Board Staff Interrogatory #011

Ref: Ex. D2-T2-S2

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

OPG is seeking approval to include CWIP in rate base for the Darlington Refurbishment Project, effective March 1, 2011 and refers to *The Report of the Board on The Regulatory Treatment of Infrastructure Investment in Connection with Rate Regulated Activities of Distributors and Transmitters in Ontario* ("Report"), dated January 15, 2010 in support of its request. Please explain why OPG believes that the Report, which speaks to Distributors and Transmitters), should also apply to nuclear generators. Did OPG consider cost recovery mechanisms other than CWIP? If so, please identify the other options and explain why CWIP was selected.

Response

OPG's responses to the three questions asked in this interrogatory are provided separately below as items 1), 2) and 3).

In addition, please note that OPG proposes to include Darlington Refurbishment CWIP in rate base effective January 1, 2011, not March 1, 2011 as is suggested above.

1) The OEB's Report on the Regulatory Treatment of Infrastructure Investment represents an important addition to the Province's regulatory framework. The reasons that OPG believes the mechanisms described in that Report, including CWIP in rate base, should be available to it are provided below:

   - Making these mechanisms available to OPG would be consistent with the OEB Chair's original vision for the infrastructure consultation, namely that "The magnitude of current and future utility infrastructure investment has led me to consider how the OEB could create conditions which would foster timely investment by utilities in required infrastructure." (Statement from the OEB Chair dated April 3, 2009).

   - It would also be consistent with the Statement from the OEB Chair dated June 1, 2009, which was referenced in the Report in both the Executive Summary (page 1) and in the Introduction section (page 2).

     In his June 1, 2009 statement the OEB Chair stated that:

> The cost recovery initiative will consider more innovative approaches to cost recovery for electricity infrastructure projects. Availability of the mechanisms will be associated primarily with investments relating to the accommodation of renewable generation and smart grid development. **The cost recovery mechanisms developed through this initiative may also be available in relation to other types of projects in appropriate circumstances.** (Emphasis added)

- Making CWIP in rate base available for the Darlington Refurbishment project would be consistent with the reasons that the OEB advanced in its Report (pages 14-15) where it approved this mechanism, namely that it would: provide for a smoothing of rates thereby mitigating rate impact that might otherwise take place when a large new plant is placed into service; reduce borrowing costs for the utility constructing the large new plant; and, reduce a project's total net present value cost.

- Making CWIP in rate base available to OPG would be consistent with regulatory developments in a number of states in the United States as noted by Charles River Associates in their report (see Ex. D4-T1-S1) and as acknowledged by Board staff in their discussion paper at page 23.

2) No, OPG did not consider cost recovery mechanisms other than CWIP.

3) Not applicable.

Board Staff Interrogatory #012

Ref: Ex. B1-T1-S1, page 4, lines 15-18

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

The evidence states that the Darlington Refurbishment CWIP balance of $72.9M as of December 31, 2010 and the annual capital budget of $105.2M in 2011 and $255.8M in 2012 are included as in-service additions for the purposes of establishing Gross Plant balances and rate base amounts described in Exh B3-T3-S1 Table 2.

Exh B3-T3-S1 Table 2 shows no in-service dollar amounts, related to Darlington Refurbishment CWIP, in 2010 while the opening balance for 2011 shows $72.9 M. Please explain this discrepancy. Please calculate the impact on the Revenue Deficiency if the $72.9 M were treated as in-service in 2011 rather than subsumed in the opening balance for 2011.

Response

There is no discrepancy. Darlington Refurbishment's capital expenditures of $72.9M are forecast to be incurred during 2010. However, since OPG's Darlington Refurbishment CWIP proposal only becomes effective at the beginning of 2011 there are no Darlington Refurbishment CWIP amounts in rate base during 2010. Hence the closing rate base balance for 2010 for Darlington Refurbishment CWIP is properly at zero, as Ex. B3-T3-S1 Table 2 shows.

Given that the $72.9M is forecast to be incurred during 2010 and given that OPG's Darlington Refurbishment proposal becomes effective at the beginning of the test period, it is appropriate to include this amount in the opening rate base balance for 2011, as shown in Ex. D2-T2-S1 Table 1, and not as coming into service in 2011.

AMPCO Interrogatory #004

Ref: Ex. D2-T2-S2, page 8
Ex. A2-T3-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

OPG asserts that "clearly, including of CWIP in rate base would help these ratings." Please describe which specific challenges or weaknesses identified in the credit reports would be alleviated by including CWIP in rate base and to what extent OPG's ratings would improve as a result, citing specific support for your conclusions in the credit reports or as otherwise provided to OPG by the credit ratings agencies.

Response

The referenced statement made by OPG on page 8 of Ex. D2-T2-S2 is consistent with similar statements made in the Charles River Report found at Ex. D4-T1-S1, section 3.2. In general, this statement speaks to the fact that directionally, the inclusion of Construction Work in Progress ("CWIP") in rate base for significant capital projects is expected to help support or improve OPG's credit ratings over the status quo.

The most recent Dominion Bond Rating Service ("DBRS") and Standard and Poor's ("S&P") credit ratings for OPG are found at Ex. A2-T3-S1. Below are excerpts from these reports that reference specific challenges or weaknesses faced by OPG that would be aided by the inclusion of CWIP in rate base.

DBRS (Ex. A2-T3-S1, Attachment 1)
Page 1 of this report indicates that OPG's significant capital program represents a challenge to its credit rating. Specifically at page 3 of the report, it states that:

> OPG has a significant capital expenditure program underway and this is likely to increase given the new nuclear plants and the refurbishments of existing facilities under consideration. It is expected that OPG will not undertake any major capital projects without having its financing and a cost-recovery mechanism in place, thus minimizing the financial risks.

At page 2 of its report, DBRS states that:

> Over the next few years, it is expected that OPG will generate sufficient cash flow from operations to fund nuclear waste storage and decommissioning funding

requirements, along with sustaining capital expenditures, but it will require debt financing to fund development capital expenditures and refurbishments.

Inclusion of CWIP in rate base would improve OPG's cash flow between 2011 and 2021. All other things being equal, improvement in cash flow would lead to improved credit ratings.

S&P (Ex. A2-T3-S1, Attachment 2)

S&P at page 14 of its report states: "In 2010, we expect a further softening in cash flow metrics to below target". Later on in the same paragraph S&P states: "Dim prospects of recovering long-term cash flow strength at or above target in 2011 (due to sustained low prices forecast for 2011, poor asset performance, or a poor regulatory outcome for 2011) could negatively affect OPG's stand-alone credit profile and the ratings". OPG's proposal to include CWIP in rate base would improve cash flow in the 2011 – 2021 period and would help address some of the concerns expressed by S&P.

AMPCO Interrogatory #005

Ref: Ex. D2-T2-S2

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

a) Please indicate whether OPG considered a construction finance alternative to CWIP where the utility was simply allowed to expense interest for the project and not including return on investment for assets not yet in service.

b) Please provide the NPV of the revenue requirements associated with the Darlington Refurbishment Project showing all calculations and assumptions based on the approach OPG proposes for accelerated recovery, expensing interest only during construction, and the standard regulatory recovery. Please calculate two scenarios, one using discount rates equal to OPG's WACC and another using a discount rate of 10%.

Response

a) No.

b) Please see response to the Interrogatory L-14-004. In that response OPG has provided the costs recovered from the ratepayers for two illustrative examples: $6B and $10B project cost (overnight 2009 dollars before interest during construction ["IDC"]) for the proposed Construction Work In Progress ("CWIP") and current regulatory options. That response also provided the present value ("PV") of recovered costs calculated at OPG's 7.6 per cent pre-tax weighted average cost of capital. Using the same assumptions as in Ex. L-14-004, the PV results at a 10 per cent discount rate as well as an additional case where OPG recovers IDC only are summarized in Table 1.

