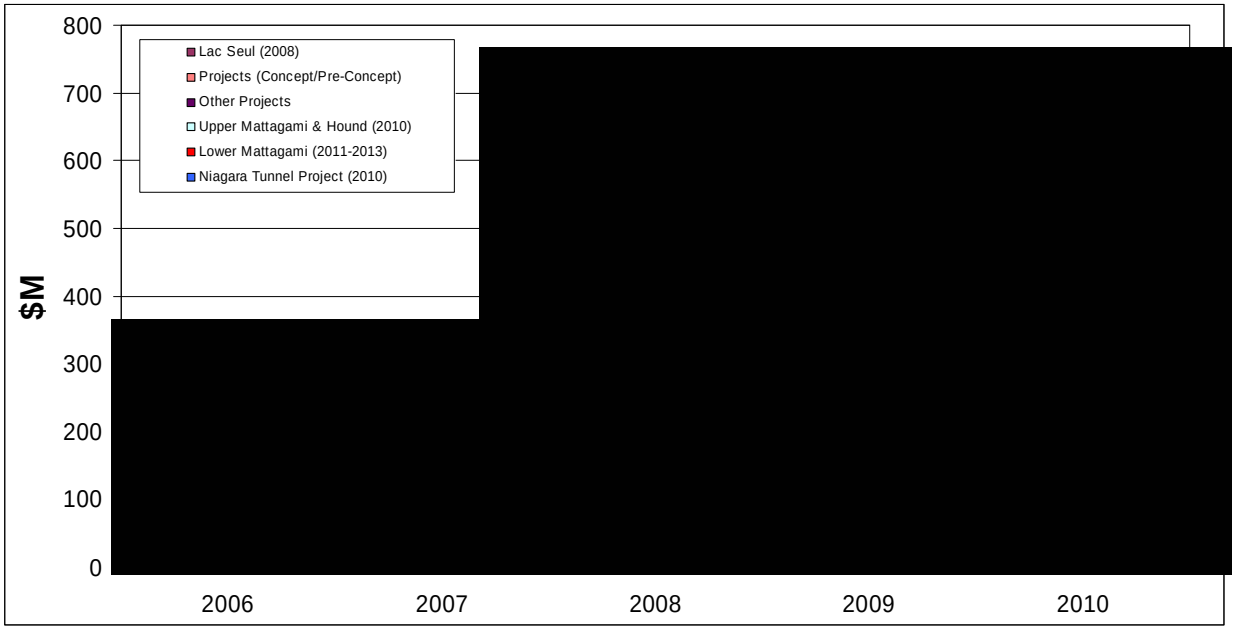


Availability & EFOR

- Availability will average 93.5% (ICbF=6.5%) during the business planning period. This is significantly better than the CEA-EUCG five year average.
- In 2010, availability will be lower than the average due to additional long outages for the major rehabilitation of 2 units at Sir Adam Beck 1 and one unit at Sir Adam Beck PGS
- EFOR is assumed to average 1.6% during the business planning period.

Hydroelectric Development Plan

	Capacity	Pre-2007	2007 Forecast	2008	2009	2010	Balance	Total
	MW	$M	$M	$M	$M	$M	$M	$M
Projects In-Progress								
Niagara Tunnel Project		239	63	171	347	165	0	985
Lac Seul								
Subtotal (Projects In-Progress)								
Projects In Definition Phase								
Lower Mattagami								
Upper Mattagami & Hound Chute								
Healey Falls								
Mattagami Lake Dam								
Subtotal (Defintion Phase)								
Projects Begin Definition Phase in 2008								
Ranney Falls								
Newpost Creek								
Little Jackfish								
Calabogie								
Lake Gibson	5			0.3	0.7	0.5	0.0	1.5
Long Lake Dam								
South Falls								
Other								
Projects Begin Definition Phase in 2008								
Total (Projects In-Progress & In Definition Phase								



- Costs for projects presently in execution and definition phases are included in the business plan (see table).
- Timing of execution phase for projects presently in definition phase will be dependent on government directives, HESA's (from OPA), and agreements with First Nations.
- Definition phase costs for projects where definition phase activities are expected to start in 2008 are also included in the plan. However, execution phase costs for these projects is not included.

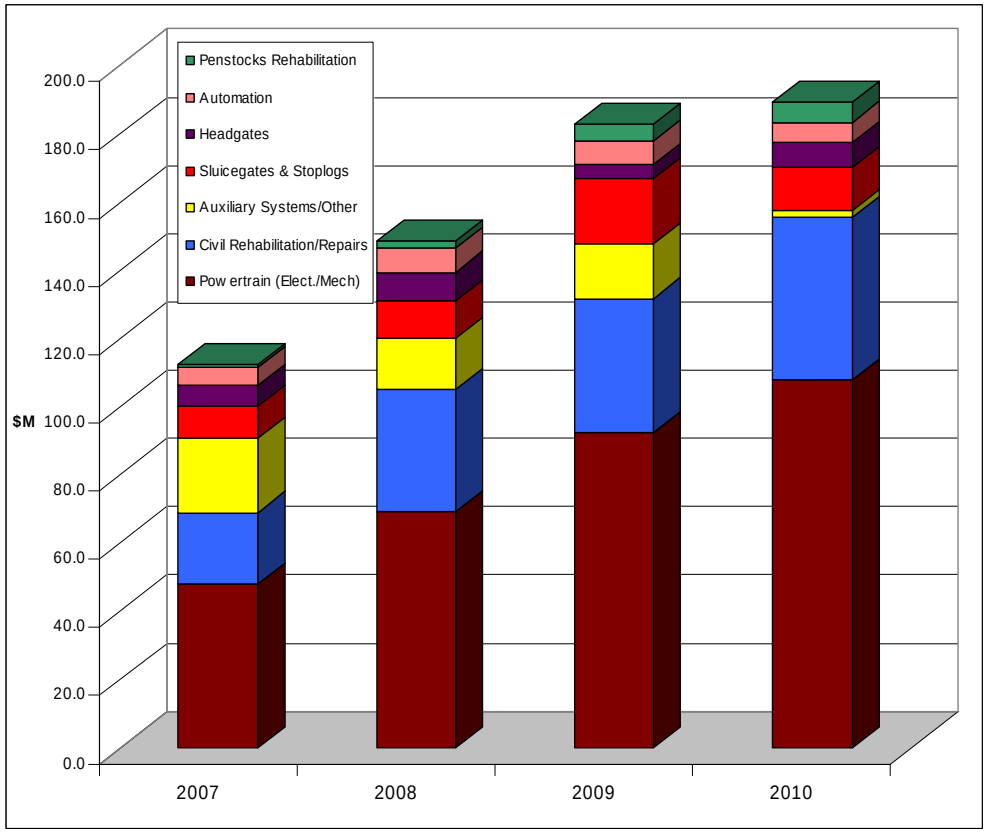
In-Service Dates (Planned)

- Lac Seul:
- Niagara Tunnel: mid-2010
- Upper Mattagami:
- Mattagami Lake dam:
- Healey Falls:

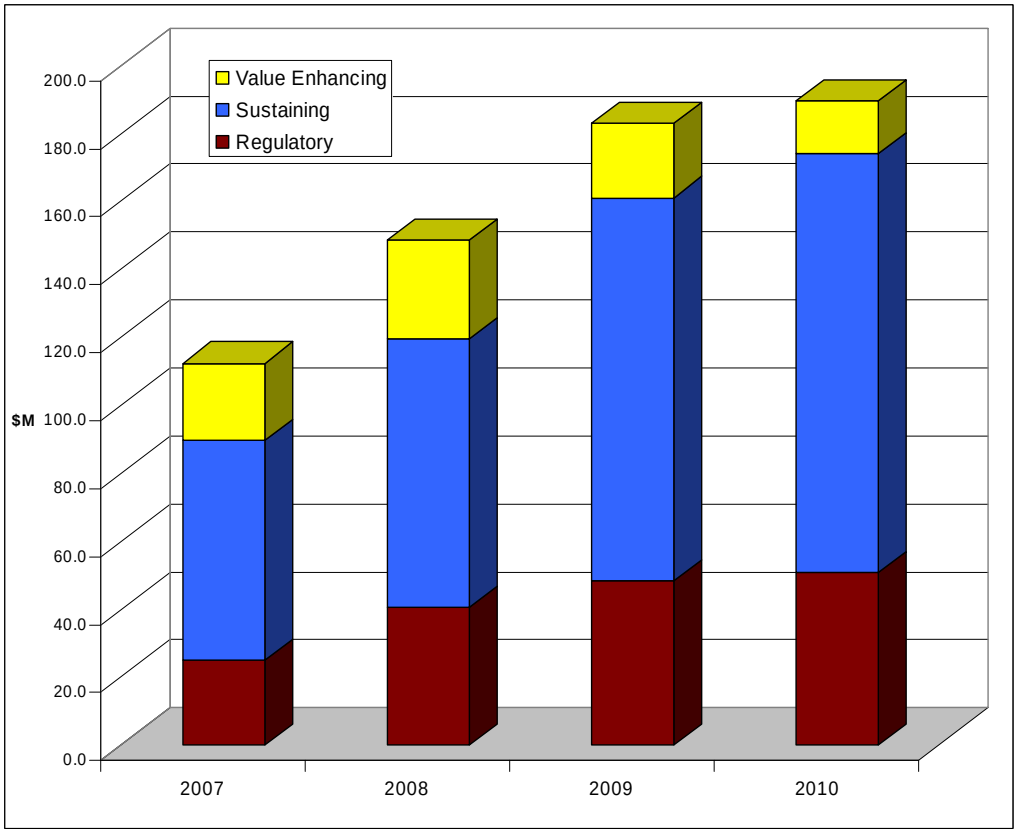
ONTARIO POWER GENERATION

Project Expenditures To Maintain and Improve Existing Assets

By Discipline/Component

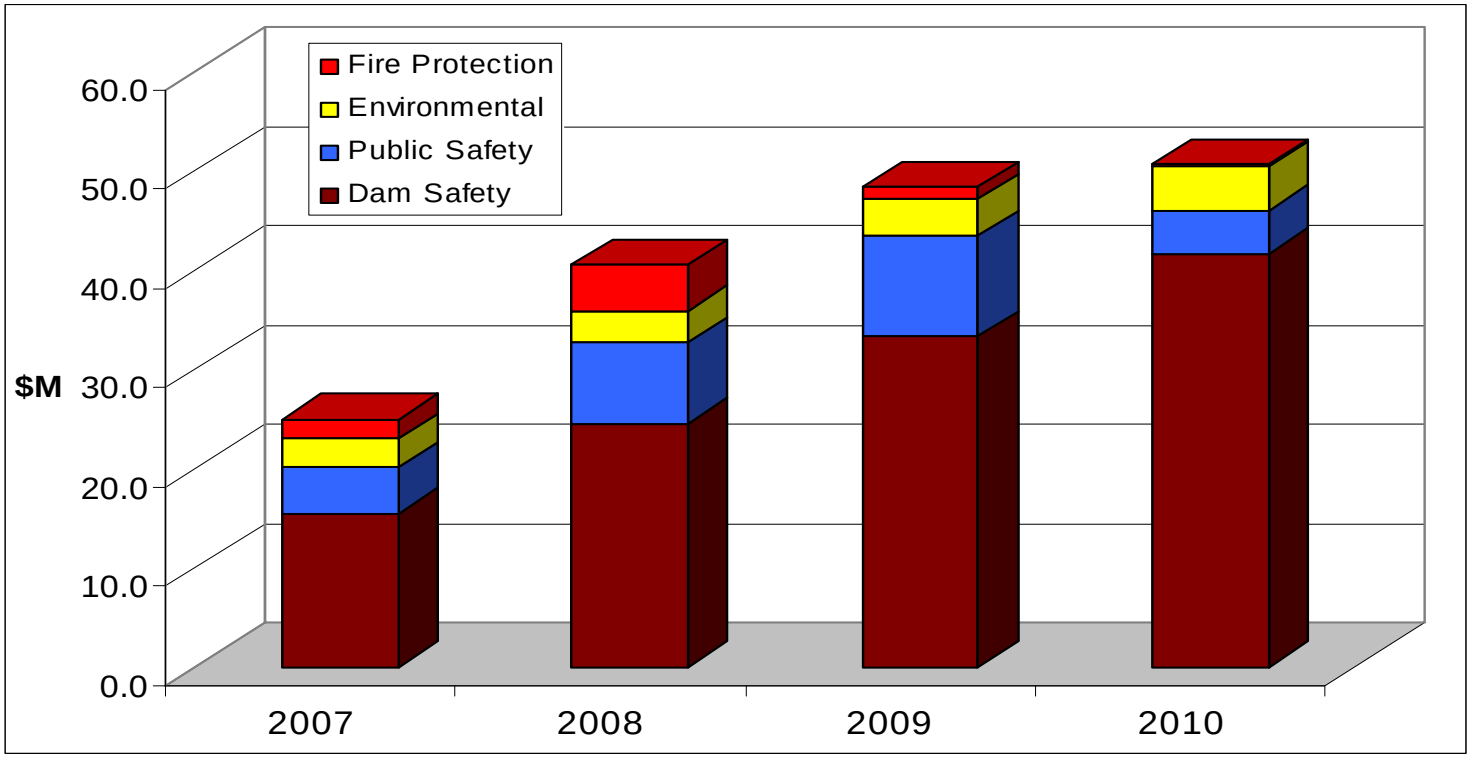


By Regulatory/Sustaining/Value Enhancing



- **Continued re-investment, averaging $175 million per year in Capital and OM&A project expenditures, will be required to sustain and improve the existing assets per our mandate. Major investments will include:**
  - replacement of ageing "power train components" such as turbines, generators, transformers
  - replacement of control equipment (automation) to improve efficiency and accommodate market dispatch requirements
  - repairs, rehabilitation or replacement of ageing civil structures including powerhouses, penstocks, dams, sluiceways and bridges
  - replacement and refurbishment of headgates and sluicegates (dam safety)
  - runner upgrades/replacements
  - investment in small hydro facilities

