



**ASSESSMENT OF COMMERCIAL STRATEGIES
DEVELOPED FOR THE DARLINGTON REFURBISHMENT
PROJECT'S STEAM GENERATORS WORK PACKAGE**

PREPARED FOR ONTARIO POWER GENERATION

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I. EXECUTIVE SUMMARY

On September 9, 2011, Tory's LLP retained Concentric Energy Advisors, Inc. ("Concentric") to review the commercial strategies and contracts developed and implemented for the refurbishment of four CANDU heavy water reactors at Ontario Power Generation, Inc.'s ("Ontario Power Generation's" or the "Company's") Darlington Nuclear Generating Station ("Darlington" or the "Plant").¹ The Darlington Refurbishment Project (the "Project") will include removal and replacement of the reactor calandria tubes and pressure tubes from each reactor, replacement of all feeders, refurbishment of the existing fuel handling equipment, refurbishment of the existing turbine generators, refurbishment of the existing steam generators (herein referred to as the "Steam Generators" project), and a set of supporting refurbishment projects aligned with existing station systems. The plant modifications are planned to be made during 36-month outages for each of the four Darlington units between October 2016 and 2025.² The first refurbishment outage will be conducted on Unit 2 between Fall 2016 and Fall 2019. The remaining outages will occur between Fall 2019 and Fall 2025 with approximately 17 to 19 months of overlap between each successive outage.

Prior to commencing the execution phase work, Ontario Power Generation has committed to undertaking significant planning activities, which include working to develop and implement appropriate commercial strategies for a project of this magnitude. Concentric was engaged to review the Company's commercial strategies and how these strategies are being implemented. This report summarizes Concentric's review and opinion of the current Steam Generators work package commercial strategy.

The Project is following a standard megaproject progression that includes the following phases: (1) project initiation; (2) definition; (3) execution; (4) commissioning; and (5) project closeout. In the project initiation phase, a project is evaluated for its initial feasibility based on relatively high-level information that is readily available. Should a project prove feasible during the project initiation phase, it will proceed into the definition phase. During the definition phase, the project team undertakes detailed reviews of the project's anticipated scope, cost, and schedule to begin to define the activities that must be completed during the project, when those activities must be completed, and how much those activities are expected to cost. Concurrently, the project team begins to define the commercial strategies expected to be employed. Later during the definition phase, the project team is responsible for: (1) identifying, procuring and fabricating all long lead materials, components and tooling; (2) executing all of the necessary agreements to proceed with the major work packages; (3) completing the detailed scope and project schedule; and (4) developing a "release quality" cost and schedule estimate from which the project's performance can be measured. The release quality estimate and the integrated schedule available at the conclusion of the definition phase are more defined than prior iterations of the cost estimate and schedule, yet both still contain some uncertainty that is a component of any undertaking of this nature, particularly projects that compare to the Refurbishment Project in magnitude. Following the definition phase, a project enters the execution phase during which the actual plant modifications will take place. This stage is followed by the commissioning and project closeout phases. During these phases, the project team brings the project online and completes all of the recordkeeping associated with the project.

¹ As used in this context, commercial strategies refer to the processes by which Ontario Power Generation will procure goods and services for the Darlington Refurbishment Project.

² As a practical matter, initial planning for the Project began in 2006 with the initiation of feasibility studies and plant technical assessments. Thus, from the Project's initiation to closeout, the Project will span nearly 20 years.



The initiation phase of the Project began in late 2007 with the preparation of a business case that evaluated, at a high level, the overall feasibility of completing the Project. In November 2009, the Project sought and received authorization from the Ontario Power Generation Board of Directors to proceed with the planning portion of the definition phase. In February 2010, the Ministry of Energy concurred with the Board of Directors' decision. To execute the work, Ontario Power Generation will retain multiple contractors for discrete portions of the Project work known as work packages. Consistent with this approach, Ontario Power Generation has proposed dividing the work into multiple major work packages, of which the Steam Generators work package is one.

As discussed in detail below, the commercial strategy Ontario Power Generation has selected for the Steam Generators work package includes a competitively-sourced Engineering Procurement and Construction ("EPC") arrangement. The Steam Generators project team issued a Request for Expressions of Interest to potential vendors in 2011 and extended a Request for Proposals ("RFPs") to two proponents in February 2013.³ The Company received final proposals in May, and in mid-July the Company selected a vendor for detailed negotiations. The Company executed an EPC contract with a consortium of Babcock & Wilcox Canada Ltd. ("B&W") and Candu Energy Inc. ("Candu," together referred to as "B&W/Candu") on December 30, 2013. The contract contains a combination of fixed and firm pricing for known or highly definable tasks, and target pricing for work elements that remain undefined or that are dependent on conditions that arise during execution. Throughout the balance of this phase of the Project, the Company will work with its EPC contractor to advance engineering and planning. It will also execute all necessary supplemental project agreements, and develop a release quality cost estimate, among many other activities.