Table 1 – PV of Recovered Costs (in 2009 $B)

Capital Cost (Before IDC) ($B)	**6.0**		**10.0**	
Discount Rate (Pre-Tax) (%)	**7.6**	**10.0**	**7.6**	**10.0**
1. Proposed CWIP ($B)	3.4	2.2	5.6	3.7
2. OPG Recovers IDC When Incurred ($B)	3.3	2.1	5.4	3.5
3. Current Regulatory Treatment ($B)	3.2	2.0	5.3	3.4

Witness Panel: Deferral and Variance Accounts, Payment Amounts and Regulatory Treatments
Nuclear Refurbishment

AMPCO Interrogatory #006

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

a) Please identify the cost to OPG for CRA's services with respect to regulatory matters, including without limitation the costs of preparing the report included as evidence.

b) Please provide a curriculum vitae for Mr. Luciani. Please include copies of all testimony or other publications Mr. Luciani has authored or co-authored dealing with CWIP in rate base.

c) For Mr. Luciani, please identify all the jurisdictions in the US that currently prohibit CWIP in rate base for the purposes of electric utility regulation.

d) For Mr. Luciani, with reference to the accelerating decline in load since 2005, please comment on the element of your opinion that rests on the view that CWIP in rate base is justified by the need to "serve new load".

e) For Mr. Luciani, with reference to OPG's status as a government-owned enterprise, the role of government regulations and directives in driving regulatory and business decisions of OPG and the OEB, and OPG's specific financing experience whereby large projects are directly financed by government entities with provincial-backed credit, please comment on the element of your opinion that rests on the view that CWIP in rate base is justified by a need for utilities to have "greater regulatory certainty".

f) For Mr. Luciani, please provide a quantitative estimate with all assumptions documented to support your opinion that CWIP in rate base is "beneficial to Ontario ratepayers."

g) For Mr. Luciani, in considering arguments against including CWIP in rate base, please comment on the concern that CWIP in rate base, by allowing utilities to potentially profit from delays and cost overruns, invites a moral hazard.

h) For Mr. Luciani, with regard to your reliance in your opinion on the rate smoothing attributes of CWIP in rate base, please comment on how the phased in-service dates of the Darlington refurbishment project naturally smooth rates under a conventional regulatory approach to investment cost recovery.

Witness Panel: Deferral and Variance Accounts, Payment Amounts and Regulatory Treatments

Response

a) The cost of preparing the report and evidence was $31k. As the regulatory proceeding is currently in progress the cost of all regulatory services will not be known until the proceeding is completed.

b) Please see Attachment 1 for Mr. Luciani's curriculum vitae. Mr. Luciani has not produced previous testimony or authored or co-authored any publications dealing with Construction Work in Progress ("CWIP") in rate base.

c) Mr. Luciani has not specifically researched the CWIP in rate base activity for states other than those specifically discussed in the CRA paper, but that it is his general understanding that CWIP in rate base is not generally permitted in these other states.

d) In Mr. Luciani's opinion, as a general matter, a decrease in the rate of load growth will lead to fewer generation additions being required. However, to the extent that refurbishments and new investments are still needed, the benefit of CWIP in rate base for these investments continues to apply. Further, in the absence of new load, the issue of inter-generational equity becomes less of a concern.

e) It is Mr. Luciani's understanding that OPG has a commercial mandate from its shareholder to operate on a financially sustainable basis and maintain the value of its assets. Inclusion of CWIP in rate base is consistent with this commercial mandate. As noted in the CRA paper (page 10), even for utilities with governmental support for their financing, a significant mismatch between utility cash flow and revenues can lead to credit quality concerns, and, as such, stand-alone consideration of the utility's operation and risk is an important control mechanism for maintaining credit quality. To the extent that greater regulatory certainty is important for a privately-owned utility, it is important for a government-owned enterprise to have such a commercial mandate.

f) Mr. Luciani has not performed a quantitative analysis for Ontario. His conclusion is based on the regulatory activity in the United States as discussed in the CRA paper in which CWIP in rate base has been deemed beneficial to customers in supporting the construction of significant capital investments.

g) As Mr. Luciani noted in the CRA paper:

> If necessary, disallowances can also be used by regulatory agencies regardless of whether CWIP has been put into rates. Prudence disallowances are typically for much less than the full amount of a new baseload plant. CWIP in rate base will only recover a portion of the new plant during the construction period, leaving a large portion to be placed into rate base at the time of in service. Thus, the regulatory agency will continue to have a large amount of control and flexibility in deciding the ultimate rate treatment for a new asset.

In short, institution of CWIP in rate base does not decrease regulatory control of the rate recovery process, and the construction monitoring program that might be instituted by the regulatory body in conjunction with CWIP in rate base could well improve the oversight process.

h) Mr. Luciani has not seen the specifics of the Darlington refurbishment costs and timing. Phased in-service dates can provide some smoothing of the rate increases needed for a large project. However, there can continue to be a long construction period with significant financing needs prior to the first project in-service date. In effect, each in-service project date can be considered an individual large project, the impact of which would be additionally and beneficially "smoothed" through inclusion of CWIP in rate base.

RALPH L. LUCIANI

Vice President

M.S. Industrial Administration, Carnegie Mellon University

B.S. Electrical Engineering and Economics, Carnegie Mellon University

Mr. Luciani has more than 20 years of consulting experience analyzing economic and financial issues affecting regulated industries. He has had a special focus on the electricity industry, where he has assisted electric utilities and generating companies with business planning and restructuring, merger and acquisition analysis, resource planning, power solicitations, ratemaking, fuel and power supply contract negotiations, and environmental compliance strategy.

Mr. Luciani has assisted clients and their legal counsel in the management of numerous complex litigation matters, including electric utility prudence and rate cases, and assessments of economic damages in commercial disputes. He has assisted many clients in reaching agreements in settlement processes administered by the Federal Energy Regulatory Commission (FERC). He has appeared as an expert witness in a number of regulatory proceedings.

Prior to joining CRA, Mr. Luciani was a Senior Vice President at PHB Hagler Bailly, and a Director at Putnam, Hayes & Bartlett, Inc. Before that, he worked as an Edison engineer for the General Electric Company and as a financial analyst for IBM Corporation. Summarized below are a number of recent projects directed by Mr. Luciani involving the electric utility industry.

PROFESSIONAL EXPERIENCE

Generation and Power Marketing

Wind/Transmission Studies—Mr. Luciani has performed a number of wind/transmission cost-benefit studies, including leading a team analyzing the economics of installing 765 kV transmission lines to support new wind power in the Southwest Power Pool. He presented the study to the SPP Regional State Committee, and the study was filed at the FERC as part of an incentive rate filing.

Power Solicitations—Mr. Luciani has assisted electric utilities in a number of solicitations for power, including formulating the RFP, conducting bidder's conferences, negotiating term sheets and definitive agreements, and obtaining regulatory approval for the final agreements.

Generation Valuation Lecturer—Over a five-year period, Mr. Luciani served as the lead lecturer and instructor of an advanced training course on generation valuation under cost-of-service rates and under market-based pricing offered annually at a large U.S. investor-owned utility.

Power Marketing—He prepared several affidavits at FERC analyzing wholesale trading activities of power marketers, and developed utility cost-based rates for wholesale sales of capacity and energy.

Stranded Cost Derivation—Mr. Luciani presented testimony before four state utility commissions on the quantification of the stranded cost associated with the deregulation of generation.

Nuclear Power—Mr. Luciani assisted a utility in negotiating the sale of a nuclear plant and developed the financial model used in applying for DOE financing of a new nuclear facility.