Project Expenditures - Safety and Environmental Programs

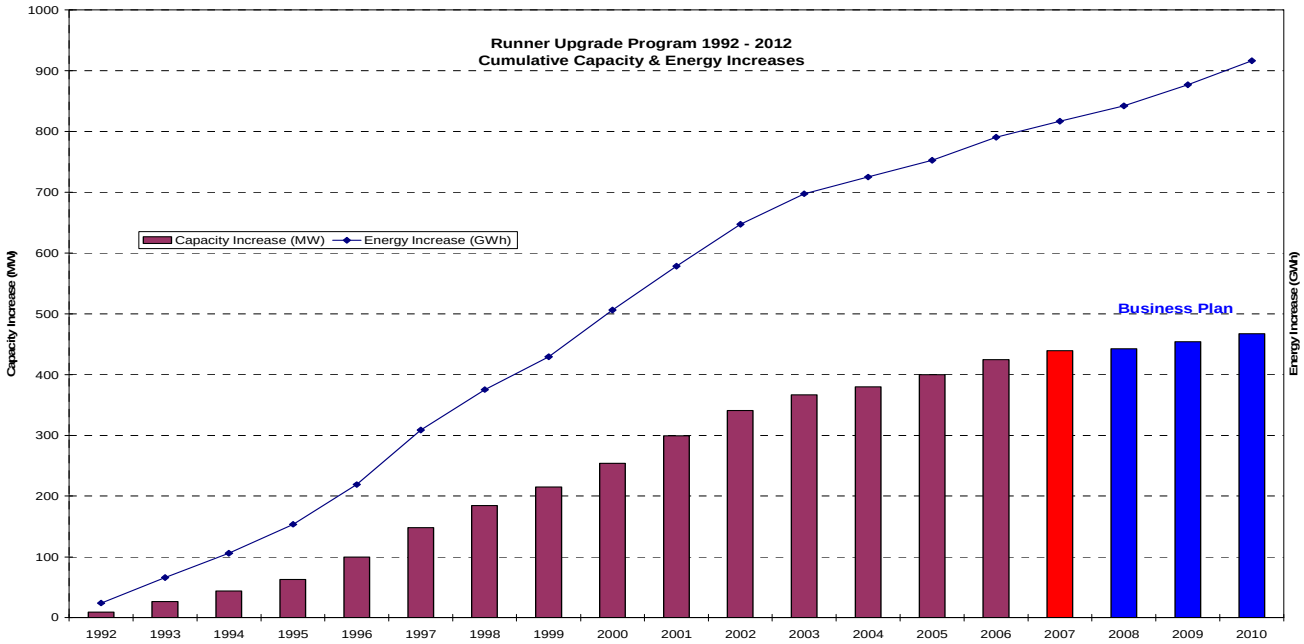


Project expenditures for safety and environmental programs will increase during planning period:

- Public Safety (safety booms, fences, signs, video cameras, special structures, etc) (15% of total safety and environmental project costs). Additional $6 M in 2008 compared to last year's plan.
- Dam Safety (continue with sluicegate & headgate refurbishments/additions, dam upgrades/ restoration)(70%).
- Environment (oil containment, turbine pit/sump improvements, underground piping) (7%).
- Fire Protection (life safety projects). Program to be completed during planning period (6%).

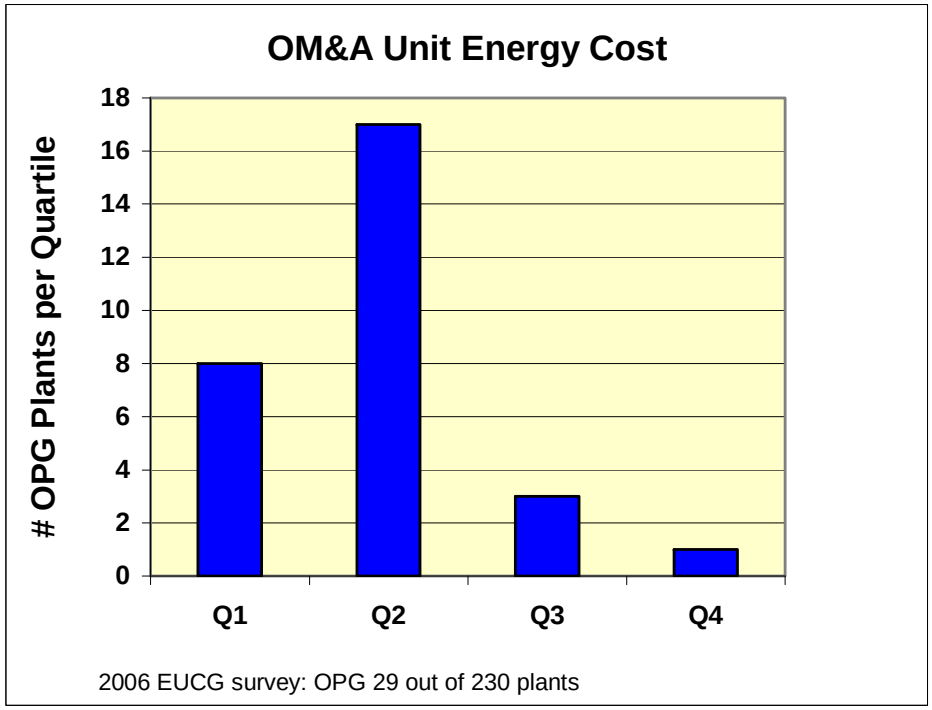
Runner Upgrade Program

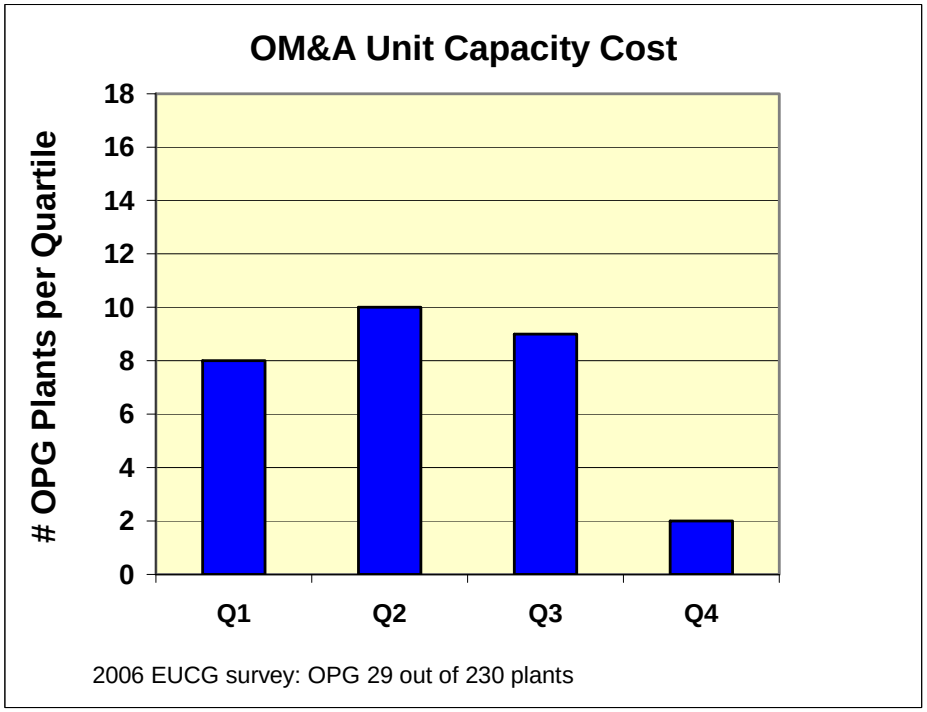
	Completed 1992 to 2006	2007 Proj.	2008	2009	2010	Total (2008 to 2010)
CAPACITY (MW)	427	12	4	12	13	28
ENERGY (GWh)	790	26	26	35	40	100
TOTAL CAPITAL COST (M$)		[redacted]				
OM&A COST (M$)						



- In 2007, five units at 5 stations were upgraded, adding 12 MW & 26 GWh per year.
- Execution of remaining program will continue as quickly as practical. A business case will be developed for each project before proceeding ([redacted])
- The speed of execution may be impacted by IESO constraints, consideration of outage spill losses, coordination with other major work, resource availability (internal resources and external contractors), & coordination with development projects (at existing sites).

Benchmarking of OM&A Costs – EUCG (2006)



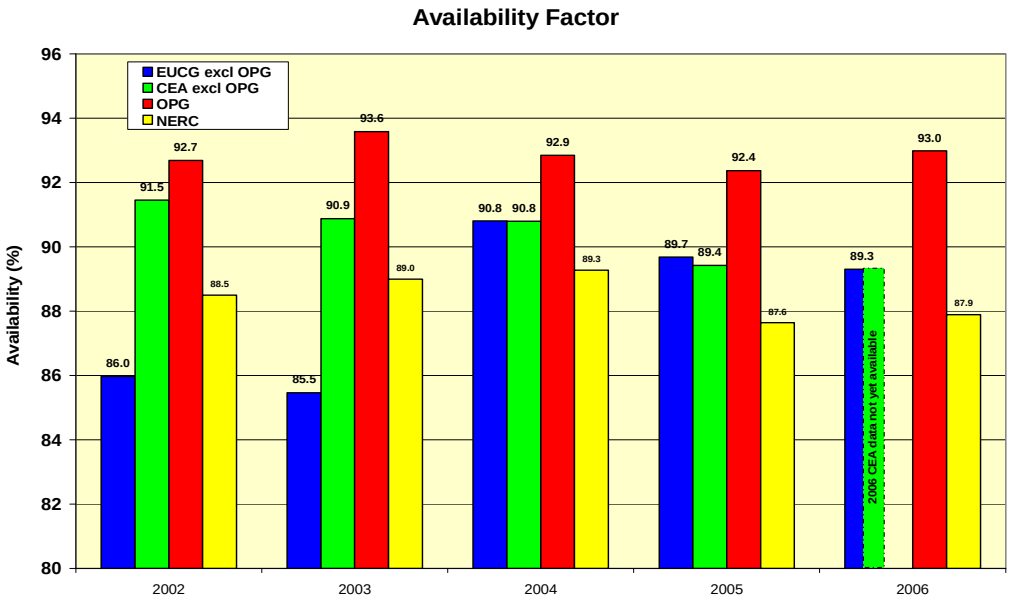


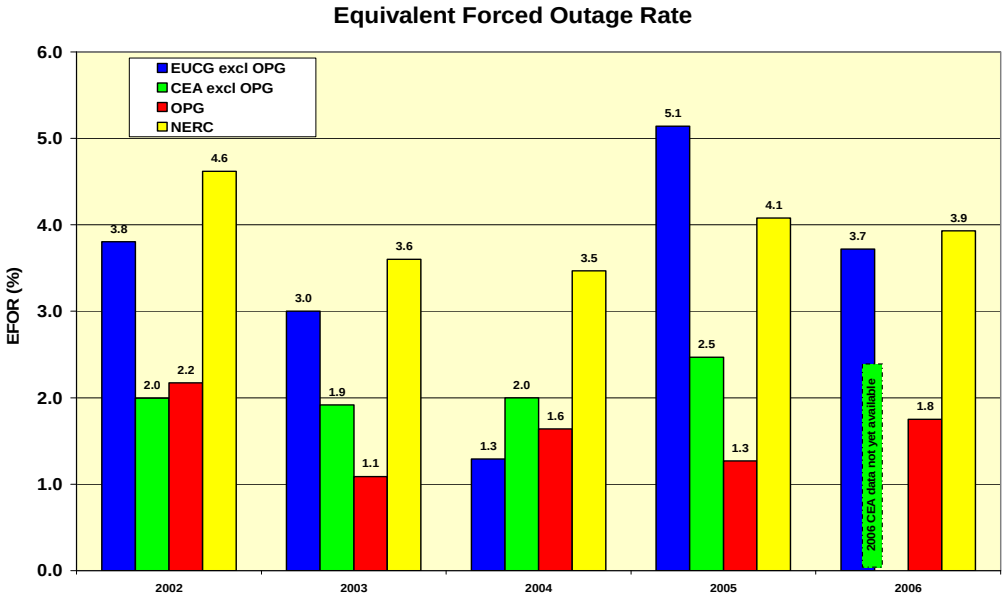
	Q1	Q2	Q3	Q4
USD/ MWh	0.9 - 5.4	5.4 - 9.3	9.3 - 23.3	23.2 - 5050
# plants	8	17	3	1
TWh	23.8	9.2	0.8	0.1
% TWh	70%	27%	2%	0%

	Q1	Q2	Q3	Q4
USD/ kW	3.8 - 18.0	18.0 - 32.7	32.7 - 64.9	64.9 - 603.6
# plants	8	10	9	2
MW	4,057	1,686	934	41.6
% GW	60%	25%	14%	1%

- OM&A costs continue to be competitive with other EUCG participating utilities (97% of Hydro Generation is in top two quartiles.
- Most of our large stations such as Saunders, Sir Adam Beck 2 and Des Joachims are in the top quartile.