II. SUMMARY OF CONCLUSIONS

As discussed below, Concentric concluded that, based on activities that have taken place between late 2009 and January 27, 2014, the commercial strategy Ontario Power Generation is employing for the Steam Generators work package is appropriate and reasonable and meets the regulatory standard of prudence.

Concentric's opinion is not without certain caveats and limitations, which are discussed in the sections that follow. Similarly, the basis for our opinions are described throughout the remainder of this document.

III. STANDARD OF REVIEW

To conduct our review of the commercial strategy selected by Ontario Power Generation for the Steam Generators work package, Concentric sought to answer three primary questions:

- 1) Is the commercial strategy selected by Ontario Power Generation for the Steam Generators work package reasonable?
- 2) Is the Company executing that commercial strategy in a reasonable manner?
- 3) Do the selected commercial strategy and the execution of that strategy meet the regulatory standard of prudence?

³ The period between the Request for Expressions of Interest and the RFP for Steam Generators was planned by the Project, and is a function of variety of business considerations, including the optimal timing of the Steam Generators solicitation in the context of other Project procurement activities.



To answer these questions, Concentric adopted a definition for the regulatory standard of prudence based on Concentric's work before state, provincial and federal energy regulators in both Canada and the United States. The definition utilized by Concentric is consistent with decisions rendered by the Ontario Superior Court of Justice,⁴ the Court of Appeal for Ontario,⁵ the Ontario Energy Board,⁶ and the U.S. Supreme Court,⁷ among other jurisdictions. Specifically, Concentric defined the prudence standard as examining the range of actions that a reasonable manager would take given the facts or circumstances that were known or knowable at the time of the decision or action. That definition rejects the use of hindsight as a basis for determining the prudence of a decision or action. In addition, that definition relies on an evaluation of decisions or actions. Project costs are neither prudent nor imprudent; instead, costs are prudently or imprudently incurred as a consequence of the decisions and actions of management.

In this report, Concentric provides its assessment of the Company's development and execution of its commercial strategy for the Steam Generators work package in the context of the above-described standard of prudence review. In particular, Concentric is providing its opinion on the prudence and reasonableness of Ontario Power Generation's decisions to:

- 1) Elect to engage outside support for all six sub-packages of work envisioned for the Steam Generators scope of work;
- 2) Pursue an EPC contract with a single vendor for a bundled scope of work; and
- 3) Pursue a combination of fixed, firm, and target pricing for Steam Generators work.

These decisions are discussed in greater detail in the sections that follow.

IV. INFORMATION SOURCES

Our review and the development of our opinions relied on three primary information sources. First, Concentric submitted multiple rounds of data requests for information related to the Steam Generators work package. Second, Concentric performed independent research on topics including lessons learned and the experiences of other CANDU operators performing similar projects, the Canadian nuclear safety regime, and industry trends and practices for other large nuclear refurbishment projects. Third, Concentric conducted in-person and telephone interviews with members of the Steam Generators refurbishment project team.

V. GENERAL LIMITATIONS OF CONCENTRIC'S OPINION

The following are general limitations regarding the scope of our review:

⁴ 2005 CanLII 4941 (Ont. Div. Ct.).

⁵ Court of Appeal for Ontario Decision, Docket: C55602, C55641 and C55633, June 4, 2013.

⁶ Decision with Reasons, RP-2001-0032, December 13, 2002. This Decision deals with Enbridge Gas Distribution Inc.'s (formerly Enbridge Consumers Gas or ECG) application for a Board Order approving rates for the 2002 Test Year.

⁷ Separate, concurring opinion of Justice Louis Brandeis, Missouri ex. Rel. Southwestern Bell Telephone Co. v. Public Service Commission, 262 U.S. 276 (1923).