Climate Change Regulation—He has assisted several utilities in analyzing the impact of potential climate change regulations on their generation resource plans.

Standby Power—He assisted counsel in reaching a settlement in an arbitration regarding standby power charges for a merchant facility.

RTOs and Transmission

RTO Cost-Benefit Studies—He has directed the evaluation of the economic and rate impacts on stakeholders in eight major cost-benefit studies of Regional Transmission Organizations (RTOs), and has provided related testimony in a number of state proceedings.

RTO Administrative Costs and Rates—Mr. Luciani worked as the lead consultant on behalf of the PJM Finance Committee in the FERC settlement process in which PJM proposed the establishment of a stated rate for the recovery of its administrative costs in place of the existing formula rate.

Transmission Ratemaking—For several utilities, Mr. Luciani has filed testimony which developed OATT transmission, ancillary service, and reactive power rates and also has presented testimony before the FERC regarding calculations of earned returns for transmission operations.

Transmission Costing—He provided testimony and negotiated settlement agreements in a FERC settlement process regarding the assignment of costs for through and out transmission charges.

Transmission Expansion—Mr. Luciani assisted a utility in formulating pricing alternatives for the installation of a new 500 kV transmission line to be used primarily to export power.

Financial Evaluation

Cost of Capital—He has testified before the U.S. Bankruptcy Court and assisted counsel in a number of arbitration proceedings regarding the proper discount rate to apply in assessing termination payments for wholesale power contracts, and has assisted counsel in assessing capital structures and rates for use in FERC proceedings.

Municipalization—He assisted an electric utility in deriving the exit charges to be assessed for a proposed municipalization of a portion of the electric utility's service territory.

Mergers and Acquisitions—On several occasions, Mr. Luciani analyzed the potential acquisition of electric utilities and formulated transmission and distribution pro forma financials.

Organizational Restructuring—Mr. Luciani acted as the lead facilitator in a 12-month project that functionally unbundled the operation of an integrated electric utility into stand-alone profit centers.

Distribution and Retail

Distribution Performance-Based Rates—Mr. Luciani formulated a performance-based ratemaking (PBR) plan, for an electric utility, and presented the plan to the state public utility commission.

Distribution Benchmarking—He formulated a benchmarking analysis to compare the costs and rates for the distribution system of an electric utility to the systems of neighboring utilities.

Efficiency Programs—He formulated a financial and rate incentive model for an electric utility to evaluate the impact on rates and earnings of adopting energy efficiency programs.

Distribution Cost Allocation—Mr. Luciani filed an affidavit in Ontario regarding allocation of distribution costs and derivation of stand-by rates for load displacement generation.

Retail Market Strategy—Mr. Luciani formulated models to assess the profitability of new retail loads in a competitive market and a product to reduce on-peak demand in residences.

Environmental and Fuel

Environmental Regulations—He has assisted electric utilities in formulating strategies for meeting provisions of the Clean Air Act regarding SO_2, NO_x and mercury emissions, and in assessing potential climate change regulations.

Fuel Supply—Mr. Luciani assisted an electric utility in negotiating the terms of a buyout and replacement of a long-term coal supply contract, and in obtaining approval for the rate treatment.

Nuclear Spent Fuel—He assisted counsel in a litigation involving the responsibility for costs incurred in the management of nuclear spent fuel storage and disposal.

Natural Gas—He assisted counsel in obtaining state and federal approval for the merger of natural gas distribution companies, and in evaluating natural gas market manipulation in California.

Expert Testimony Experience

Mr. Luciani has testified before the Arkansas, Kansas, Kentucky, Louisiana, Maryland, Missouri, Ohio, and Pennsylvania public utility commissions, the Ontario Energy Board, the U.S. Bankruptcy Court, and the Federal Energy Regulatory Commission (FERC). On a number of occasions, he has also provided expert testimony on behalf of United Parcel Service (UPS) in U.S. Postal Service rate proceedings before the U.S. Postal Rate Commission.

CCC Interrogatory #005

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Please provide the terms of reference for the Charles River Associates Study on CWIP. Was this study tendered? If not, why not? What are the costs of the study and how are those costs to be recovered? Has OPG contracted for any other studies on this topic? If so, please provide copies of those reports.

Response

The study in question was conducted under a general purchase order which was awarded to Charles River Associates for regulatory support pursuant to a full RFP process. The process was conducted for the provision of regulatory support for calendar years 2009, 2010 and 2011. The engagement letter for the study is attached.

OPG has not contracted for any other studies on this topic.

July 25, 2008

Colin Anderson
Regulatory Affairs
Ontario Power Generation, Inc.
700 University Avenue
Toronto, Ontario M5G 1X6
CANADA

RE: CWIP Regulatory Support

Dear Colin:

I am pleased that effective July 28, 2008, Ontario Power Generation Inc. ("OPG") has retained CRA International, Inc. ("CRA") to assist you in support with respect to the regulatory treatment of Construction Work in Progress ("CWIP") costs in generation ratebase.

A Brief Discussion of Construction Work in Progress

CWIP is a holding account that captures the expended detailed costs incurred in the design and construction of facilities that meet general capitalization rules and thresholds. At the point when the facility is usable, even if the construction contract remains open, the value of costs accumulated in CWIP to date associated with the facility is moved into rate base.

Practically speaking, the conventional regulatory approach associated with CWIP is to capitalize costs during construction, and wait until the project is in-service to transfer the costs to rate base and to commence recovery of the investment in rates. This approach is far from optimal from the Applicant's perspective when one considers the significant upcoming capital expenses that OPG will incur if it goes forward with nuclear refurbishment or new build opportunities that are being considered with respect to OPG's prescribed nuclear assets. If one makes the assumption that construction of new facilities and infrastructure is generally positive for ratepayers, then the existing approach leaves much to be desired from that perspective too, since in some cases proponents of major construction projects will not or can not proceed given the current system, and projects that do proceed will result in significant rate pressures when these projects enter into productive service.

Approach

The engagement will be subdivided into three distinct phases:

1. Development of a third party expert report supporting OPG's position and providing an illustration of evidence with relevant examples (Transmission and Generation)

OPG has selected CRA to create a whitepaper that outlines the case for inclusion of CWIP within rate base from an Ontario generator's perspective. The paper should be grounded in regulatory and accounting fundamentals but clearly illustrate why the existing regulatory approach is inconsistent with Ontario's current policy framework and new infrastructure requirements.

The primary deliverable will be a white paper incorporating a recommended approach to integration of CWIP within rate base. The paper will be substantiated with regulatory precedents and will clearly articulate benefits associated with the proposed change in approach to all stakeholders. The paper will consider the following areas (including, but not limited to):

- Regulatory precedents in other jurisdictions (FERC, State-level, other Canadian jurisdictions)
- Legislative constraints or obligations influencing regulatory decisions, and their applicability to OPG
- Inclusion of full CWIP within rate base in future test period rate regulation
- Consideration of inclusion of changes to depreciation expense if CWIP amounts are amortized
- Consideration of other adjustments to revenue requirement associated with the proposed treatment, identifying specific adjustments that were made and the rationale / method for determining specific adjustments
- Recommended approach

2. Development of Alliances

OPG must seek out potential allies who share its position. At the conclusion of the whitepaper creation, OPG in conjunction with CRA may choose to socialize the paper with various stakeholders in Ontario to gather support for the proposed approach. A list of potential allies will be developed by OPG, ranked and approached accordingly.

Much of the work in this phase is associated with meeting with individual stakeholders and discussing the proposed approach with them. CRA involvement will be on an as-required basis during these meetings, to defend the whitepaper and bolster support for the general recommendation. OPG may create a general stakeholder map indicating who the key stakeholders are, what each stakeholder's interests are, whether (and the degree to which) the stakeholder is supportive / opposed, what changes would be required to gain support.