Benchmarking Reliability (2002 – 2006)





- Hydro Availability and EFOR continues to benchmark better than EUCG and NERC participants.
- Availability performance – Hydro has 17 plants that are better than the median. This accounts for 71% of Hydro capacity, and 80% of Hydro energy.
- 8 of the 17 plants are in the top quartile.
- Forced outage rate performance - Hydro has 14 plants that are better than the median. This accounts for 55% of Hydro capacity, and 65% of Hydro energy.

Notes:

1) Only the 30 largest Hydro stations are included in the benchmarking.

2) CEA benchmarking data is not available.

Key Business Risks

- Large portfolio of Hydroelectric development projects (risks associated with project management, planning, design, availability of qualified contractors, and execution)

- Cost escalation risk for both Operations and Hydroelectric Development Projects
  - Construction and rehabilitation activity in power sector is increasing leading to significant demand for materials, labour and contracting services
  - This could significantly drive up costs more than has been assumed in business plan

- Human resources demographic risk, especially in the knowledge and skilled trades areas

- Ageing Plants: Asset integrity, reliability and safety at risk without continued re-investment

- Dam Safety (New Regulation) and Public Safety risks

- Aboriginal Past Grievances [redacted]

- Cyber Security risk – New FERC standards could lead to more stringent requirements and additional costs

- Water Management Planning Risks (reduction in operating flexibility and increased monitoring costs)

- [redacted]

Most of the above risks are mitigated through programs, strategies and managed systems in the Hydro Business Plan.

Appendix A
General Hydro Asset/Station and Other Information

Hydro Asset Summary


RH Saunders GS (1045 MW)

STATIONS PROFILE

NO. OF STATIONS	64
AVERAGE ENERGY (30 yr avg.)	34.5 TWh
CAPACITY (October 2007)	6971 MW
AVERAGE AGE	72 yrs.
NO. OF GENERATING UNITS	240
SMALLEST / LARGEST UNIT	1 MW / 137 MW
NO. OF DAMS	238
BOOK VALUE	[redacted]
REPLACEMENT COST	

PEOPLE / WORK CENTRES / LAND

PLANT GROUPS	5
WORK CENTRES	22
CONTROL CENTRES (includes ICD)	7
TOTAL STAFF	981
OPERATORS	100
NO OF RIVER SYSTEMS	26
HYDRO OWNED LAND	~17,000 hectares
LEASED LAND (flooded)	~800, 000 hectares


Ragged Rapids GS (8.3 MW)

ONTARIO POWER GENERATION

Hydro Plant Group and Station Data (Year End 2006)

Niagara Plants	No. of Units	Capacity (MW)	30 Yr Avg Energy (GWH)	Age In 2006 (Years)	PUEC (cents/kWh)	Capacity Factor
Decew Falls ND1	4	23	112	108	1.5	56
Decew Falls NF23	2	144	1,041	62	1.0	83
Sir Adam Beck I	10	447	2,282	84	1.6	58
Sir Adam Beck II	16	1,499	9,499	52	1.5	72
Sir Adam Beck PGS	6	174	-120	49	5.1	7
TOTAL	38	2,287	12,814	71	1.5	64
CNP Payback & Water Transfers			-500			
TOTAL (after CNP/WT)			12,314			61
OPGS (mothballed)	9	81	351	96		

NUMBER OF DAMS & SPECIAL STRUCTURE **27**

Note: SAB 1 Unit 7 (51 MW, 25 cycle) was removed from service in 2005.

Ottawa-St-Lawrence Plants	No. of Units	Capacity (MW)	30 Yr Avg Energy (GWH)	Age In 2006 (Years)	PUEC (cents/kWh)	Capacity Factor
Arnprior	2	82	145	30	[redacted]	20
Barrett Chute	4	176	296	64		19
Calabogie	2	5	22	89		56
Chats Falls	4	96	523	75		62
Chenaux	8	144	723	56		57
Des Joachims	8	429	2,230	56		59
Mountain Chute	2	170	293	39		20
Otto Holden	8	243	1,134	54		53
R.H. Saunders	16	1,045	6,860	46	1.6	75
Stewartville	5	182	302	58		19
TOTAL	59	2,571	12,529	57		56

NUMBER OF DAMS IN PLANT GROUP **45**

Evergreen Energy Plants	No. of Units	Capacity (MW)	30 Yr Avg Energy (GWH)	Age In 2006 (Years)	PUEC (cents/kWh)	Capacity Factor
Auburn	3	2	10	95	[redacted]	62
Big Chute	1	10.0	49	13		56
Big Eddy	2	8.0	37	65		53
Bingham Chute	2	1.0	4	83		48
Coniston	3	4.6	19	101		48
Crystal Falls	4	8.4	42	85		56
Elliot Chute	1	1.6	5	77		36
Eugenia Falls	3	6.1	22	91		42
Frankford	4	2.6	14	93		62
Hagues Reach	3	3.6	20	81		64
Hanna Chute	1	1.4	8	80		64
Healey Falls	3	11.8	74	93		72
High Falls	3	2.7	15	86		63
Lakefield	1	1.8	7	78		47
McVittie	2	2.8	12	94		48
Merrickville	2	1.7	5	91		35
Meyersberg	3	5.2	34	82		76
Nipissing	2	1.8	9	97		56
Ragged Rapids	2	8.3	40	68		56
Ranney Falls	3	9.6	50	84		60
Seymour	5	5.7	31	97		63
Sidney	4	4.4	26	95		66
Sills Island	2	1.8	8	106		54
South Falls	3	5.0	26	99		59
Stinson	2	5.4	23	81		49
Trethewey Falls	1	1.8	9	77		61
TOTAL	65	119	602	84		58

NUMBER OF DAMS IN DIVISION **65**

Northeast Plants	No. of Units	Capacity (MW)	30 Yr Avg Energy (GWH)	Age In 2006 (Years)	PUEC (cents/kWh)	Capacity Factor
Abitibi Canyon	5	339	1,324	73	[redacted]	45
Harmon	2	141	629	41		51
Hound Chute	4	4	26	96		82
Indian Chute	2	3	16	82		61
Kipling	2	157	630	40		46
Little Long	2	133	553	43		47
Lower Notch	2	274	393	35		16
Lower Sturgeon	2	5	36	83		79
Matabitchuan	4	10	52	96		62
Otter Rapids	4	182	703	45		44
Sandy Falls	3	3	17	95		55
Smoky Falls*	4	52	369	82		80
Wawaitin	4	11	51	94		54
TOTAL	40	1,314	4,799	70		42

NUMBER OF DAMS IN PLANT GROUP **45**

Northwest Plants	No. of Units	Capacity (MW)	30 Yr Avg Energy (GWH)	Age In 2006 (Years)	PUEC (cents/kWh)	Capacity Factor
Aguasabon	2	51	289	58	[redacted]	65
Alexander	5	68	423	76		71
Cameron Falls	7	84	524	85		72
Caribou Falls	3	91	507	48		64
Ear Falls	4	17	112	76		75
Kakabeka Falls	4	25	143	100		67
Manitou Falls	5	73	384	50		60
Pine Portage	4	142	778	56		63
Silver Falls	1	48	213	47		51
Whitedog Falls	3	68	393	48		66
TOTAL	38	665	3,769	64		65

NUMBER OF DAMS IN PLANT GROUP **56**

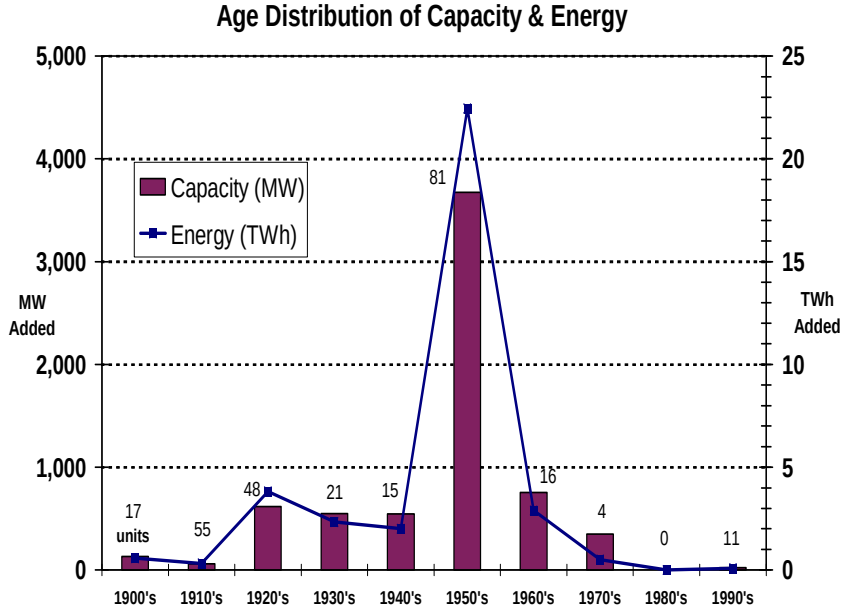
Total Capacity (MW)	**6,957**
Average Energy (TWh)	**34.5**
Total Number of Units	**240**
Total Number of Dams	**238**

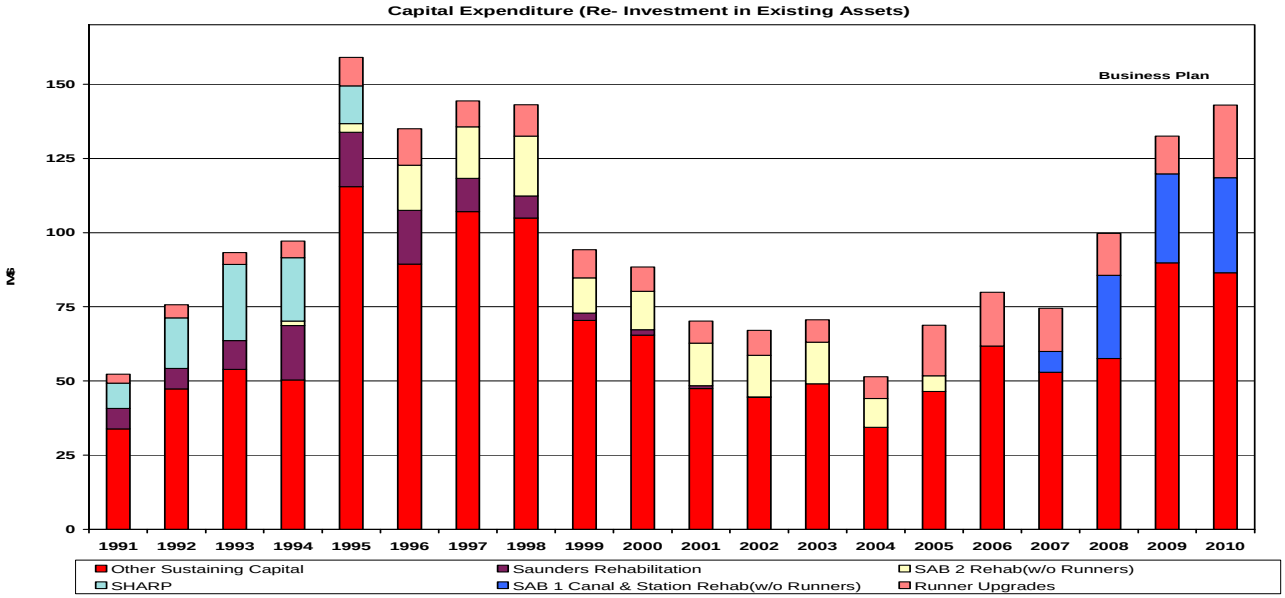
- Regulated station PUECs include only **direct** station costs. All allocations are not included.