- First, our review is limited to Ontario Power Generation's actions and documents prepared between late 2009 and January 27, 2014.⁸ Concentric did not review Ontario Power Generation's actions related to the Project prior to or after that time period.
- Next, Concentric did not independently verify the appropriateness, sufficiency, or correctness of the project schedules, cost estimates, or scope. However, Concentric was informed of the processes used to develop these metrics, and we reviewed assessments from outside experts that were engaged by the Company specifically to evaluate whether the Project and commercial terms with key vendors are consistent with similar projects throughout the industry.
- In addition, Concentric assumed Ontario Power Generation will retain adequately qualified personnel to complete the Project generally and the Steam Generators work package specifically. Those resources are critical to the success of the project, and may be sourced internally, hired directly, or engaged through contracts with third parties.
- Concentric did not perform a compliance audit to determine whether Ontario Power Generation and the Project were in compliance with Ontario Power Generation's internal policies, procedures, instructions and guidelines, or applicable provincial and federal regulations. Similarly, Concentric did not conduct a legal review of Ontario Power Generation's agreements or proposed agreements with any contractors. Notwithstanding that limitation, Concentric did review relevant Ontario Power Generation internal policies and procedures, and relevant provincial and federal laws and regulations when developing our opinion.
- Finally, Concentric's review is not an assessment of the Project's likelihood of success. Successful execution of the Project generally and the Steam Generators work package specifically will require the efforts of many entities and individuals over many years, and the development and implementation of the Project's commercial strategies is only one contributor to project success.

VI. STEAM GENERATORS WORK PACKAGE COMMERCIAL STRATEGY

A. OVERVIEW

Ontario Power Generation's Steam Generators project team was established in early 2011 and included representation from a broad array of groups within the Company including Engineering, Execution, Supply Chain, and Contract Management. In addition, input for the Steam Generators refurbishment work was gathered from Law (internal and external), Finance, and Darlington Refurbishment Planning and Controls. The team's progress in developing a commercial strategy was communicated on a regular basis to appropriate corporate and Darlington Refurbishment executive leadership.

⁸ The beginning of the period Concentric reviewed is roughly concurrent with Ontario Power Generation's completion of the Economic Feasibility Assessment of Darlington Refurbishment dated November 13, 2009. However, portions of the operational experience material reviewed by Concentric were prepared prior to this time.



To gauge the condition of the Steam Generators and associated hardware, a comprehensive Degradation Assessment was performed in 2000, and revised with additional detail in 2005.⁹ These assessments were supported by a report prepared by Dominion Engineering Inc. in December 2008 that contained an exhaustive evaluation of the maintenance that will be required to extend the Plant's operation. Additional lifecycle maintenance assessments are conducted in considerable detail on a regular basis. The condition of the steam generators has consistently indicated that the concerted effort that has guided the Ontario Power Generation's steam generator maintenance program at Darlington has been beneficial, but that aggressive additional maintenance and monitoring will be necessary to ensure the units are able to operate for an additional 25-30 years. Consequently, the refurbishment of the Steam Generators work package will involve inspections and extensive physical maintenance. The project consists of six discrete components:

1. Primary Side Cleaning ("PSC"): mechanical maintenance on the inside dimension of the steam generator tubes. PSC has been selected as the approach to enhance reactor inlet header temperature and neutron over power performance and is expected to allow the current Steam Generators to continue to operate for an additional 25-30 years.
2. Primary Side Divider Plate Leakage Measurements: measure leak performance in comparison to measurements from prior maintenance outages.
3. Secondary Side Cleaning: Hydraulic lancing and visual inspection will be used to address the outer diameter of Steam Generator tubes.
4. Inspection and Maintenance work consistent with the Life Cycle Management Plan: While this work has historically been performed on a regular basis during maintenance outages, a portion of the scope to be completed during refurbishment is augmented from traditional maintenance in order to address performance degradation. Under the terms of its EPC contract, the Company may choose whether the Inspection and Maintenance work will be completed by B&W/Candu. In the alternative, this work would be performed by the Darlington Station's Inspections & Maintenance Services ("IMS") group.
5. Installation of Access Ports: New port access will permit Station Engineering staff to conduct visual inspections of Steam Generator internal components during refurbishment activities as well as in future maintenance outages. Ontario Power Generation continues to evaluate the optimal timing of the installation of access ports. This work may be completed during a post-refurbishment planned outage.
6. Lay-up work: Wet-layup requires recirculation and nitrogen cover gas for the secondary side. Lay-up of the primary side will involve circulation of dry, dehumidified air once the primary heat transport system is drained and prepared for refurbishment.