3. Regulatory Support at Hearing

Depending upon the success of the previous phases, OPG may request CRA to assist OPG in the creation of evidence and to provide expert testimony at hearing in OPG's 2009 Rate Application to the OEB.

The deliverable in this the phase is the drafting of written evidence that is judged acceptable by OPG for filing with the OEB as part of OPG's next rate application. Provision of expert testimony to defend the evidence at hearing is also included, as well as necessary witness education and training.

Timing of Activities

Phase 1 of the engagement will begin at the end of Q2 2008 with the awarding of the business to CRA. A final version of the whitepaper is expected by the start of Q4 2008. Depending on the outcome of Phase 1, Phase 2 will begin when the whitepaper is concluded and Phase 3 (evidence creation) will potentially begin in Q4 2008, continuing into Q1 2009. OPG's decision to proceed on Phases 2 and 3 depends on the outcome of Phase 1.

Terms and Conditions

In establishing and maintaining good relationships with clients, we have found it important to provide each client with a statement of our engagement practices and our billing policies. These practices and policies are intended to safeguard our client information, establish reasonable fees for our services, and provide for the billing and collection of fees in a timely manner.

All of CRA's work for clients is confidential. CRA staff members and consultants have signed confidentiality agreements and are obligated not to disclose any confidential information or documents used or obtained in the course of our studies. This obligation of confidentiality does not apply to data or information which: (1) is or becomes generally available to the public other than as a result of a disclosure by CRA or any of its representatives; or (2) is required to be disclosed pursuant to any subpoena, order or decree of any appropriate court or governmental agency; or (3) was in CRA's possession prior to the time it was disclosed to CRA by you; or (4) is disclosed to CRA by a third party who is under no obligation of confidentiality to you. Following termination, any nonpublic information you have supplied to CRA, which is retained by us, will be kept confidential with at least the same degree of care as we use for our own materials. If, upon such termination, you wish, at OPG's expense, to have any such documents stored by us, delivered to you, or destroyed, please advise us. Otherwise, all such documents will be transferred to the person responsible for administering our client document storage program. For various reasons, including the minimization of unnecessary storage expense, we reserve the right to destroy or otherwise dispose of any such documents. The terms of this paragraph shall survive termination and/or the expiration of this agreement.

The relationship of CRA and OPG is solely that of independent contractors. In no event shall this agreement or any work performed by CRA create a relationship of principal and agent, partnership or joint venture or any fiduciary relationship between the parties.

Under this Agreement, CRA will provide consulting expert services to OPG. CRA will report to OPG on the progress of CRA's work, either orally or if requested by OPG, in written form. CRA will offer independent, objective opinions and analysis.

CRA will provide its services on a time-and-materials basis. Our billing and payment policies are described in Exhibit A to this letter, which is incorporated herein.

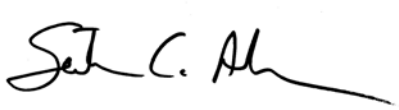
You have asked us to provide an estimate for our services under this agreement. The indicative estimated cost of Phase 1 (development of the whitepaper) is US$30,000. Please recognize that this is an indicative estimate and is not a fee cap or limitation of the amount of services that may be rendered by or paid to CRA. All invoices will be submitted to OPG for payment. Payment is due upon receipt of the invoice. CRA may terminate this Agreement at any time and for any reason upon thirty (30) days' prior written notice to OPG.

The total liability of CRA shall be limited to the total amount of fees paid to CRA under this engagement. Under no circumstances shall CRA be liable for consequential, punitive, incidental or special damages or claims in the nature of lost profits, lost revenue or lost opportunity costs. The terms of this paragraph shall survive termination and/or the expiration of this agreement.

Thank you for your confidence in our ability to assist OPG. We look forward to working with you.

Sincerely yours,

CRA INTERNATIONAL, INC.



Seabron Adamson
Vice President

Enclosure

CCC Interrogatory #007

Ref: Ex. D2-T2-S2

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

OPG is seeking approval to include the Darlington Refurbishment CWIP in rate base. In the 2007/2008 HON Transmission proceeding the HON sought similar relief for several projects. That relief was denied, but for the Niagara Reinforcement Project the Board allowed HON to expense, rather than capitalize the AFUDC associated with the project. Please explain why this approach would not be appropriate for OPG with respect to Darlington.

Response

The approval to expense the carrying costs of the Niagara Reinforcement project was based, in part, on an understanding that the project construction had been suspended and it was uncertain whether the project would be completed as planned, reformulated, or abandoned. From an economic and ratemaking perspective, inclusion of Construction Work In Progress ("CWIP") in rate base and "expensing of AFUDC" (Allowance for Funds Used During Construction) are similar approaches. That is, instead of financing costs being capitalized for future recovery, they are recovered in rates as they are incurred. That said, the recommendation that financing costs should be recovered as incurred for the Darlington Refurbishment project (i.e., through inclusion of CWIP in rate base) is not based on a finding that the project's in-service date has become uncertain.

CCC Interrogatory #008

Ref: Ex. D2-T2-S2

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Did HON consider other accounting approaches for the Darlington Project? If so, why were those approaches rejected?

Response

OPG understands the reference to HON in the question should be a reference to OPG.

OPG did not consider other accounting approaches for the Darlington Refurbishment project. OPG concluded that the existing accounting approach is the appropriate accounting approach under Canadian Generally Accepted Accounting Principles ("GAAP").

CCC Interrogatory #009

Ref: Ex. D2-T2-S2, page 9

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

The evidence indicates that OPG will provide regular updates on project scope, schedule and progress, any variances against budget and a forecast of future expenditures for the Darlington Project. Please specifically identify the format of that reporting. Will OPG be seeking approval of that reporting in this case?

Response

The reference on page 9 of Ex. D2-T2-S2 states that OPG expects to provide regular updates on the Darlington Refurbishment project as part of its submissions in future payment amount applications. OPG has not specifically considered the format for this reporting, nor will OPG be seeking approval of the format for this reporting in this Application.

CCC Interrogatory #010

Ref: Ex. D2-T2-S2

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

If the Board grants OPG approval to recover CWIP in rate base for the Darlington Project what happens if the project is suspended or cancelled , thereby never going into service. Would those costs already recovered from ratepayers be returned? If not, why not?

Response

In the unlikely event that the project is suspended or cancelled, OPG would apply to the OEB for a regulatory treatment for the Construction Work In Progress ("CWIP") costs recovered from ratepayers. OPG expects that this treatment would be consistent with the terms of Section 6(2)4 of O. Reg. 53/05 (Ex. A1-T6-S1, page 3):

> 4. The Board shall ensure that Ontario Power Generation Inc. recovers capital and non-capital costs, and firm financial commitments incurred to increase the output of, refurbish or add operating capacity to a generation facility referred to in section 2, including, but not limited to, assessment costs and pre-engineering costs and commitments,
>
> > i. if the costs and financial commitments were within the project budgets approved for that purpose by the board of directors of Ontario Power Generation Inc. before the making of the Board's first order under section 78.1 of the Act in respect of Ontario Power Generation Inc., or
> >
> > ii. if the costs and financial commitments were not approved by the board of directors of Ontario Power Generation Inc. before the making of the Board's first order under section 78.1 of the Act in respect of Ontario Power Generation Inc., if the Board is satisfied that the costs were prudently incurred and that the financial commitments were prudently made.

CME Interrogatory #014

Ref: Ex. B1-T1, Ex. D1, Ex. D2, and Ex. D3

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

To what extent does the test period Revenue Requirement decrease if Construction Work in Progress ("CWIP") for the Darlington Refurbishment Project is excluded from Rate Base?