ONTARIO POWER GENERATION

Re-investments In Existing Assets - Background

- Average age of our facilities is 72 years. The majority of our stations were built before 1960.
- Equipment service lives range between 30 to 50 years.
- Structures such as dams, penstocks, powerhouses, canals, etc. typically require repairs every 25 to 50 years. Replacement of some civil components is required every 40 to 75 years (eg, wood stave penstocks).
- Due to the old average age, large number and variability of stations/units/equipment, and special issues such as AAR at some of plants, there is risk of deteriorating performance and safety without continued re-investment.
- Hydro has been investing about $50 million to $120 million per year to replace and refurbish/repair equipment and civil components (approx 0.5% to 2% per yr of "replacement cost"). ***A level of 2%+ per year is considered to be reasonable and practical.***
- **Continued re-investment, averaging $175 million per year in Capital and OM&A project expenditures, will be required to sustain and improve the existing assets per our mandate.**

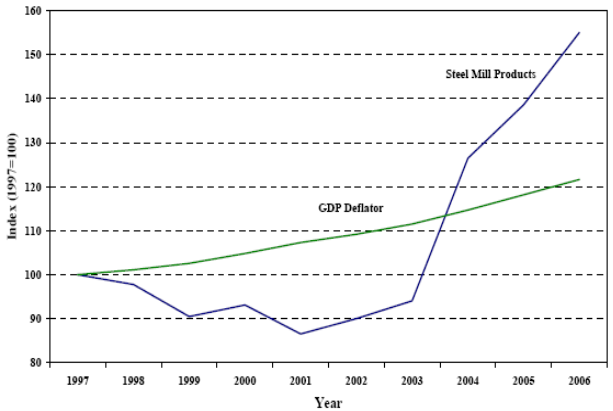




Appendix B - Capital/OM&A Projects and Base OM&A Cost Increases

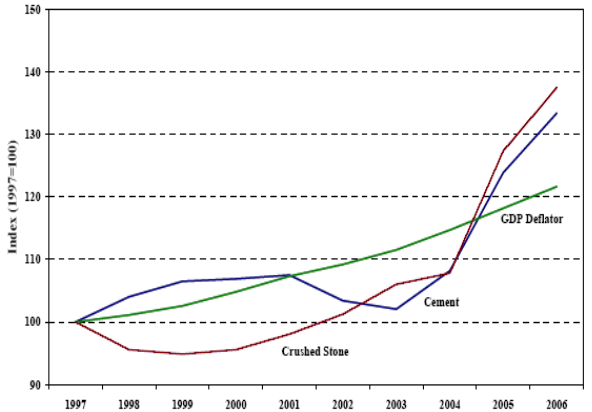
- Construction and rehabilitation activity in the power sector has increased significantly in the past three years leading to significant demand and price increases for materials (steel & concrete), specialized construction labour, and equipment. This trend is expected to continue.
- Availability of qualified contractors and engineering firms is also tight and procurement/delivery times for equipment are longer (as much as one year longer compared to 2006).
- The growth in construction project backlogs likely will dampen the competitiveness of Engineering, Procurement & Construction (EPC) bids for future projects until the EPC industry is able to expand capacity to manage and execute greater volumes of projects.
- In the past two years, Hydro has experienced similar cost increases, especially for civil rehabilitation/repair projects, major mechanical and electrical equipment replacements and new build. In several cases costs have been 2 to 3 times of the original estimates.
- ***This could significantly drive up costs above the average 10% increase which has been assumed for major projects in this year's Business Plan.***

Steel Mill Products Price Index



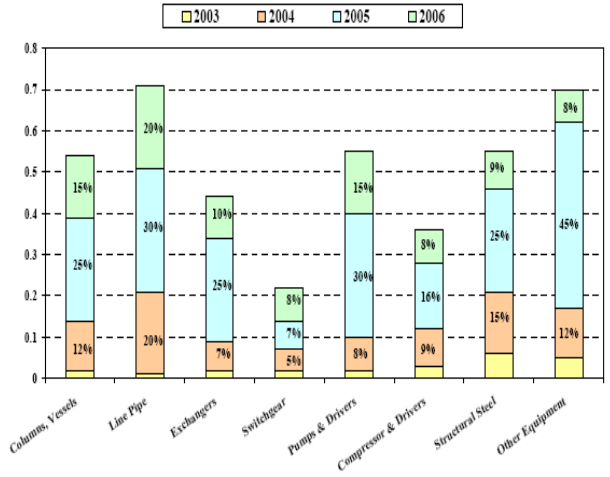
Sources: U.S. Geological Survey, Mineral Commodity Summaries, and the U.S. Bureau of Economic Analysis.

Cement and Crushed Stone Price Indices



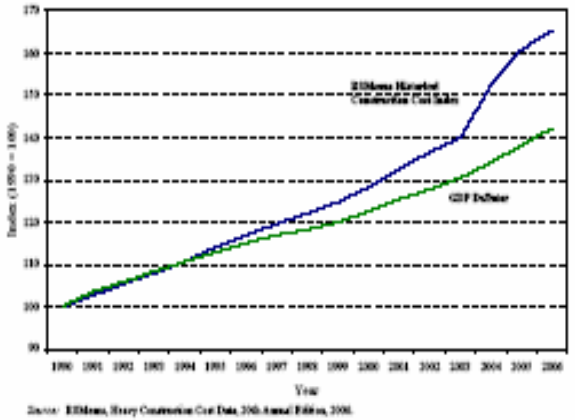
Sources: U.S. Geological Survey, Mineral Commodity Summaries, and the U.S. Bureau of Economic Analysis.

Equipment Price Increases



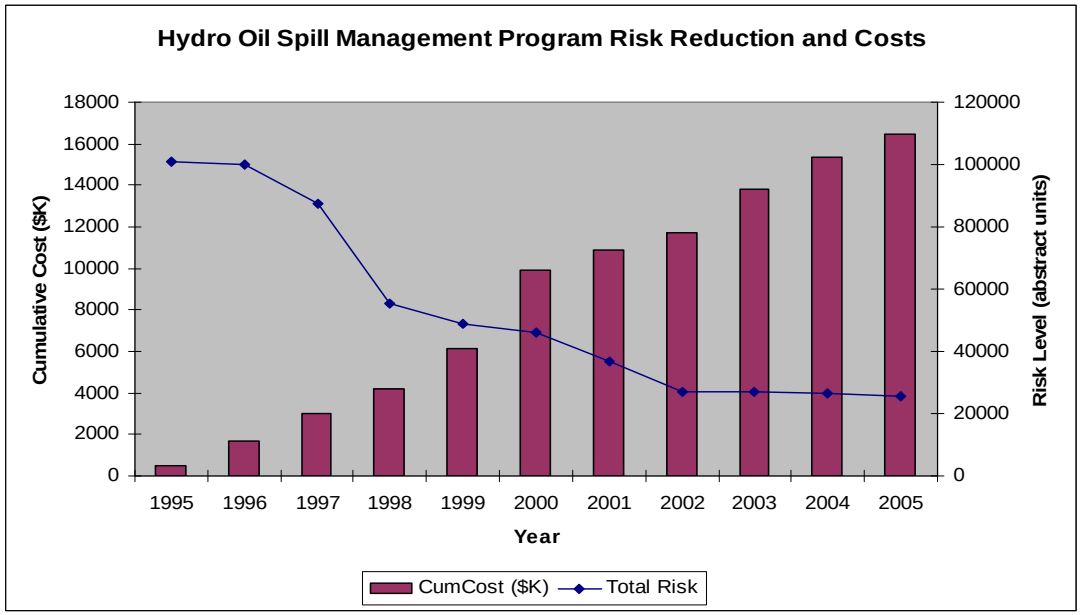
Source: "Who, What, Where, How" presentation by John Siegel, Bechtel Power Corp. Delivered at the conference entitled *Next Generation of Generation* (Dewey Ballantine LLP), May 4, 2006.

RSMeans Historical Construction Cost Index



ONTARIO POWER GENERATION

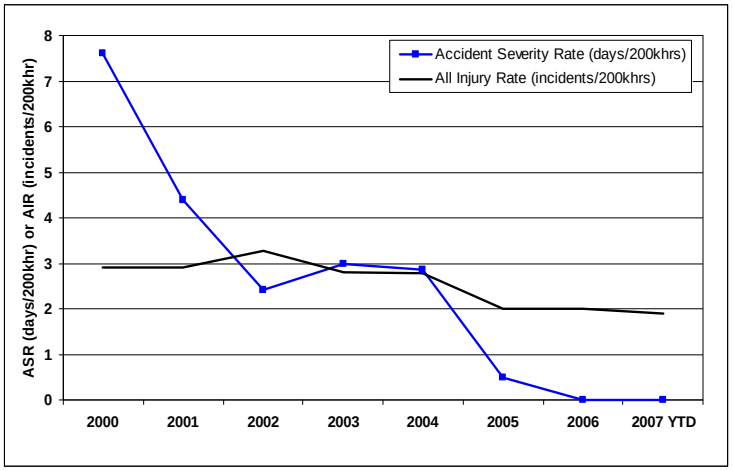
Appendix C - Environmental Initiatives

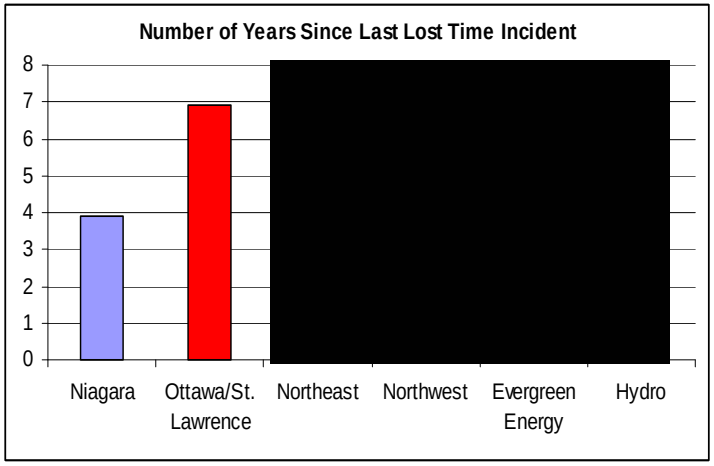


- The environmental performance of the Hydro Business has been very good. Since 2000, the Hydro Environmental Performance Index has been significantly better than target.
- Only 2 major spills have occurred since 2000 (ie, 2 "B" oil spills in NEPG in Q1 2007)
- The Environmental Management Systems at each of the Plant Groups are ISO 14001 certified.
- Since 1995, significant investments (>$17 M) have been made in the oil containment program to reduce oil spill risks. 75% of the spill risk has been reduced.
- The number of major spills was also reduced by 40% between 1995 to 2005, with the volume of oil lost to the environment reduced by 95% for same time period.

- **A major environmental initiative starting in 2008 will be to improve spill performance for all types of spills (ie, not only transformer oil) by implementing a comprehensive and consistent framework for spill classification, prevention, contingency planning and spill notification/reporting.**
- To this end, a new risk assessment tool has been developed in 2007 which will:
  - demonstrate a systematic process of identification of reasonably foreseeable spill scenarios
  - assign a risk value to each scenario
  - facilitate consistency in approach across the plant groups
  - provide the plant groups with a better understanding of the factors that affect the risk and potential to mitigate and minimize the risk
  - facilitate transparency and documentation of the process
- Other environmental initiatives during the business planning period include:
  - strengthening relationships with federal and provincial governments (eg DFO, CEAA, & MOE) through participation at various CEA and OWA working/task groups
  - continued implementation of the American Eel action plan and negotiations with government agencies
  - biodiversity initiatives and projects

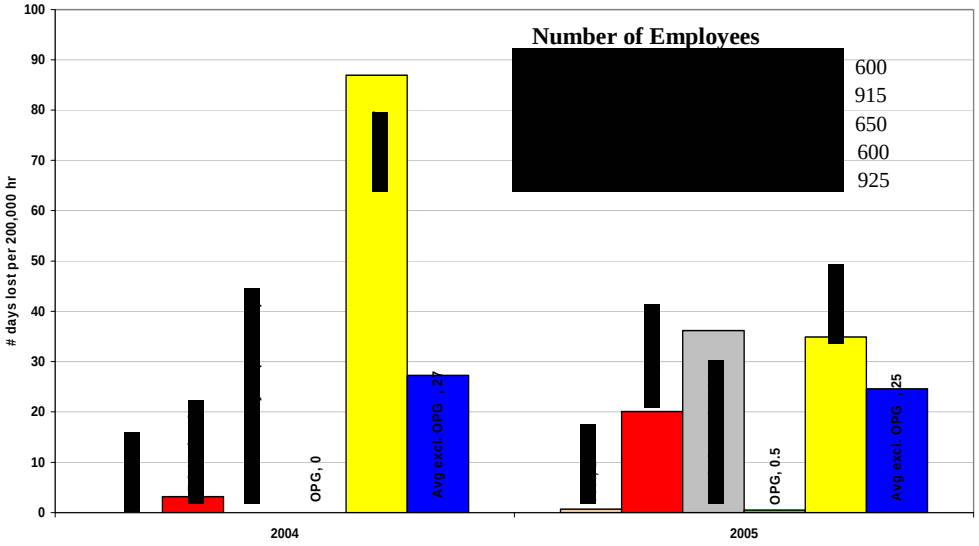
Appendix D - Safety



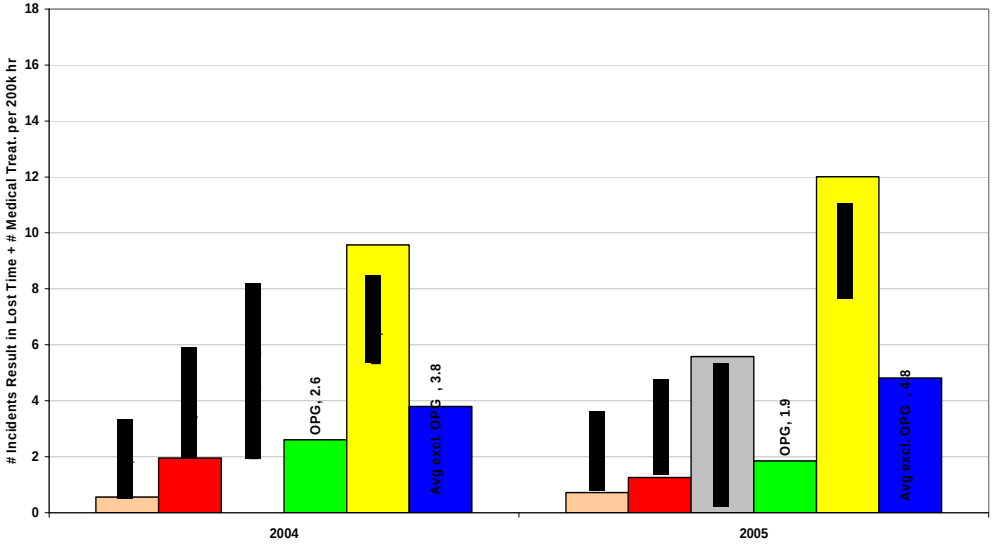


- Since 2000, Hydro's safety performance has been continuously improving due to the joint planning and efforts of all staff.
- Two Plant Groups have achieved over 7 years without an LTI and one Plant Group is approaching this milestone.