The Original Equipment Manufacturer ("OEM") of the Darlington Steam Generator sets was B&W. According to Ontario Power Generation, access to OEM support will be beneficial during maintenance and refurbishment, in particular with respect to work related to the Access Ports.

B. STEAM GENERATORS WORK PACKAGE: CONTRACTING MODEL

⁹ "Darlington NGS Steam Generator Tubing and Internal Components Degradation Assessment." Darlington Refurbishment Project Document Number NK38-REP-33110-027, R001.



Ontario Power Generation completed an analysis of four contracting models for the Steam Generators work package: Self-Perform; Design-Bid-Build; Design-Build/EPC; and Turnkey. The Company's evaluation of risks and advantages of each approach indicated that the EPC approach offers the best opportunity to meet the Project's key cost, schedule and quality objectives and would avoid significant risks of each alternative approach. An EPC contract eliminates the significant coordination, oversight, integration, and administrative burden that would attend a Self-Perform or Design-Bid-Build approach. It also aligns with the Company's long-term business interest in pursuing a smaller, more efficient level of staffing at the Darlington Station. Finally, the Turnkey approach was determined not to match the overall Project commercial approach, in which Ontario Power Generation serves as the general contractor for all work. A turn-key arrangement would remove certain flexibility and oversight that the Company intends to preserve in order to ensure efficient and high-quality execution of the work packages.

C. STRATEGY WITH REGARD TO BUNDLING SUB-PACKAGES

In developing a Steam Generators commercial strategy, the Steam Generators project team conducted an analysis of risks and benefits of unbundling the elements in the scope of work. Six sub-packages were envisioned in an unbundled approach. (The project team determined that if the scope were to be split among different EPC contracts with the possibility of having a different vendor for each, layup work should be combined with the Primary Side Clean sub-package discussed above in Section VI.A.)

Unbundling the project elements would offer the ability to contract with vendors that have highly specific expertise with specific portions of the Steam Generators scope. In addition, the Company would retain the ability to use technologies and processes with which it is already familiar. (For example, using Kinectrics' Acoustic Leak Inspection System ("ALIS") technology for divider plate leakage detection and measurement would prevent any risks from employing techniques that have not been used in the Darlington units in the past.) Unbundling would also offer the potential for a more effective negotiating position for Ontario Power Generation in that more vendors would likely be qualified for particular types of work. Finally, limited-scope contracting would preserve the Company's ability to pivot to an alternative contractor for subsequent unit refurbishments if cost, scheduling, or performance expectations are not met by vendors focused on individual components of the Steam Generators work.

However, the benefits of unbundling the Steam Generators scope would be offset by significant risks to the Project. The primary risk Ontario Power Generation identified with unbundling was the integration and coordination challenges of managing the work of multiple vendors on equipment in a very constrained portion of the Darlington geography. As the general contractor for all refurbishment work, the Company is keenly aware of this risk and its impact on all Project work packages. For the Steam Generators project, a portion of which is close to being on the Refurbishment Program's critical path, this risk is particularly acute. The risk of managing the schedule for several different components of work on the Steam Generators hardware would be compounded by the need to manage the work of multiple different teams. Additionally, facilitating the work of multiple vendors on the Steam Generators eliminates the overall Refurbishment Project objective of minimizing points of accountability and would dramatically increase the level of effort and coordination required of the Company.

The alternative, *i.e.*, bundling the work in a single EPC contract, reduces Ontario Power Generation's administrative responsibilities for the scope of Steam Generators work and provides the Company with a single point of accountability. This will restrict the level of effort required of Ontario Power Generation to



coordinate the work of individual vendors, workforces, and execution timeframes. The Company also determined that a single, larger contract would be more likely to provide incentives to proponents to invest resources in necessary tooling, project development, and workforce training than a sequence of smaller contracts. Finally, combining the sub-packages may offer the possibility of creating a “partnership” relationship between Ontario Power Generation and the EPC vendor, although this type of relationship is highly dependent on the pricing structures, incentives, and opportunity for ongoing maintenance provisions that would need to be explicitly specified in a contract.