Response

The 24-month test period revenue requirement for 2011 – 2012 would decrease by $37.9M if Construction Work In Progress ("CWIP") for the Darlington Refurbishment Project is excluded from rate base. This amount is found at Ex. D2-T2-S1, Table 1, line 8, column (h).

CME Interrogatory #017

Ref: Ex. B1-T1, Ex. D1, Ex. D2, and Ex. D3

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Is there a CWIP amount included in the test period Revenue Requirement, but not in Rate Base, for capital expenditures being incurred in the test period with respect to projects expected to be completed, and in service on a date later than December 31, 2012? If so, what is the total CWIP amount for Hydroelectric and Nuclear projects included in the 24-month test period Revenue Requirement for such projects? How have each of the amounts been calculated; and in what line items do the CWIP amounts for such projects appear in the Revenue Requirement presentation?

Response

No.

GEC Interrogatory #001

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Page 8 quotes the Louisiana PSC to the effect that "the recovery of a current cash return on CWIP may be needed to protect a utility's financial integrity…"

a) Does Mr. Luciani believe that this consideration applies to OPG? If so, please provide any evidence that a cash return on CWIP is needed to protect OPG's financial integrity.

Response

a) OPG understands that Mr. Luciani believes that this consideration applies to OPG. Financial integrity is not a simple yes or no assessment. As noted in the CRA paper (page 10), even for utilities with governmental support for their financing, a significant mismatch between utility cash flow and revenues can lead to credit quality concerns, and, as such, stand-alone consideration of the utility's operation and risk is an important control mechanism for maintaining credit quality. The recovery of a cash return on CWIP will help ensure that OPG is operating on a financially sustainable basis and thereby, on an incremental basis, improve its financial integrity.

GEC Interrogatory #002

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Page 8 quotes the Louisiana PSC to the effect that "the recovery of a current cash return on CWIP may be needed… to maintain an acceptable credit rating…."

a) Does Mr. Luciani believe that this consideration applies to OPG? If so, please provide any evidence that a cash return on CWIP is required in that OPG or the Province would not "maintain an acceptable credit rating" in the absence of CWIP in rate base.

Response

a) Yes, OPG understands that Mr. Luciani believes this consideration applies to OPG. A credit rating agency takes into account a number of items in determining utility credit ratings and a current cash return on CWIP is one of those items. Credit rating agencies, as part of their review, will look at a publicly-supported commercial entity such as OPG on a stand-alone basis in evaluating credit risk. As such, a cash return on CWIP will be helpful to OPG, on an incremental basis, in such a review and maintaining an acceptable credit rating.

GEC Interrogatory #003

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Page 8 quotes the Louisiana PSC to the effect that "the recovery of a current cash return on CWIP may be needed…to prevent an undue increase in the utility's cost of capital (p. 8)

a) Does Mr. Luciani believe that this consideration applies to OPG? If so, please provide any evidence that OPG's cost of capital would increase unduly if it is not granted a current cash return on CWIP.

Response

a) Yes, OPG understands that Mr. Luciani believes that this consideration applies to OPG. While the government supports OPG's financing needs, the implicit cost of this financing is dictated by OPG's financial conditions. As noted in Ex. L-07-001, a cash return on CWIP will help ensure that OPG is operating on a financially sustainable basis and from a stand-alone perspective will help, on an incremental basis, minimize the cost of that financing.

GEC Interrogatory #004

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Regarding the first paragraph on page 9, please provide OPG's projection of the payment amount for the regulated hydroelectric facilities and the payment amount for the nuclear facilities for each year for which OPG has such projections.

a) Please provide the projection of payment amounts both with a cash return on CWIP and without.

Response

Table 1 below identifies the nuclear payment amounts for 2011 – 2102 including and excluding Construction Work in Progress ("CWIP") on Darlington Refurbishment project expenditures. The impact on 2011 – 2012 rates is estimated to be $0.4/MWh. The corresponding impact on forecast 2013 – 2014 payment amounts is estimated to be $1.5/MWh.

Table 1
Nuclear Payment Amount ($/MWh)

	2011-2012	2013-2014
With CWIP on the Darlington Refurbishment Project	55.3	
Without CWIP on the Darlington Refurbishment Project	54.9	
Impact of CWIP	0.4	1.5

There is no impact on projected regulated hydroelectric payment amounts as Darlington Refurbishment is the only project for which the CWIP treatment is being proposed.

For 2013 and 2014, OPG is only showing CWIP impacts and not forecast payment amounts. Forecasts of future payment amounts are irrelevant to the OEB's determination of payment amounts in this proceeding. They also would be speculative given that the payment amounts for regulated nuclear and hydroelectric generation in 2013 – 2014 will depend on the outcome of this proceeding; the forecasts for prescribed facility costs and production underlying any future application for payment amounts covering 2013 and 2014, and the outcome of any such future application.

Witness Panel: Deferral and Variance Accounts, Payment Amounts and Regulatory Treatments

GEC Interrogatory #005

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Please provide OPG's projection of all the charges for its services for each year for which OPG has such projections.

Response

OPG's projected rates for 2011 – 2012 are documented in its rate proposal. OPG declines to provide projections of payment amounts for future years as they are speculative and not relevant to the determination of payment amounts in the test period as discussed in response to interrogatory Ex. L-07-004.

GEC Interrogatory #007

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Page 9 states that "the revenue requirement under standard cost-of-service ratemaking associated with the recovery of the capital expended on a new plant is said to be 'front end loaded'".

a) Please state whether the inclusion of CWIP in rate base increases or decreases the front-end loading of cost recovery.

b) Please provide OPG's projection of the annual revenue recovery for Darlington Refurbishment for each year through 2054, with CWIP in rate base.

c) Please provide OPG's projection of the annual revenue recovery for Darlington Refurbishment for each year through 2054, if CWIP is not in rate base.

d) Does Mr. Luciani agree that the total revenue recovery of the Darlington Refurbishment through 2025 would be greater if CWIP is in rate base than if CWIP is capitalized? If Mr. Luciani disagrees, please explain the basis for that disagreement.

Response

a) From the perspective of the rate increase required at the time of in-service, the inclusion of CWIP in rate base decreases the amount by which recovery is front-end loaded. Of course, recovery takes place in smaller amounts earlier than it otherwise would, meaning, by definition, that more revenue is recovered in the early years. Nonetheless, the rate increase required in any individual year after the asset is in service would be lower with CWIP in rate base, as well as the total recovery in any year. The cumulative revenue recovery over the life of the asset will also decrease and the crossover point in cumulative revenue recovered should take place well before the midpoint of the asset's life.

b) OPG has only developed a very preliminary estimate of the range of costs for the Darlington Refurbishment project. OPG is not providing the requested projection as it would be too speculative to be of any value.

c) OPG has only developed a very preliminary estimate of the range of costs for the Darlington Refurbishment project. OPG is not providing the requested projection as it would be too speculative to be of any value.

d) While Mr. Luciani has not seen the specific Darlington Refurbishment figures, OPG understands that he believes this is likely to be the case on a cumulative total revenue recovered basis. Again, the cumulative revenue recovery over the life of the asset will decrease, and the crossover point in cumulative revenue recovery should take place well before the midpoint of the asset's life.

GEC Interrogatory #008
(NON-CONFIDENTIAL VERSION)

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Regarding the statement that "for a utility that has not constructed significant base load generating capacity for a number of years, the cost of a new plant represents a significant percentage of the remaining net book value of the utility's existing asset base … resulting in a sharp spike in rates." (p. 9), please provide the projected cost of each Darlington unit refurbishment and the projected net book value of OPG's total asset base in the year before each unit enters service.