ASR



AIR



- The ASR target in 2007 is 5.0 days/200,000 hrs. ***A target reduction of 10% is proposed for 2008 (ASR Target = 4.5).***
- The AIR target in 2007 is 3.0 incidents/200,000 hrs. ***It is proposed that 2007 Hydro target remain at 3.0.***
- These targets are generally in line with benchmarks for other Hydro utilities (ie, they are less than the weighted average).

ONTARIO POWER GENERATION

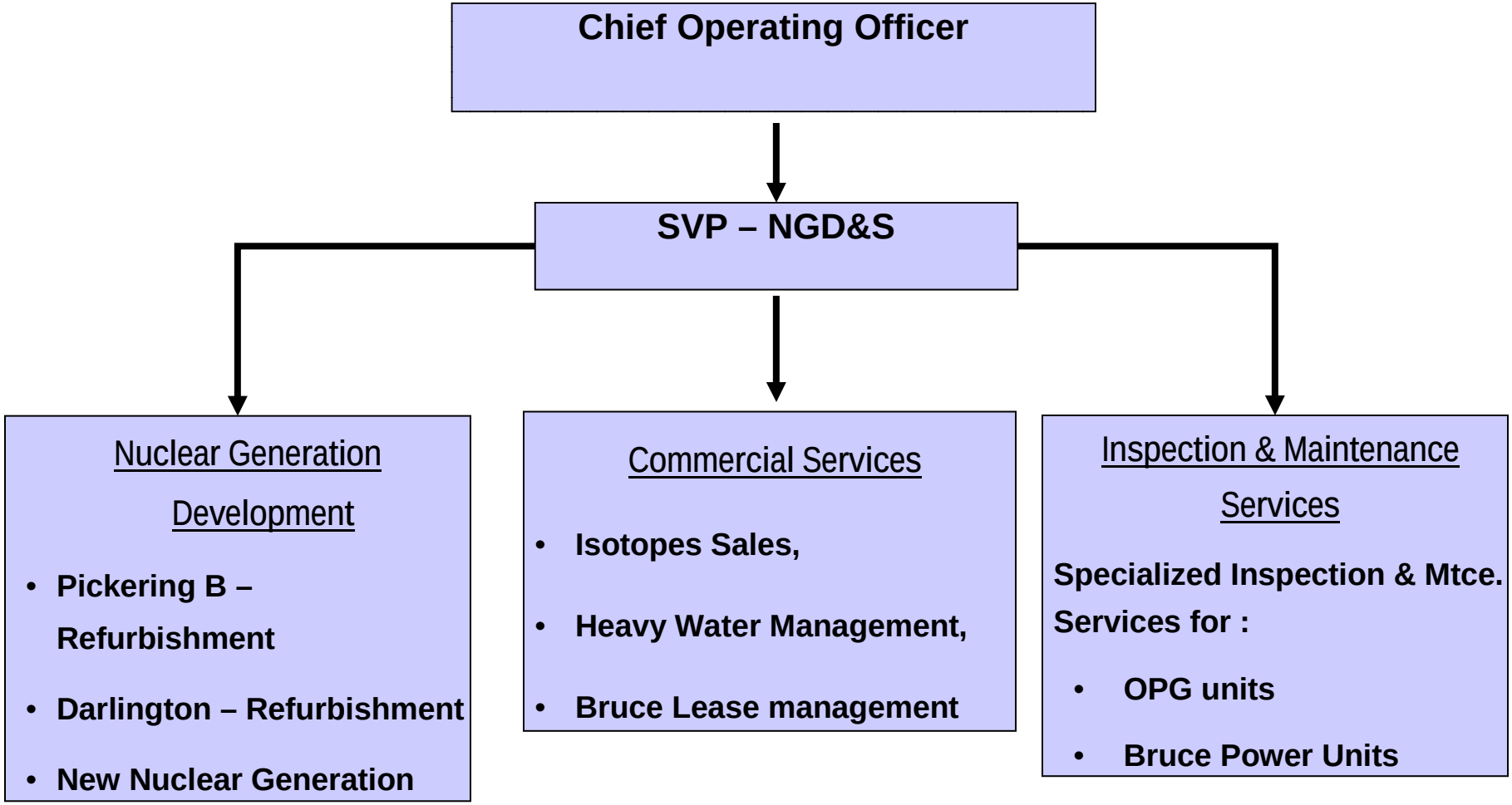
2008 -2010
Business Plan
Nuclear Generation Development & Services

Pierre Charlebois
Chief Operating Officer

OPG Board of Directors presentation
December 13, 2007

CONFIDENTIAL

Nuclear Generation Development & Services



Nuclear Generation Development – Projects

❑ PB Refurbishment Project - Phase 1

- Completed Major Component Study and Plant Condition Assessment work.
- The Business Case recommendation to the Board in Q1 2008.
- Work to finalize the Integrated Safety Review Environmental Assessment programs to be completed in 2008.

M$	2005 *	2006 *	2007 fcst *	2008	2009	2010
OM&A - Pickering B Refurb - Phase 1	1.2	11.3	22.7	6.2	-	-

* costs being held in deferred account

❑ PB Refurbishment Project – Phases 2/3

- Phase 2 (Refurbishment Outage Planning) would start in 2008 and Phase 3 (Refurbishment Outage Execution) would start in 2013 for the 1st unit.
- This is a preliminary funding estimate for PB Refurbishment Phase 2/3 (i.e. refurbishment planning and execution, respectively).

M$	2007 fcst	2008	2009	2010
OM&A - Pickering B Refurb - Phase 2/3	-	2.3	4.0	7.0
Capital - Pickering B Refurb - Phase 2/3	-	30.6	118.3	191.8

Nuclear Generation Development – Projects

❑ DN Refurbishment Project - Phase 1

- Phase 1 includes screening level Business Case Assessment, Plant Condition Assessments, Integrated Safety Review and Environmental Assessment. The predicted End of Service Life of the DN units are 2018-2020

M$	2007 fcst	2008	2009	2010
OM&A - DN Refurbishment	0.3	18.5	22.7	22.3

❑ New Nuclear Development Project

- Work based mainly on planning and preparation for the development of New Nuclear, specifically, licensing, environmental assessment activities, technology assessment, development of the commercial & technical requirements and selection of technology.

M$	2006 *	2007 fcst	2008	2009	2010
OM&A - New Build	0.3	12.0	75.4	67.2	43.4

* costs being held in deferred account

Inspection & Maintenance Services

PROGRAM: Apply highly skilled labour force to conduct specialized inspection and maintenance – usually on the critical path for the outage program at OPG and Bruce Power plants. Continuously improve existing and implement new technologies to improve quality and schedule.

KEY ACTIVITY LINES: Feeder Inspections, Pressure Tube Inspections, Single Fuel Channel Replacements, Boiler inspections, Calandria vault Inspections.

2008 Plan Improvements:

- Staff alignment to the peaking nature of the business and the specialized skills required for specific programs.
- Reduce dependency on contractors.
- Improve quality standards for work.

M$	2007 fcst	2008	2009	2010
[redacted]				
OM&A *	(13.3)	0.3	4.8	(0.3)
Capital	12.1	20.3	19.2	19.0
Regular Staff	534	690	700	670

**Internal to OPG revenue less costs*

Commercial Services

- Isotope (Cobalt, tritium and Heavy Water) Sales and Services - Market and manage a program for the sale of isotopes products and services for existing and future applications.
- Bruce Lease Management Office - Coordinate, monitor and oversee the contract obligations of OPG and Bruce Power.
- Heavy Water Management - Manage the Heavy Water Inventory for OPG.

M$	2007 fcst	2008	2009	2010
[redacted]				
OM&A	1.5	3.5	3.5	2.2
Regular Staff	8	10	10	10

NGD&S key risks

- Regulatory uncertainty could impact the schedule and estimates for the major NGD projects.
- The availability of skilled labour could also impact the execution of the major NGD projects .
- The overlap in scheduling / execution of the major NGD projects could stress the resource and project management capability.
- Overlapping outages demands (OPG / non-OPG) puts IMS capability at risk and potential for quality of work to suffer.

ONTARIO POWER GENERATION

Updated: 2008-05-21
EB-2007-0905
L-4-2
Attachment 3

2008 -2010 Business Plan Nuclear Operations

Tom Mitchell
Chief Nuclear Officer

Presentation to the Board of Directors
December 13, 2007

CONFIDENTIAL

Business Plan 2008 – Major Objectives

- **SAFETY -** continued focus on high performance.
- **RELIABILITY** :
  - Maintain progress on improving material condition of the operating units and sustaining the improvements.
  - Deliver improved outage scope execution with reduced duration.
- **VALUE FOR MONEY :**
  - getting the right work and parts to the line to improve efficiency.
  - Improve cost structure.
- **HUMAN PERFORMANCE** :
  - Continued improvements in Human Performance & Leadership.
  - Continue to address demographics/knowledge transfer issues.