After weighing the costs and benefits of bundling and unbundling the work package elements, Ontario Power Generation reached the conclusion that the potential for interface risks and the administrative burden of managing multiple vendors did not justify the ability to seek contracts with a broader array of industry participants with specific, focused expertise. The Company determined that a single, bundled scope of work for the Steam Generators work package offered the best opportunity to achieve quality, cost, and schedule objectives for the Project.¹⁰

D. IDENTIFICATION OF QUALIFIED STEAM GENERATOR REFURBISHMENT VENDORS

Ontario Power Generation evaluated several contracting arrangements in development of its Steam Generators commercial strategy. In addition to the commercial principles that apply to all Darlington Refurbishment Project work, a number of priorities specific to the Steam Generators scope of work informed the evaluation and selection process, including:

- Completion of Steam Generators work on schedule and budget is crucial;
- Ontario Power Generation prefers not to own custom tools or lead the development of custom tool designs;
- The PSC component of the Steam Generators scope of work is currently very close to being on the overall Refurbishment Project critical path;
- Qualification of the PSC technology used by the vendor selected for that portion of work must be completed within a schedule that does not compromise other refurbishment activities.¹¹

¹⁰ While unbundling the work packages would allow Ontario Power Generation to engage directly with vendors that have domain expertise on a single sub-package of the Steam Generators work, the bundled EPC arrangement does not eliminate the opportunity to benefit from that expertise. Rather, it transfers execution risk and coordination responsibility to the EPC contractor. For example, the Company has historically contracted with [REDACTED] to perform primary side divider plate leakage measurement using its proprietary [REDACTED] Bundled EPC proposals from both [REDACTED] and [REDACTED] indicated that the vendors would subcontract this work to [REDACTED]. Consequently, this work will be completed by a vendor that is familiar with the Darlington units, while shifting the administrative and project management burden from Ontario Power Generation to its EPC contractor.

¹¹ PSC processes used by Areva and B&W (through its subcontract with Candu) have been qualified by Ontario Power Generation. However, both processes will require optimization and design acceptance, which is estimated to take approximately one year. Achieving “execution ready” status for the PSC technologies will take an additional year, meaning that the minimum lead-time for use of existing PSC processes at Darlington for refurbishment work is two years from Steam Generators contract execution. Qualification and optimization of altogether new PSC technologies would add a layer of complexity and substantial schedule risk to the Steam Generators work package, and the Refurbishment Project as a whole.



With these priorities in mind, Ontario Power Generation conducted an assessment of potential contractors that are capable of completing the scope of work under consideration. The Company found that AECL, Areva, B&W, and Westinghouse each possess the required capabilities for one or more of the sub-packages of the Steam Generators scope. In an effort to collect additional information regarding the various vendors' abilities to execute the scope of work, Ontario Power Generation issued a Request for Expressions of Interest to potential proponents in June 2011. On July 29, 2011, the Company received expressions of interest in participating in a formal proposal process from three proponent groups:

- Areva (with support in a subcontractor role from Promotion and PHTH Logistics)
- B&W (with support from AECL and Intech as subcontractors)
- Westinghouse (with AECON, AMEC NSS, and Kinectrics as subcontractors)

Through extensive discussions with Westinghouse, Ontario Power Generation confirmed that the company and its partners did not have a qualified cleaning process for the PSC component of the Steam Generators base scope of work, which was an explicit requirement of the Company. This and other information gathered from the market, as well as the experience gained through the Company's extensive steam generators maintenance program, informed the development of Ontario Power Generation's Steam Generators pricing strategy.

E. STEAM GENERATORS WORK PACKAGE: PRICING MODEL

After deciding on a bundled, EPC approach to the Steam Generators work, Ontario Power Generation conducted an analysis of the scope of work in order to design pricing requirements the Company planned to issue with its formal RFP. Ontario Power Generation developed separate pricing strategies for each component of the Steam Generators work package.

1. *PSC*
PSC work represents nearly 60% of the anticipated total cost of the Steam Generators work package. Much of the PSC scope (*e.g.*, tooling, mock-up, pre-execution engineering) has been defined in detail and can be completed at the vendor's facility. A fixed price has been selected for this portion of the work for the first unit, with firm pricing for the subsequent units.

Successful execution is predicated on the EPC vendor having access to the equipment during the refurbishment outage. A target price structure is planned for the execution phase work for all four units.
2. *Primary Side Divider Plate Leakage Measurements*
Ontario Power Generation has extensive experience with ALIS for divider plate leakage measurement at Darlington. A target price structure will be used for this portion of the work.
3. *Secondary Side Cleaning*
Ontario Power Generation plans to use fixed pricing for the Secondary Side Cleaning (or "waterlancing") work on the first unit to be refurbished. This work on the remaining units will be completed using a firm price arrangement.