Response

The response to this question is confidential.

GEC Interrogatory #009

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Regarding the statement that "In effect, CWIP in rate base provides a smoothing, or phase-in effect on rates, and thereby mitigates the rate shock that would take place when the large new plant is placed into service."

a) Is the Darlington Refurbishment a "large new plant"?

b) Has OPG surveyed Ontario consumers to determine whether they prefer to pay for power projects before they enter service or to bear the "rate shock" resulting from deferring the return on CWIP? If so, please provide the survey vehicle and all results and analyses.

c) Can "rate shock" also be avoided by deferring some costs past the in-service date, so that the phase-in occurs after the in-service date?

Response

a) The Darlington Refurbishment Project is a "large new investment", the outcome of which will result in increased energy availability over the base case for a number of years. Integrating CWIP in rate base for this large new investment will still have the same effect as outlined in the reference above.

b) No.

c) While the deferral of inclusion of costs in rate base would tend to dampen rate shock, such an approach is unlikely to stimulate infrastructure investment, an outcome that was indicated as desirable in the OEB's consultation process (EB-2009-0152). Further, actively delaying cost recovery would have a negative impact on maintenance of acceptable credit ratings for utilities and would likely result in increases to a utility's cost of capital, both outcomes that are counter-productive. Finally, delaying inclusion of project costs would only allow more time for interest charges to accumulate, thereby increasing the overall cost of any given project.

GEC Interrogatory #010

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

With regard to the statement that "Earlier cash returns on assets with long construction periods provide more certainty to investors which should encourage a greater willingness to invest" (p. 11), please clarify whether the term "investors" refers to equity or debt investors.

a) If it refers to equity investors, does Mr. Luciani believe that the Province's willingness to invest in OPG would be increased by placing CWIP in rate base?

b) If it refers to debt investors, how is this point different from the discussion of borrowing costs in Section 3.2?

Response

The reference is inclusive of equity and debt investors.

a) OPG understands that Mr. Luciani's belief is yes, as measured on a stand-alone basis from a commercial perspective. The statement applies to equity investors interested in a commercially-viable investment. OPG has a commercial mandate from its shareholder to operate on a financially sustainable basis and maintain the value of its assets (see OPG 2009 Financial Results, page 15). Inclusion of CWIP in rate base is consistent with this commercial mandate.

b) The reference is inclusive of equity and debt investors. For debt investors, it would be related to credit quality and the willingness to invest on any reasonable terms.

GEC Interrogatory #011

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

With regard to the quote from the NRRI publication on pp. 11-12 concerning tax financing of schools and transit projects, does Mr. Luciani agree that these projects are generally funded by bonding?

Response

OPG understands that Mr. Luciani has not examined school and transit project financing, and does not know the extent to which school buildings and transit projects are funded by short-term or long-term bonds or pay-as-you-go arrangements. The NRRI quote cites school buildings and mass transit projects as supporting examples for the proposition that early cost recovery for utility investment is not unique.

GEC Interrogatory #012

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

With regard to the statement that, during the construction period of a baseload plant, "The utility, for example, may not enter into the same amount of longer-term contracts, or may not build as many shorter-term assets given that a baseload plant will be coming into service. That is, the new plants will affect actual utility costs and rates during the construction period with or without CWIP in rates." (p. 12)

a. Please describe all the "longer-term contracts" that OPG would enter into in the absence of the Darlington Refurbishment.

b. Please explain why those "longer-term contracts" would be reflected in rates during the Darlington Refurbishment construction period.

c. Please define the "shorter-term assets" that Mr. Luciani is describing in this section.

d. Please describe all the "shorter-term assets" that OPG would build in the absence of the Darlington Refurbishment.

Response

a) OPG has no plans to enter into "longer-term contracts" in the absence of Darlington Refurbishment. However, if Darlington is not refurbished then the baseload supply that would have been provided by this station will have to be procured from some other generation source. OPG expects that such contracting would be done by the Ontario Power Authority.

b) Whether or not there would actually be costs related to the "longer-term contracts" in rates during this period would depend on the nature and terms of these contracts, or whether there was a need to make early investments (e.g., transmission or distribution investments) in order to access the supply provided via the contracts. The point in the referenced quote is simply that in the context of a utility supply, decisions about one project in the portfolio can affect decisions about other parts of the supply portfolio.

c) In this context "shorter-term assets" refers to those generation supply options that could be designed, permitted, procured, constructed and commissioned in a shorter timeframe than the option under consideration by the utility. These assets would help bridge the system until the baseload plant was completed and placed into service.

Witness Panel: Deferral and Variance Accounts, Payment Amounts and Regulatory Treatments

d) Please see response to Part a) above.

GEC Interrogatory #013

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

With regard to the statement that regulators "have often disregarded the used and useful concept when the reliability of future service is in doubt" (p. 12), please explain whether the reliability of future service to Ontario consumers would be in doubt if OPG did not earn a cash return on CWIP, and if so, why.

Response

The excerpt above is taken from FERC Docket EL06-54-000, Order Granting Petition for Declaratory Order and Denying Motion to Defer Consideration, June 20, 2006. The full excerpt is as follows:

> In light of lengthening construction cycles, relatively high inflation, and the proportional significance of capital financing costs in relation to overall project costs, this Commission – as well as many state regulatory authorities – have examined the basis for the inclusion of CWIP from rate base and **have often disregarded the used and useful concept when the reliability of future service is in doubt** … it must be reemphasized that the used and useful concept, if administered inflexibly and without regard to other equitable and policy considerations may fail the interests of both the electric utility industry and its ratepayers. [emphasis added]

It appears to OPG that FERC is simply putting the "used and useful" concept into perspective vis-a-vis other regulatory considerations, including the need to support new investment through the inclusion of CWIP in rate base.

OPG has no information to suggest that the reliability of future service for Ontario consumers would be in doubt if OPG did not earn a cash return on CWIP.

GEC Interrogatory #014

Ref: Ex.D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Please provide the most recent rating report for OPG from Standard & Poor's (S&P) and Dominion Bond Rating Service (DBRS).

Response

The ratings reports included with the prefiled evidence at Ex. A2-T3-S1 are the most recent reports available.

GEC Interrogatory #015

Ref: Ex. D4-T1-S1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

For each major nuclear project that OPG has undertaken (including the restart of each of the Pickering A units, and any other project costing more than $20 million), please provide

a) Actual project cost.

b) OPG's estimate of project costs at the beginning of the preliminary planning phase.

c) OPG's estimate of project costs nine years before the planned completion date (or the earliest estimate, if that is less than six years before planned completion).

Response

OPG is providing the requested information for major nuclear project completed after April 1, 2008, the date the OEB assumed jurisdiction over OPG's prescribed facilities. The requested information on the restart of the Pickering A units is not relevant as the return to service was completed prior to April 1, 2008 and the in-service amounts are included in the asset values that the OEB was required to accept under O. Reg. 53/05.

The following table presents information on completed projects greater than $20M (Ex. F2-T3-S3, Table 1, and Ex. D2-T1-S2, Table 1a adding the "Preliminary Planning Estimate"), which reflects the estimate of total project cost that was provided in the developmental business case summary. These "Preliminary Planning Estimates" represent the earliest estimates as requested in the interrogatory.