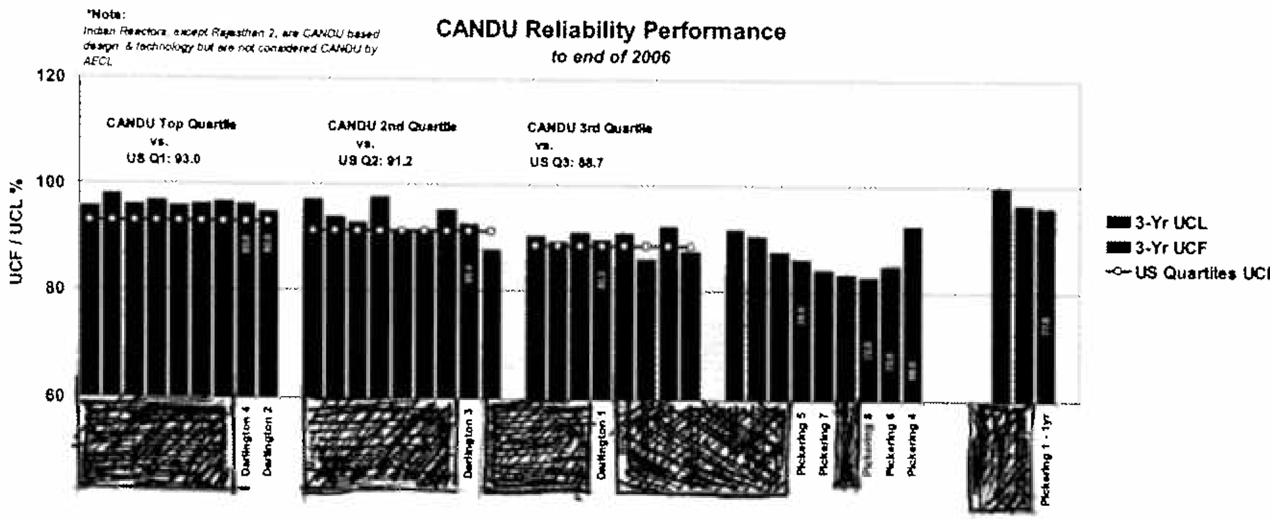
2007 Performance Review

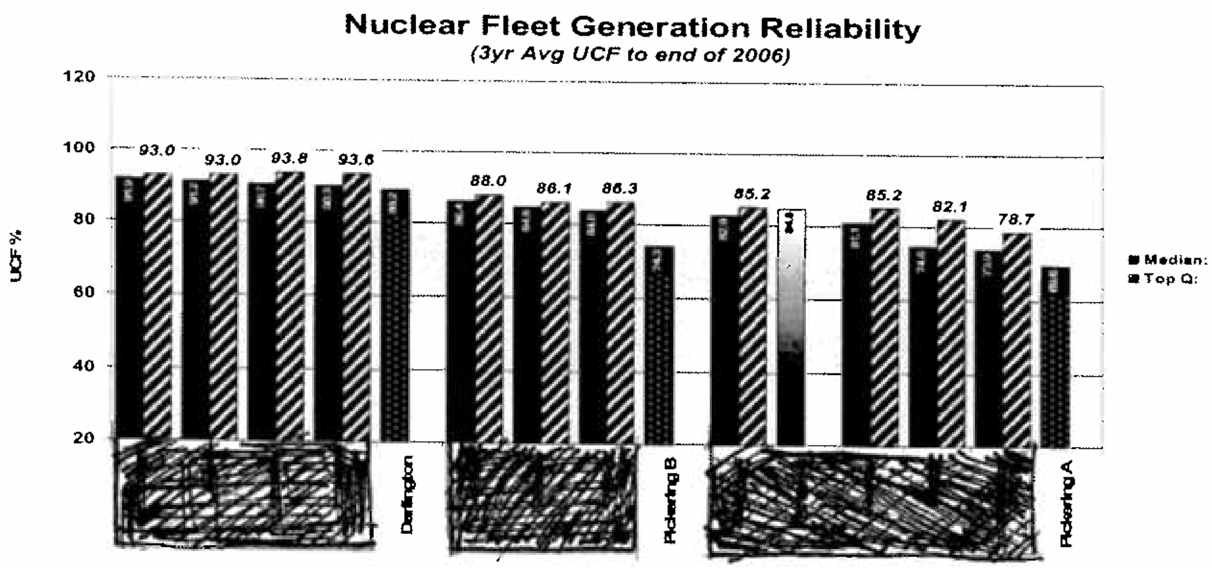
- **Safety :** Continued excellent safety results.
- **Reliability/Asset Health :**
  - Excellent performance from Darlington's (DN) Forced Loss Rate (FLR) and Planned Outages.
  - The resin and Inter-Station Transfer Bus (ISTB) issues had a significant negative impact on performance at Pickering A (PA) and Pickering B (PB).
  - DN achieved the best ever WANO rating & excellent results for Nuclear Performance Index, with Unit 2 attaining maximum 100 points score.
  - Maintenance backlog reduction and overall plant condition improvement is positive at DN, however rate of improvement at PA, PB is lagging.

2007 Performance Review

- **Value for Money :**
  - Despite significant operational issues at all three sites - we were able to keep expenditure levels below budget.
- **Human Performance/Processes** :
  - Significant improvement in Supply Chain. (*eg: Cycle time was 930 days in 2004, it is 80 today).*
  - Significant Improvements in project execution, portfolio definition & control.
  - Outage planning improvements reflect improved work-off rates and workflow. *Challenge is still in dealing with emergent issues.*
  - Enhanced focus on leadership training and accountabilities.

Performance – Generation

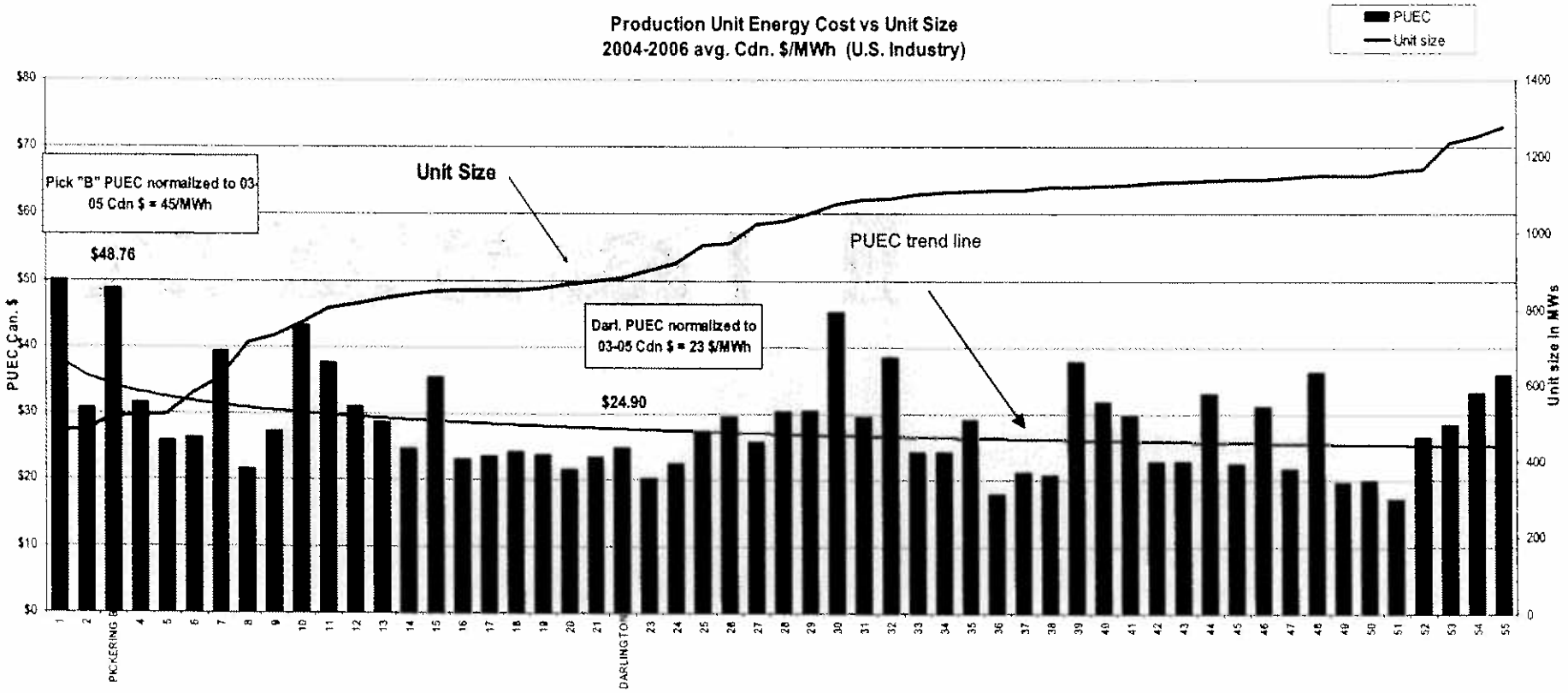




- Two of the DN units are in the top quartile. (3 year avg.).
- The PB units were impacted by the long SLAR outages & higher forced losses from poor material condition. The completion of the 85/5 program and shorter planned outages will improve this performance in the future.
- PA units continue to be impacted by equipment issues resulting from the 7 year shutdown.
- The performance versus ALL *international nuclear* reactors shows the DN units trending to the median of the better performers.

Performance: Cost

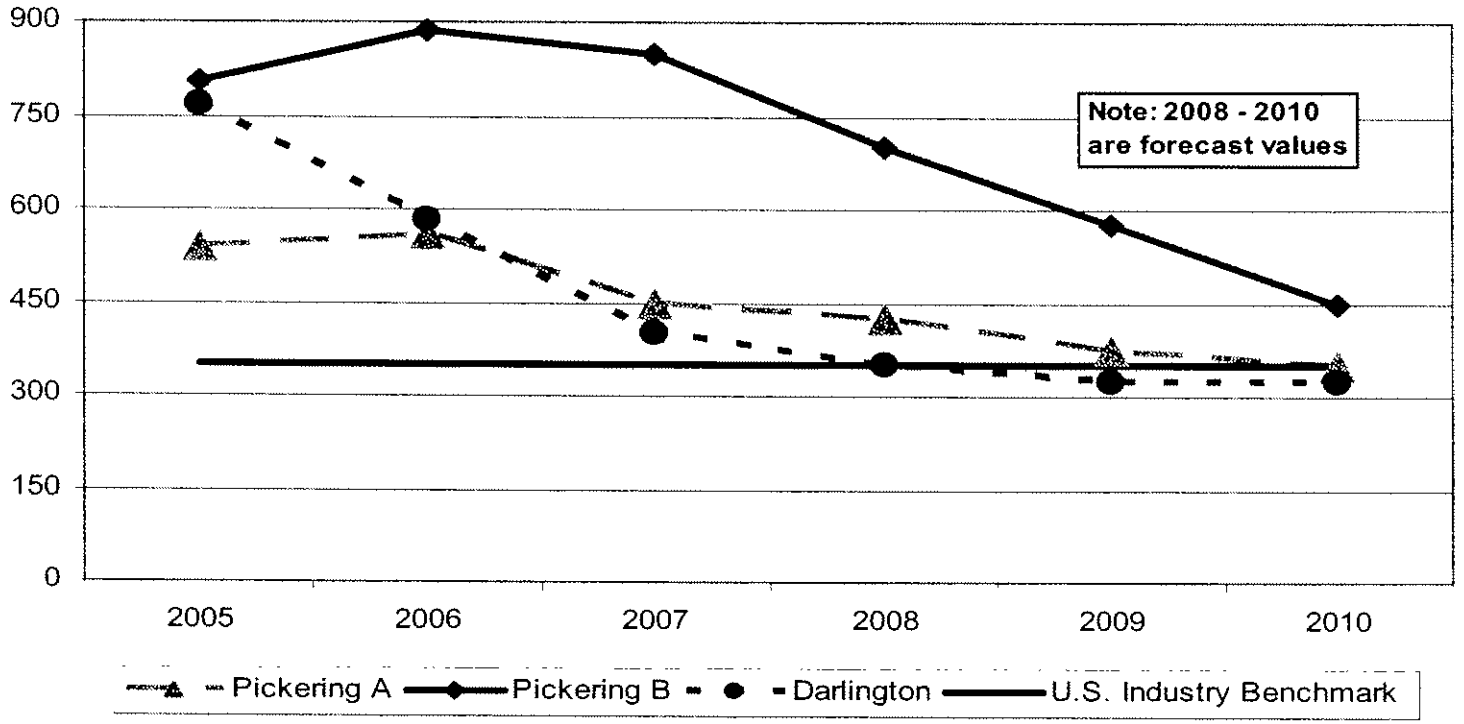
Production Unit Energy Costs (PUEC) in $ / MWh (Cdn) show DN units continue to compare favourably vs PWR/BWR peers *(mid-range size units).* PB's costs will improve as the longer outages and higher costs (SLAR, 85/5) drop off.



Performance: Elective Backlogs

- Since 2005, all the plants have made progress to drive to Industry benchmarks for Online Elective Maintenance Backlogs. Pickering B will achieve its target in the back end of the Plan. The *inflow* of backlogs at PB remain high.
- All Plants will be at industry standard for Corrective backlogs in 2007.

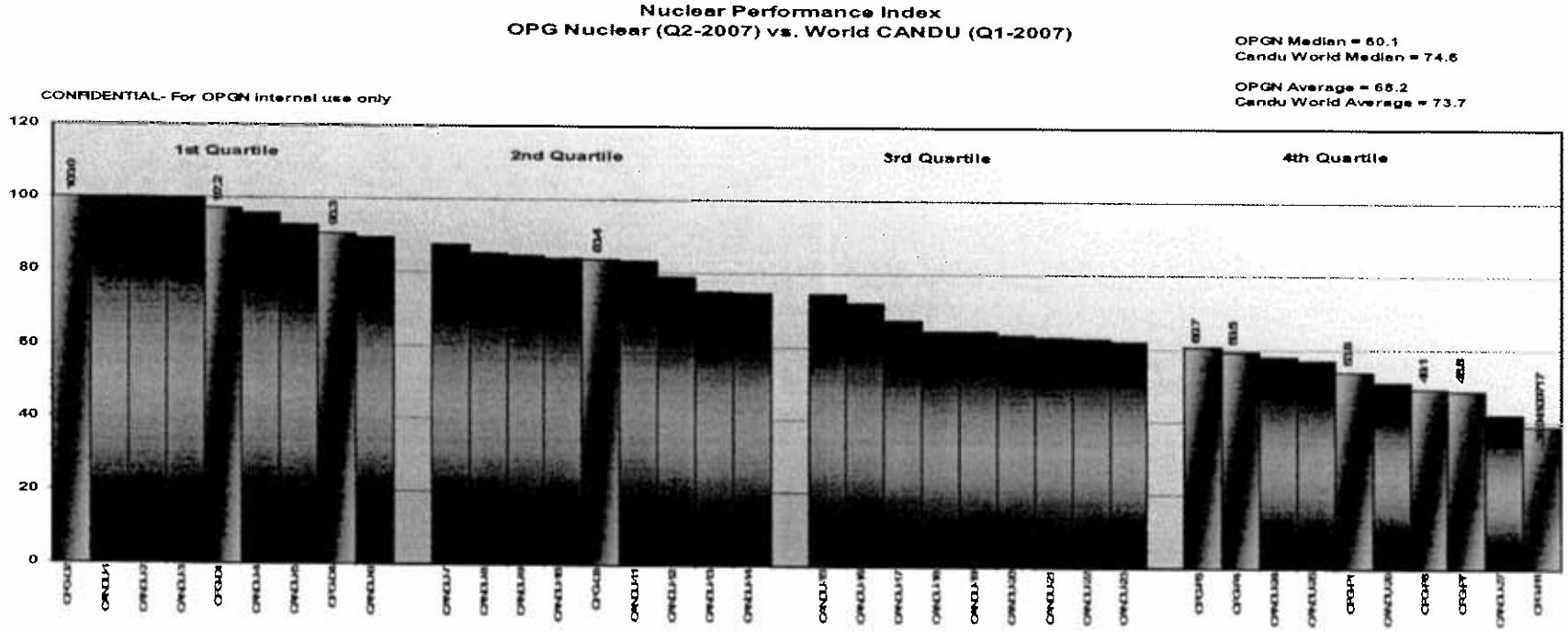
Online Elective Maintenance Backlog work orders per unit
OPG vs US Industry - to Dec 2006
(CANDU data not available)



Performance: Nuclear Performance Index (NPI)

This industry index reflects multi- year performance for 10 key indicators (70 % safety & 30 % reliability). The index is considered a measure of operational excellence.