4. *Inspection and Maintenance (Optional: the Company may choose to have IMS complete this work.)*
The majority of inspection and maintenance activities has historically been completed by Ontario Power Generation and therefore, is well-known and can be planned in detail. A fixed price is planned for this work for the first unit, with target pricing for each following unit.
5. *Installation of Access Ports*
The majority of the planning and engineering work related to the Steam Generator Access Ports is well defined and can be completed at the vendor's facility. A fixed price basis is planned for the first unit planning and execution. The following units will be completed on a firm-price basis.
6. *Lay-up work*
Lay-up work design engineering will be fixed-price for the first unit, and firm for each remaining unit. Execution layup work will be completed on a target price basis.

The Steam Generators scope of work is currently estimated to cost less than [REDACTED]. A more definitive cost estimate will be available later in the Project, at the close of the definition phase. To the degree possible, the Company plans to defer non-critical scope (*i.e.*, items that can be completed in the course of routine maintenance) discovered during refurbishment to future outages in order to control scheduling uncertainty and reduce stress on the near-critical path elements of the Steam Generators scope. To the degree that deferral is infeasible, additional scope will be developed using an appropriate pricing structure based on the nature of the additional scope.

VII. EXECUTION OF THE COMMERCIAL STRATEGY

Ontario Power Generation issued a formal RFP for the full scope of Steam Generators work in February 2013 [REDACTED]

Ontario Power Generation executed an EPC contract with B&W/Candu on December 30, 2013. Pre-refurbishment Steam Generators work is expected to begin in the first quarter of 2014.

VIII. CONCENTRIC'S OBSERVATIONS AND RECOMMENDATIONS

As stated above in the Summary of Conclusions, Concentric determined that the planning processes and activities completed by the Company between late 2009 and January 27, 2014 for the Steam Generators work



package were appropriate and reasonable, and meet the regulatory standard of prudence. In addition, we have made observations and identified opportunities for improvement that can strengthen the project management and supply chain functions going forward. Those observations and opportunities include:

1. While the Company has obtained a number of external assessments of the condition of the Steam Generators (*e.g.*, the Dominion Engineering report discussed above), no external assessments of the Steam Generators refurbishment work package scope have been conducted to ensure that the scope contained in contracting documents is consistent with the condition of the system hardware. An external validation of the decision to include or remove portions of work from the refurbishment scope will enhance confidence in successful completion of the Project, and will demonstrate the comprehensiveness of scope considerations.
2. Concentric agrees with Ontario Power Generation that single point of accountability reduces the Company's integration and Project management risk. However, we believe the Company should explicitly identify (and to the degree possible, mitigate) risks that are introduced when the six components of work are packaged together. The larger scale of a bundled approach does not guarantee that work will be completed more effectively. In fact, the magnitude of the impact in the case that a single vendor struggles to complete the work to the required level of quality on budget and within schedule can be substantial. The company should begin to formulate contingency plans for the unlikely event that its selected vendor does not meet Ontario Power Generation's expectations on the first unit to be refurbished.
3. A requirement in the Company's RFP for Steam Generators explicitly specified that vendors must be able to complete base scope work without putting the Steam Generators on the Project's critical path. However, given that the Steam Generators work remains "near critical path," we suggest that Ontario Power Generation begin to plan methods of integrating additional resources into the work plan in the case that the selected Steam Generators refurbishment vendor begins to experience challenges meeting schedule, scope, or cost objectives. Having a "Plan B" contingency demonstrates prudent planning of a major work package within the refurbishment Project.

IX. CONCLUSIONS

Concentric was retained to review Ontario Power Generation's development and implementation of its commercial strategies for the Project. At a cost of \$6 to \$10 billion in 2009 dollars, excluding inflation and interest, and a duration of more than 18 years from the start of planning to conclusion of commissioning and project closeout activities, the Project is clearly a major undertaking for Ontario Power Generation, and it is subject to financial, economic, regulatory, political, and execution risks. While effective commercial strategies are necessary to assist the Company in mitigating these risks, no commercial strategy can fully eliminate them.

To conduct our review of the Project's commercial strategies, Concentric undertook a detailed process to determine whether the strategies selected by the Steam Generators Project team are reasonable, whether the strategies were executed in a reasonable manner and whether Ontario Power Generation's actions related to the selection and execution of those strategies meet the regulatory prudence standard. Our opinion of these



strategies relied on information provided by the Company in response to our data requests, in-person interviews, our independent research and Concentric's experience advising other megaproject sponsors. Our review confirms the reasonableness and prudence of Ontario Power Generation's selected procurement strategies.