	Facility	Project Name	Project Number	Actual Project Cost (M$)	Preliminary Planning Estimate (M$)
	(a)	(b)	(c)	(d)	(e)
1	DN	Boiler Primary Side Cleaning	38296	24.2	32.0
2	DN	Used Fuel Dry Storage In Station Mods	33925	44.6	50.3
3	DN	Fire Protection Upgrade Program Phase 3	79148	29.7	12.5
4	PB	Auxiliary Power System for PB	49104	107.2	200.0
5	PB	Standby Generator Governor Upgrade	49109	22.3	13.4
6	NPT	Security Optimization (Capital)	62558	172.3	100.0

Pollution Probe Interrogatory #001

Ref: Ex. D2-T2-S1, page. 8 - Minutes of Stakeholder Information Session 1, page 18
Ex. D2-T2-S2, page 3

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

OPG's current projected cost of the Darlington refurbishment project is $6B to $10B (in 2009$) excluding capitalized interest.

Please provide OPG's low and high estimates of the total capital cost for this project (in 2009$) assuming the Board does **not** allow OPG to include these capital costs in rate base before the project is completed and in-service.

Response

As noted above, the estimated range of costs provided by OPG for the Darlington Refurbishment project is in 2009 dollars and excludes both interest and escalation. There is no impact on this estimated range from a decision to not allow the project's capital costs in the rate base before the project is completed and in-service.

Pollution Probe Interrogatory #004

Ref: Ex. D2,-T2-S1, pages 4 and 5
Minutes of Stakeholder Information Session 1, page 18
Ex. E2-T1-S2, Table 1b

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

OPG estimates that the Darlington Refurbishment project will have a LUEC of between 6 and 8 cents per kWh (2009$) excluding capitalized interest.

Please re-calculate these LUECs under the following two scenarios:

a) The Board does not allow OPG to include these capital costs in rate base before the project is completed and in-service;

b) The Board does not allow OPG to include these capital costs in rate base before the project is completed and in-service; and the project has an annual average capacity factor of 64.2%.

Please provide a break-out of these revised LUEC estimates according to at least the following categories:

- capital costs;
- fixed operating, maintenance & administration costs;
- fuel cost;
- variable operating, maintenance & administration costs;
- short-term, medium-term and long-term costs associated with the management of used fuel.

Response

The question is incorrect in stating that OPG's estimates of the Levelized Unit Energy Cost ("LUEC") range exclude capitalized interest. The evaluation of LUEC includes capitalized interest.

a) The LUEC methodology is an economic assessment, while Construction Work in Progress ("CWIP") is a cost recovery methodology. Under OPG's CWIP in rate base proposal, there is a negligible impact on LUEC caused by the slight change in the timing of interest expense.

Witness Panel: Nuclear Refurbishment

b) The range of $0.06/kWh – $0.08/kWh for the LUEC of Darlington Generating Station (Ex. D2-T2-S1, page 8, Figure 1) is based on a Monte Carlo analysis where a significant degree of variability is introduced into the different inputs to the LUEC calculation (e.g., refurbishment costs, post-refurbishment costs and performance and post-refurbishment station life). The LUEC range of $0.06/kWh – $0.08/kWh has a high to very high confidence range.

OPG has re-run the Monte Carlo analysis, with a changed assumption on capacity factor to 64.2 per cent and no variation in the capacity factor. With these changed assumptions, OPG's assessment shows that the adjusted LUEC range estimate would be $0.08/kWh to $0.10/kWh with a high to very high confidence range.

Because OPG's range estimate is based on a Monte Carlo analysis, it is not possible for OPG to provide the breakdown of the capital costs, operating costs and fuel costs which make up the upper and lower bound of the range or of any points in-between. Please refer to response to the interrogatory in Ex. L-10-003 for the typical percent breakdown of the LUEC into refurbishment costs, operation, maintenance & administration costs and fuel costs.

Pollution Probe Interrogatory #007

Ref: Ex. D2-T2-S2, page 3

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

According to OPG: "Inclusion of CWIP in rate base for the Darlington Refurbishment project is warranted since it meets the criteria for qualifying investments specified by the OEB in its Report" [EB-2009-0152, *Report of the Board: The Regulatory Treatment of Infrastructure Investment in connection with the Rate-regulated Activities of Distributors and Transmitters in Ontario*].

However, Pollution Probe notes that the referenced report is restricted to investments by electricity distributors and transmitters, which are natural monopolies. OPG, on the other hand, is an electricity *generator* and electricity generation is not a natural monopoly (in Pollution Probe's view).

Has the Board indicated that it believes that inclusion of CWIP in rate base could be appropriate for an electricity generator?

Response

Please see response to Board Staff Interrogatory L-01-011.

Pollution Probe Interrogatory #008

Ref: Ex. D2-T2-S1, page 4
Ex. D2-T2-S1, Attachment 3

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

OPG's management has not received permission to date to proceed with the refurbishment of the Darlington Nuclear Generating Station from its Board of Directors, its sole shareholder, or the Board.

Have any regulatory tribunals approved the inclusion of a project's CWIP in rate base before they have determined that the project is in the public interest and should proceed? If "yes", please provide copies of the applicable decisions.

Response

OPG disagrees with the question's preamble that it has not received approval to proceed with the Darlington Refurbishment project. On November 19, 2009, OPG's Board of Directors ("OPG Board") approved the definition phase of the Darlington Refurbishment project by approving the project's overall timeline and funding release strategy, including the approval to spend $240.7M for planning and the development of required infrastructure.

In his February 4, 2010 letter, the Minister of Energy, speaking on behalf of the Government, concurred with the decision of the OPG Board, and thus indicated that the OPG Board's decision was in the public interest (see Ex. D2-T2-S1, Attachment 3). This decision to proceed with the Darlington Refurbishment project was also endorsed by the OPA as noted in Ex. F2-T2-S3, Attachment 2.

In the OEB's Report in EB-2009-0152, the OEB indicated that it would, on a case-by-case basis, consider a Construction Work in Progress ("CWIP") proposal on the basis that the applicant demonstrates a nexus between the proposal and the facts of the particular case. The OEB Report stated that the applicant must demonstrate that the proposal is tailored to address the demonstrable risks and challenges faced by the applicant. In considering a proposal for an alternative mechanism, such as CWIP, the OEB indicated that it would evaluate a variety of factors including the need for the project and the public interest benefits. The OEB did not indicate that a public interest finding was required before an alternative mechanism such as advanced recovery of CWIP would be considered.

Pollution Probe Interrogatory #010

Ref: Ex. D2-T2-S2, page 1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Long-term electric power planning is the responsibility of both the Ontario Power Authority and the Ontario Energy Board. However, the Board has not approved to date an integrated power system plan developed by the OPA which includes the refurbishment of the Darlington Generating Station.

Please explain why it would be in the public interest for the Board to approve OPG's CWIP proposal before the Board reviews and approves an integrated power system plan for Ontario?

Response

Please see the response to the interrogatory in Ex. L-10-008.

Pollution Probe Interrogatory #012

Ref: Ex. D2-T2-S1, Attachment 4

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

According to OPG: "Based on publicly available information, the economics of Darlington Refurbishment are more attractive than alternative generation options including New Nuclear and Combined Cycle Gas Turbines (CCGT)."

a) Has OPG compared the economics of the Darlington Refurbishment with the economics of incremental energy efficiency investments, natural gas-fired combined heat and power, and/or hydro-electricity imports from Quebec? If so, please provide copies of OPG's analyses.

b) Does OPG believe it would be in the public interest for the Board to approve OPG's CWIP proposal before it has reviewed the economics of alternative options, such as incremental energy efficiency investments, natural gas-fired combined heat and power, and/or hydro-electricity imports from Quebec? If so, please explain why.

Response

a) OPG's analysis of the economics of the Darlington Refurbishment project is provided at Ex. D2-T2-S1, Attachment 4.

b) Please see the response to the interrogatory in Ex. L-10-008.

Pollution Probe Interrogatory #013

Ref: Ex. D2-T2-S2, Table 1

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Please extend the time horizon of this Table to show the revenue requirement and rate impact of OPG's CWIP proposal in 2013 & 2014.