- Our overall safety performance ranks with the top quartile performers.
- Three DN units currently rank in the CANDU top quartile. The PB and PA units are in the lower quartiles of performance – largely due to a poor ranking in generation performance from long planned outages and high forced losses.



Business Plan 2008 – Operational Strategies

- **Darlington** – Continue improvements and ensure the good performance is sustained – while completing the transition of the 3 year outage cycle in 2008 and successful execution of feeder replacements.
- **Pickering B -** Complete the few outstanding issues for the 85/5 program and ensure that plant performance is sustained to keep all options open pending the life extension decision.
- **Pickering A** – Assess & resolve the reliability issues impacting plant output and execute the major component programs (feeders, turbines).
- Complete the **Safe Storage Project** on PA Units 2 & 3.

Business Plan 2008 - Summary

- This Plan continues with the direction laid out in the 2004 Business Plan.
- Station Vacuum Building outages in 2009 (DN) and 2010 (Pick) - largely account for lower Capability Factors and higher costs and lower contribution margin in those years.
- Fuel costs reflect forecasted significant increases in uranium prices.
- Generation : No significant change in output from the last Plan.

	2007 forecast	2008	2009	2010
Generation (TWh)				
Pickering A	3.7	7.1	7.3	6.9
Pickering B	13.8	15.7	16.0	14.5
Darlington	27.2	28.6	26.5	27.6
Total Nuclear Generation	**44.7**	**51.4**	**49.8**	**49.0**
Costs (M$)				
OM&A *	1,525	1,584	1,599	1,671
Capital *	194	186	180	169
Fuel	115	164	206	246
Decommissioning Provisions	42	64	42	7
* includes P2/P3 safe storage costs				
Contribution Margin (M$)	**582**	**821**	**673**	**507**
Staff (FTEs)	7,061	7,149	6,923	6,771
Key Measures				
Production Unit Energy Costs ($/MWh)	47	43	46	48
Gross Capability Factor	78	89	86	85
Nuclear Performance Index (NPI)	74	78	82	80
Online Elective Maintenance Backlogs/unit	590	505	435	380

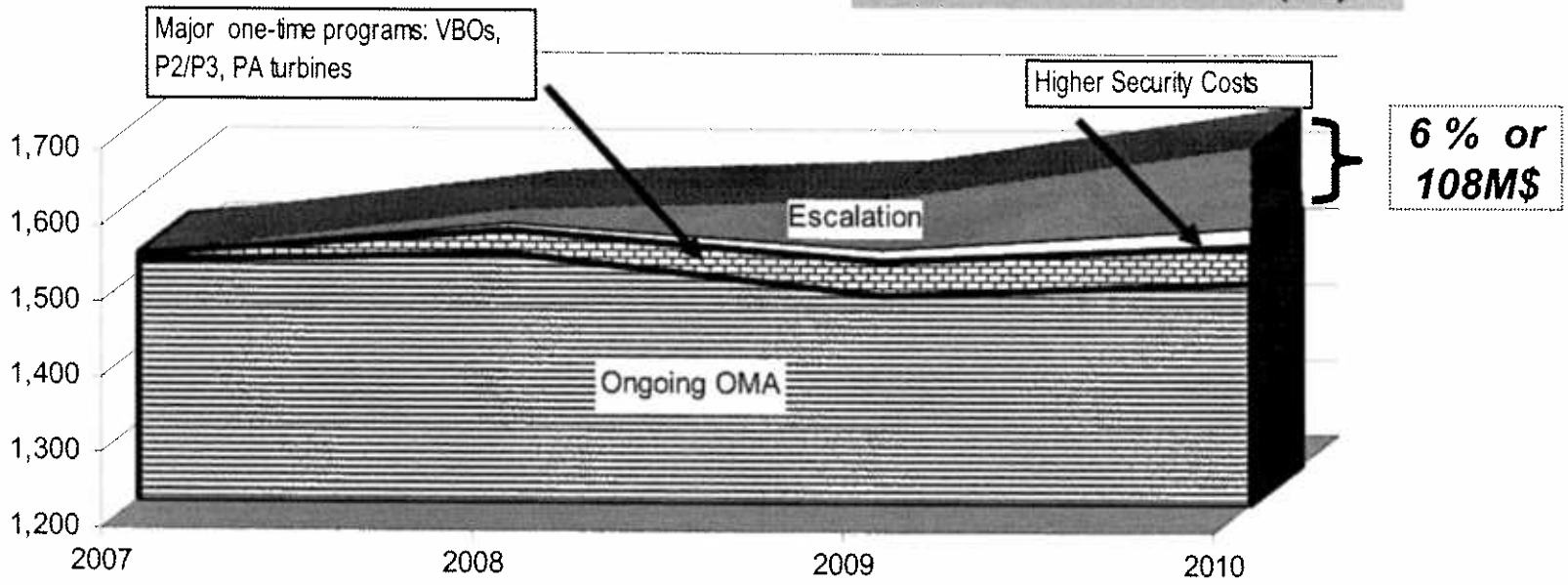
Business Plan 2008 – Planning basis

- Incorporated **Security** enhancements to conform to regulatory standards.
- Addressed material condition issues impacting **reliability at PA.**
- Revised strategy to address **PA Turbine** problems.
- **Feeder Program** optimized based on the latest inspection results.
- Built up **Critical skill** shortages (trainees) especially in Operator and Engineering ranks.
- Restructured **project portfolio** - duly benchmarked and analyzed to ensure that we can improve and sustain our asset performance.
- Built in costs and planning structure to execute 2 *major back to back outages (4 DN units-2009 & 6 Pick units- 2010) for the* ***Vacuum Building.***
- Recognized the delay in certain elements of the **P2/P3 project** – due to the EA requirements.
- Adjusted **DN & PA Forced Loss Rate** expectations - reflecting current performance.
- PB Operations plan does not address refurbishment or extending end of life.

Business Plan 2008 – OM&A

2008/09 largely reflects the delay in some of the P2/P3 work from 2007 to 08/09 & higher Security & PA Turbine costs. Excluding escalation the 2010 OM&A costs would be lower by 108M$.

M$	2007	2008	2009	2010
Total OM&A	**1,525**	**1,584**	**1,599**	**1,671**
Changes - Plan vs Plan	**(31)**	**11**	**46**	**(13)**



Business Plan 2008 - Generation

2009 (DN) & 2010 (Pickering) reductions reflect the major outages for the Vacuum Building Outage (VBO) equating to lost CbF ~ 4 % /year.

	2007	2008	2009	2010	
Generation - CbF (%)	**78.0%**	**88.7%**	**86.2%**	**84.9%**	
Generation Revenue M$	**2,213**	**2,543**	**2,465**	**2,424**	
Changes - Plan vs Plan M$	**(254)**	**15**	**(19)**	**11**	
Forced Loss Rate					**CANDU Top Q**
Pickering A	**49.4%**	**13.0%**	**10.0%**	**8.0%**	
Pickering B	**11.3%**	**6.2%**	**5.0%**	**5.0%**	**1.7%**
Darlington	**0.8%**	**2.2%**	**2.0%**	**1.7%**	
Capability Factor					
Pickering A	**42.4%**	**79.0%**	**81.4%**	**76.9%**	
Pickering B	**76.9%**	**86.6%**	**88.6%**	**80.1%**	**92.0%**
Darlington	**88.7%**	**92.7%**	**86.2%**	**89.9%**	

Business Plan 2008 - Staff

Regular Staff	2007 headcount at YE	2008	2009	2010
		Full Time Equivalent		
Pickering A (excl.P2/P3)	1,005	1,048	1,020	1,007
Pickering B	1,587	1,630	1,572	1,557
Darlington	1,751	1,697	1,657	1,630
Engineering & Mode	663	696	675	665
Nuclear Programs & Training	1,276	1,358	1,412	1,487
Nuclear Supply Chain	448	424	377	357
Performance Improvement & Nuclear Oversight	68	68	65	65
CNO Office	2	3	3	3
Safe Storage - P2/P3	261	226	142	0
Total Staff	**7,061**	**7,149**	**6,923**	**6,771**
Variance to 2007 Plan	*(240)*	*174*	*274*	*201*
PA *- Feeder replacement team, back to back outage team, VBO, initiatives*		*27*	*38*	*25*
P2/P3 - *delay of project caused by EA*		*43*	*105*	*0*
PB *- Planned improvement initiative reductions and less support to project portfolio*		*(16)*	*(21)*	*(27)*
DN *- Mtce staff requirement partly offset by organization realignment and station support*		*41*	*19*	*(4)*
NPT *- fire code and life assurance compliance, engineering training, work force plan and security*		*90*	*140*	*213*
Other support functions *- efficiency improvement*		*(10)*	*(8)*	*(6)*
Total Variance		***174***	***274***	***201***

Major Risks

- **Technology:**
  - Feeder replacements (#, duration and cost) could change through the course of the BP based on inspection findings over the next year.
  - Heat Transport Aging – *could* result in a DN derate *mid BP* period, if CNSC do not accept analysis. Funding set aside for HT aging study .
  - Fuel Channels at DN - accelerated EOL due to rolled joint findings (joint flaws).
  - Discoveries from future calandria vault inspections at Pickering A could result in higher outage duration and costs.
  - The 2010 Vacuum Building outage at Pickering could have significant impacts if degradation is detected in the fibre glass components.
  - Environmental Qualification - Potential for significant investments if deficiencies determined at DN.
- **Regulatory** - Risk around changing regulatory requirements, especially in Security, also around assessment of equipment aging and its impact on Nuclear Safety margins.
- **Human Resource:**
  - Demographic profile and shrinking replacement pool challenge ability to sustain performance. In the next 5 years, a significant part of the highly skilled trades and technical staff have the option to retire. Critical skills (assessors etc) requirement to address current and future plant (incl new build) needs.

Darlington

Business Plan 2008 - Darlington

Darlington is currently ranked as one of the top performing CANDU plants in the world; the vision embodied in this Plan is to deliver sustainable performance that will rank Darlington as one of the top performing nuclear plants in the world.

1. **Improved Plant Reliability (including the Tritium Removal Facility) through:**
   - Focus on maintenance backlog reductions and work that improves system health. Enhancements going forward ensure a focus on the equipment most important to safety and reliability through Preventative Maintenance Optimization, Focus on Critical Components, Plant Health Plans.
2. **Improved Planned Outages through:**
   - Continued implementation of the 36 month outage cycle in 2008, pursue scoping of a 38 day outage duration initiative, execute initiative to lower tritium levels in the vault to improve productivity.
3. **Improved Equipment Life Cycle Management through:**
   - Addressing heat transport system aging, Feeder and Reactor Maintenance, Fuel Handling capability, Turbine Cracking, and the Vacuum Building outage in 2009.
4. **Improved Leadership & Human Performance**

2008 – 2010 Key Deliverables – Darlington

	2005 Actual	2006 Actual	2007 Proj.	2008	2009	2010
Net Electrical Production (TWh)	27.5	26.9	27.2	28.6	26.5	27.6
Gross Capability Factor (%)	90.0	88.0	88.7	92.7	86.2	89.9
Planned Outage days	117	121	145	75	175	125
Forced Loss Rate (%)	1.3	3.2	0.8	2.2	2.0	1.7
Nuclear Performance Index	95.3	91.6	92.2	95.7	92.9	92.1
Plant Condition Index	64.7	67.0	67.3	68.5	70.0	70.0
Online Elective Maint Backlogs (workorders/unit)	767	584	400	350	325	325
Online Corrective Maint Backlogs (workorders/unit)	20	14	15	15	15	15
Human Performance: Event Free Resets	11	10	8	8	8	8
OM&A - Base & Outage (M$)	278	353	406	394	395	437
Projects - Total OM&A & Capital (M$)	79	58	71	97	98	92
Minor Fixed Assets (M$)	3	4	4	4	4	4
Production Unit Energy Cost ($/MWh)	24	28	32	30	34	35
Total Regular Staff	1,838	1,727	1,751	1,697	1,657	1,630

Business Plan 2008 – Pickering B

This Plan identifies the work necessary to transition Pickering B towards achieving and sustaining capacity factors of 85-90 % built on Safety, Leadership effectiveness and alignment in workforce behaviors.