Response

The rate impacts can be found in the response to the interrogatory in Ex. L-07-004. The incremental revenue requirement attributable to Construction Work in Progress ("CWIP") in rate base for the Darlington Refurbishment project during the 2013 – 2014 rate period is estimated to be approximately $145M.

SEC Interrogatory #003
(NON-CONFIDENTIAL VERSION)

Ref: Ex. D4-T1-S1, page 13
Ex. D2-T2-S1, Darlington Refurbishment CWIP Proposal

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

The Board's CWIP policy requires that the applicant provide the total cost of the project and the cost of the project relative to the current rate base. Please provide a table for the Darlington Refurbishment which sets out the total project costs (separating capital and capitalized OM&A) for each year until the date of project completion with a comparison to the total capital budget forecast for each of those years.

Response

Attachment 1 (confidential attachment) provides the cash flows associated with the high confidence estimate for the Darlington Refurbishment project. This estimate is based on the preliminary project information contained within the current Economic Feasibility Assessment of Darlington Refurbishment, Ex. D2-T2-S1, Attachment 4.

The preliminary cost estimates were developed for the known refurbishment scope of work from a variety of sources, including the Pickering B assessment, industry studies, preliminary technical assessments performed as part of the Darlington Planning Activities project, experience from previous OPG projects and engineering judgment. The preliminary cost estimates are not based on detailed engineering and/or awarded contracts.

Additionally, during the definition phase, classification decisions on whether the detailed work qualifies as capital or OM&A will be made. As those decisions have yet to occur and the scope of work is still being developed, OPG has classified all work, other than a high level estimate of the percentage of costs which are likely to be associated with removal of equipment, as capital costs for this presentation.

SEC Interrogatory #004

Ref: Ex. A1-T3-S2, page 4

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Please show the annual incremental cost of including CWIP in rate base for each year until the in-service date of the Darlington Refurbishment project.

Response

Please see the response in Ex. L-14-004.

SEC Interrogatory #005

Ref: A2-T1-S1, Attachment 2, page 3

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

Please confirm that the decision to proceed with the refurbishment of the Darlington nuclear generating station was not, and is currently not, contingent on CWIP being included in rate base. Please provide all documents related to the February 2010 decision that relate in whole or in part to the connection between the decision to proceed and the proposal to include CWIP in rate base.

Response

Confirmed. OPG is unaware of any documents that address the stated connection.

VECC Interrogatory #004

Ref: Ex. B1-T1, General

Issue Number: 2.2
Issue: Is OPG's proposal to include CWIP in rate base for the Darlington Refurbishment Project appropriate?

Interrogatory

a) Would OPG decline to proceed with the Darlington Refurbishment Project if their CWIP proposal was rejected by the OEB?

b) If the OEB were to reject the proposal and OPG subsequently decided to go ahead with the refurbishment, how would it adversely impact OPG's credit rating?

c) Please provide a year-by-year comparison of the costs recovered from ratepayers under OPG's CWIP proposal with the alternative being the current regulatory treatment over the life of the project. Please specify all assumptions used and include a calculation of the NPV of the payments by ratepayers for each case.

d) Please confirm that the risk of not completing the project on time will be fully transferred to ratepayers under the CWIP proposal since OPG will be receiving a full return on invested capital during the delay and, once the project is completed, OPG will begin earning a full return on the undepreciated capital costs.

e) Please confirm that under OPG's CWIP proposal, no interest will be capitalized on the assets prior to the assets going into service.

Response

a) No.

b) Please see the response to Green Energy Coalition Interrogatory L-07-002.

c) The attached Table 1 provides illustrative examples comparing the costs recovered from ratepayers under OPG's Construction Work In Progress ("CWIP") proposal and the current regulatory option for each year from 2011 to 2053 for the Darlington Refurbishment project. Two illustrative examples are provided; $6B and $10B project cost (overnight 2009 dollars before interest during construction ["IDC"]).

The following simplifying assumptions were made in the analysis:

- Capital expenditures for 2010, 2011, and 2012 are $72.9M, $105.2M and $255.8M respectively as shown in Ex. D2-T2-S1 for both examples.

- The remainder of the capital expenditures are distributed based on illustrative cost flows for typical nuclear refurbishment projects.

- The refurbished units are assumed to be returned to service at the end of 2019, 2020, 2022 and 2023.

- Refurbished units are assumed to have a 30-year life.

- Present Value ("PV") calculations are done using a pre-tax weighted average cost of capital of 7.6 per cent (based on debt rate of 5.58 per cent, capital structure of 53 per cent debt and 47 per cent equity, and 9.85 per cent return on equity) and pre-tax costs.

- Interest during construction rate is the same as the debt rate.

As can be seen from the illustrative examples in Table 1, the inclusion of CWIP in rate base increases the rates paid by ratepayers from 2011 – 2023, and decreases these rates from 2024 – 2053. The overall savings to ratepayers over the asset life is $550M for the $6B project cost example and $770M for the $10B example.

On a PV basis and using OPG's pre-tax weighted average cost of capital of 7.6 per cent, the PV of recovered costs are $3.4B and $3.2B (in 2009 dollars) for the proposed CWIP and current regulatory treatment respectively in the $6B project cost example. In the $10B project cost example, the PVs are $5.6B and $5.3B for the proposed CWIP and current regulatory treatment respectively.

d) There is no difference in terms of risk to the ratepayers under the two cost recovery options. As indicated in Ex. D4-T1-S1, section 3.4.2, the utility still faces the risk of a disallowance if it does not prudently manage the project, regardless of whether CWIP has been put into rates.

e) Confirmed.

Table 1
Costs Recovered from Ratepayers
under Proposed CWIP and Current Regulatory Treatment
for 2 Illustrative Project Cost Examples
(in $ millions)

Line No.	Year	Col.1 OPG's CWIP Proposal	Col.2 Current Regulatory Treatment		Col.3 OPG's CWIP Proposal	Col.4 Current Regulatory Treatment
		$6B project cost example			$10B project cost example	
1	2011	10	-		10	-
2	2012	10	-		10	-
3	2013	30	-		30	-
4	2014	50	-		60	-
5	2015	70	-		100	-
6	2016	90	-		130	-
7	2017	110	-		160	-
8	2018	150	-		240	-
9	2019	220	-		360	-
10	2020	380	350		620	550
11	2021	500	510		820	830
12	2022	560	500		930	810
13	2023	670	670		1,130	1,100
14	2024	750	830		1,260	1,370
15	2025	730	810		1,230	1,340
16	2026	710	790		1,200	1,310
17	2027	700	770		1,170	1,270
18	2028	680	750		1,130	1,240
19	2029	660	730		1,100	1,200
20	2030	640	710		1,070	1,170
21	2031	620	690		1,040	1,140
22	2032	600	670		1,010	1,100
23	2033	590	650		980	1,070
24	2034	570	620		950	1,040
25	2035	550	600		920	1,000
26	2036	530	580		890	970
27	2037	510	560		860	940
28	2038	490	540		830	900
29	2039	480	520		800	870
30	2040	460	500		770	830
31	2041	440	480		740	800
32	2042	420	460		700	770
33	2043	400	440		670	730
34	2044	380	420		640	700
35	2045	370	400		610	670
36	2046	350	380		580	630
37	2047	330	360		550	600
38	2048	310	340		520	570
39	2049	290	320		490	530
40	2050	190	190		320	330
41	2051	120	130		210	220
42	2052	120	120		200	210
43	2053	60	60		100	100
44	Total	16,900	17,450		28,140	28,910
45	PV* @ 7.6%	3,400	3,200		5,600	5,300

* PV results are in 2009 $ millions