1. **Improved Human Performance through:**
   - Maintenance Quality (lower rework), Improved Vendor Oversight (vendor collaboration and sr. management oversight), Error Reduction Tools (Field Simulators, Field Training).
2. **Improved Planned Outages through:**
   - Improvements in Planning and Scope Control, Outage Control Centre performance, Critical Activity Readiness and First Line Management ownership of schedule.
3. **Improved Forced Loss Rate performance through:**
   - Focusing on known equipment performance issues, Common Mode events and single point vulnerabilities, Human Performance events that impact forced losses including maintenance work practices and vendor oversight.
4. **Improved Equipment Reliability Plan to sustain performance through :**
   - Focussed system health modifications, implementing the Preventative Maintenance Optimization Program and accelerated implementation of the elective maintenance backlog reduction program.

Pickering B

2008 – 2010 Key Deliverables – Pickering B

	2005 Actual	2006 Actual	2007 Proj.	2008	2009	2010
Net Electrical Production (TWh)	13.8	13.5	13.8	15.7	16.0	14.5
Gross Capability Factor (%)	77.0	75.1	76.9	86.6	88.6	80.1
Planned Outage days	269	275	185	112	98	229
Forced Loss Rate (%)	4.6	6.9	11.3	6.2	5.0	5.0
Nuclear Performance Index	54.0	63.8	62.6	67.5	78.8	75.1
Plant Condition Index	54.0	59.6	63.9	66.0	67.0	68.0
Online Elective Maint Backlogs (workorders/unit)	805	885	850	700	575	450
Online Corrective Maint Backlogs (workorders/unit)	148	71	25	25	25	25
Human Performance: Event Free Resets	16	10	6	8	8	8
OM&A - Base & Outage (M$)	330	362	362	362	361	390
Projects - Total OM&A & Capital (M$)	97	120	81	49	38	29
Minor Fixed Assets (M$)	1	2	2	2	2	2
Production Unit Energy Cost ($/MWh)	56	55	55	50	50	57
Total Regular Staff	1,555	1,587	1,587	1,630	1,572	1,557

Pickering A

Business Plan 2008 - Pickering A

This Plan identifies all the work required to transition Pickering A to improvements in reliability in order to provide acceptable capacity factors for the future.

1. **Improve Human Performance related FLR through** increased focus on Procedural Use and Adherence and Engineering Rigor.
2. **Improve Plant Reliability by addressing Material Condition related Forced losses through:**
   - Implementation of Reliability Restoration Plan.
   - Reduction of elective maintenance backlogs.
3. **Improve Leadership and Organizational Effectiveness through:**
   - Continued communications focusing on personal and group accountability.
   - Continued FLM and Stratum III workshops to improve leadership skills.
   - Sustaining management involvement in field activities via coach the coach.
4. **Reconstitute Design Basis for the Low Margin Safety Systems through:**
   - Assessing the post U1/U4 restart issues identified in the extent of condition reports.
   - Implementing a plan to complete the outstanding low margin issues.

In addition, Pickering A will continue to implement the Unit 2/3 Safe Storage Project.

2008 – 2010 Key Deliverables – Pickering A

	2005 Actual	2006 Actual	2007 Forecast	2008	2009	2010
Net Electrical Production (TWh)	3.6	6.4	3.7	7.1	7.3	6.9
Gross Capability Factor (%)	69.7	71.8	42.4	79.0	81.4	76.9
Planned Outage Days	-	95	114	67	70	120
Forced Loss Rate (%)	30.1	17.2	49.4	13.0 * *(3% NOP)	10.0	8.0
Nuclear Performance Index	60.2	63.5	63.4	61.5	65.5	66.6
Plant Condition Index	-	66.9	57.0	58.0	60.0	62.0
Online Elective Maint Backlogs (workorders/unit)	541	558	450	425	375	350
Online Corrective Maint Backlogs (workorders/unit)	8	17	20	20	15	10
Human Performance: Event Free Resets	4	5	6	6	5	4
OM&A - Base & Outage (M$)	182	212	241	253	269	286
Projects - Total OM&A & Capital (M$)	30	50	65	38	29	29
Minor Fixed Assets (M$)	2	1	2	2	2	2
Production Unit Energy Cost ($/MWh)	114	76	126	76	77	84
Total Regular Staff	995	1,010	1,005	1,048	1,020	1,007

Pickering A Units 2 and 3 Safe Storage Project

Pickering A Units 2 and 3 Safe Storage Project

Objectives

- Place Units 2 and 3 in safe state for remainder of station life plus 30 years prior to dismantling and ensure Units 1 and 4 continue to operate safely.
- Reconfigure the station (including the control room) as a two unit station.
- Disposition regulator commitments from the restart project.
- Complete the above within the Budget Quality Estimate Revision 1 and on schedule.
- Meet the standards for Nuclear, Radiological, Industrial Safety and environmental protection.

Project Status

- The need to conduct an Environmental Assessment (EA) has delayed the project closure 12 months.
- Engineering design work is complete on Unit 2. Unit 3 engineering design is progressing as scheduled and is expected to be complete in December 2007.
- Unit 2 defueling completed on May 28th. Unit 3 fuelling machine refurbishment is complete and defueling commenced September/07, with expected completion by March/08.
- Work is continuing on those field activities currently authorized under the Pickering A Power Reactor Operating License (PROL) and/or the Return to Service EA.

Pickering A Units 2 and 3 Safe Storage - Costs

M$	Life to Date 2007	2008	2009	2010	Total
Decommissioning Provision	102.0	64.5	42.2	2.1	210.8
Capital	8.6	17.0	10.1	0.0	35.7
OM&A	11.6	26.7	14.1	0.0	52.4
Total	122.2	108.2	66.4	2.1	298.9
2007 Business Plan					271.2

Decommissioning

Increase of $32.7M due to project extension resulting from EA requirements. Primarily continuation additional costs of lay-up staff, support staff and indirect cost extensions, as well as, increased share of engineering cost.

Capital

Decrease of $6.2M due to reduction of share of engineering costs. Increase in 2008 and 2009 spending reflects delayed work due to impact of EA requirement.

OM&A

Increase of $1.2M due to higher support and indirect costs. Increase in 2008 and 2009 spending reflects delayed work due to impact of EA requirement.

Nuclear Operations - Conclusion

- ✓ Significant effort involved in identifying key risks, their mitigation and the realism in the targets.
- ✓ The business continues to drive out inefficiencies without compromising safety standards and long term equipment deterioration.
- ✓ We believe that this is a challenging yet achievable Plan.

CME Interrogatory #3

Ref: Ex. C1-T1-S1

Issue Number: 2.1
Issue: What is the appropriate capital structure for OPG's regulated business for the 2008 and 2009 test years? Should the same capital structure be used for both OPG's regulated hydroelectric and nuclear businesses? If not, what capital structure is appropriate for each business?

Issue Number: 2.2
Issue: What is the appropriate return on equity (ROE) for OPG's regulated business for the 2008 and 2009 test years? Should the ROE be the same for both OPG's regulated hydroelectric and nuclear businesses? If not, what is the appropriate ROE for each business?

Interrogatory

OPG has confirmed that for the 2005 to 2007 fiscal years, it has operated under the auspices of the capital structure (45% equity and 55% debt) that was reflected in information provided by OPG to the province for use in setting the interim period payment amounts. For that same period, CME understands that OPG has operated under the auspices of a 5% ROE based upon public pronouncements by the Province.

(a) What is OPG's understanding of the rationale on which its shareholder relied to establish the ROE of 5% and the capital structure of 45% equity and 55% debt?

(b) Please list and produce all documents, including electronic communications and power point presentations in OPG's possession, relating to the determination by its shareholder of the 5% ROE and the capital structure of 45% equity and 55% debt.

(c) Please list and describe each of the criteria which were considered by OPG's shareholder in determining that a 5% ROE and a capital structure of 45% equity and 55% debt were reasonable.

Response

a) The only information that OPG has with respect to the rationale for this decision is the backgrounder document "Ontario Government Announces Prices on Electricity from Ontario Power Generation" dated February 23, 2005. OPG is aware that a 10% ROE and a capital structure of 45% equity and 55% debt were considered appropriate by the financial advisors engaged by the Province to assist them with establishing the current payment amounts, as noted in their report filed in response to interrogatory L-2-010.

b) In preparation for the establishment of interim rates, OPG provided to the Province financial information based on a capital structure of 55%/45% debt/equity and a 10% ROE. A table setting out the components of the provided information can be found on the OEB's website at:

http://www.oeb.gov.on.ca/documents/cases/EB-2006-0064/oebconsultation_finance_flong_190506.pdf.

At the request of the Province, OPG also provided a sensitivity case for 5% ROE, which resulted in a 50% reduction in the ROE amounts presented in the material on the OEB website. OPG has not undertaken the requested search of its records as this would require a significant amount of effort on its part. OPG has provided in this response all of the relevant information that it has available.

c) See response to a) above.

CME Interrogatory #4

Ref: Ex. C1-T1-S1

Issue Number: 2.1
Issue: What is the appropriate capital structure for OPG's regulated business for the 2008 and 2009 test years? Should the same capital structure be used for both OPG's regulated hydroelectric and nuclear businesses? If not, what capital structure is appropriate for each business?

Issue Number: 2.2
Issue: What is the appropriate return on equity (ROE) for OPG's regulated business for the 2008 and 2009 test years? Should the ROE be the same for both OPG's regulated hydroelectric and nuclear businesses? If not, what is the appropriate ROE for each business?

Interrogatory

For the fiscal years 2005 to 2007, OPG has operated under the auspices of a capital structure comprised of 45% common equity and 55% debt, with a ROE of 5%. For the 2008 and 2009 fiscal years, OPG proposes a capital structure comprised of 57.5% common equity and 42.5% debt, with a ROE of 10.5%.

(a) To what extent will the revenue deficiency for OPG's prescribed facilities for the 21 month test period starting April 1, 2008, to December 31, 2009, reduce if the capital structure is maintained at 45% equity and 55% debt? Please provide the resulting revenue deficiency reduction for the regulated hydroelectric business segment and the regulated nuclear business segment separately.

(b) To what extent will the revenue deficiency for OPG's prescribed facilities for the 21 month test period starting April 1, 2008, to December 31, 2009, reduce if the ROE claimed by OPG of 10.5% is reduced to 5%? Please provide the resulting revenue deficiency reduction for the regulated hydroelectric business segment and the regulated nuclear business segment separately.

(c) Please show the extent to which revenue the deficiency will change with every 100 basis points of ROE above or below 5%. Please provide the resulting revenue deficiency reduction for the regulated hydroelectric business segment and the regulated nuclear business segment separately.

(d) To what extent will the revenue deficiency for OPG's prescribed facilities for the 21 month test period starting April 1, 2008, to December 31, 2009, reduce if the capital structure is maintained at 45% equity and 55% debt and the ROE is maintained at 5%? Please provide the resulting revenue deficiency reduction for the regulated hydroelectric business segment and the regulated nuclear business segment.

Response

a) In Table 1, revenue requirement impacts are provided on an unmitigated basis and do not reflect any application of changes in tax losses.

Table 1

	Nuclear	Hydroelectric	All Regulated
Test Period Revenue Deficiency - $millions			
Updated Submission	785	244	1,030
10.5% ROE and 42.5/57.5 D/E structure			
Impacts of Alternate ROE and Capital Structure Scenarios - $ millions Increase/(decrease)			
a Maintain 55/45 D/E structure	(47)	(39)	(86)
b Maintain ROE at 5%	(255)	(214)	(470)
d Maintain 55/45 D/E and 5% ROE	(247)	(207)	(454)

b) See Table 1 provided in response to part a).

c) L-3-57 indicates the impacts on Nuclear and Hydroelectric revenue requirements of ROEs ranging from 9.5 percent to 7.5 percent. From this table the sensitivity of a 0.5 percent (500 basis point) change in ROE can be imputed as follows:

Table 2

Impact on Revenue Requirements	Nuclear	Hydroelectric	All Regulated
Impact of 0.5% reduction in ROE	(23)	(19)	(43)

The impact of a 100 basis point change would be approximately one-fifth of the values shown above.

d) See Table 1 provided in response to part a).

CME Interrogatory #5

Ref: Ex. D1-T1-S1

Issue Number: 3.1
Issue: Are the costs and financial commitments OPG is seeking to recover under section 6(2)4 incurred to increase the output of, refurbish or add operating capacity to a prescribed facility?

Interrogatory

OPG's 2007 Actual Capital Expenditure was $84.3M versus the 2007 Budget of $229.4M. The reason for this discrepancy relates to delay experienced with the Niagara Tunnel Project which was $144.6M under budget in 2007.

(a) Please produce all reports, updates or memoranda presented to OPG's President, CEO, Board of Directors and/or senior management, by OPG staff or consultants, including PowerPoint presentations, that address delays with the Niagara Tunnel Project and/or the under spending of the 2007 budget.

(b) Please produce all communications from OPG's President, CEO, Board of Directors and/or senior management to OPG staff with respect to the 2007 Actual Capital Expenditure of $84.3M versus the 2007 Budget of $229.4M.

Response

a) In general, since the information contained within such reports is sensitive and may be the subject of future litigation, OPG declines to provide the requested information. Currently, OPG believes that OPG's project cost will be within the approved budget of $985M, which includes a contingency to cover OPG risks associated with possible differing subsurface conditions.

b) There have been no communications from OPG's President, CEO, Board of Directors and/or senior management to OPG staff with respect to the 2007 Actual Capital Expenditure of $84.3M versus the 2007 Budget of $229.4M.