ONTARIO POWER GENERATION

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FOR INFORMATION to the Darlington Refurbishment Committee

November 11, 2020

DARLINGTON REFURBISHMENT PROJECT ASSURANCE: 2020 UPDATE & 3-YEAR OUTLOOK

REASON FOR REPORT

This report provides an update to key elements of the oversight and assurance structure for the Darlington Refurbishment Program (DRP), and outlines the 3-year oversight and assurance outlook, including key areas of risk that will be assessed and monitored. This Project Assurance outlook should be considered a 'living plan' that evolves with project risks and lessons learned.

CONCLUSIONS

The Project Assurance framework and plan continue to ensure that:

1) The processes and controls are in place to optimize safety, quality, schedule, and cost performance throughout the planning and execution of the remaining unit refurbishments;
2) Issues are identified and resolved expeditiously; and
3) Transparent and accurate information is reported up through Management and to the Board for effective oversight and decision-making.

HIGHLIGHTS

1. Key Updates to Assurance Roles and Accountabilities

The oversight and assurance structure, by design, incorporates multiple layers of oversight to support building and maintaining internal and external confidence in DRP performance. This structure is provided in **Appendix 1.**

Each layer of the assurance structure continues to be constructed in a manner that avoids supplanting the management decision-making process, and that reinforces accountability for identifying and fixing problems at the lowest applicable organizational level. These successive layers of oversight focus on evaluating the effectiveness of subordinate programs, and on testing the accuracy and completeness of information. **Appendix 2** provides additional detail on the respective accountabilities and reporting by the Board of Directors, Chief Project Officer (CPO), the Chief Nuclear Officer (CNO), and the Chief Executive Officer (CEO) and Enterprise Leadership Team (ELT) in discharging their oversight and assurance responsibilities.

The changes to the oversight and assurance structure for Unit 3 are as follows:

i) Board of Directors Independent External Oversight Advisor

Following the conclusion of arrangements with Burns & McDonnell / Modus, the Refurbishment Construction Review Board (RCRB) has been appointed to the role of Independent Oversight, reporting to the Darlington Refurbishment Committee (DRC). In this function, the RCRB will conduct independent assessments approximately 3-4 times per year of project performance, risks, and opportunities, and provide observations and recommendations to the DRC.

ii) Chief Project Officer (CPO) & Enterprise Projects Oversight Resource

With the appointment of the RCRB as the Independent External Oversight Advisor reporting to the DRC, Management has reviewed the existing assurance structure to identify any areas that may require adjustment. Considering the lessons learned from the successful execution of Unit 2, along with the increased maturity and confidence on subsequent units, Management has determined the existing oversight structure of both internal and external

assurance providers (detailed in Appendix 1) to be both robust and sufficient to support Management's needs to oversee and optimize project performance.

Should there be a specific need for additional oversight in specific areas, either at the request of DRP or OPG Executive Management, the following external agencies are able to provide the required services based on their expertise and/or direct experience in consulting on discrete aspects of the DRP:

- High Bridge Associates Inc., IEDG Infrastructure & Energy, World Association of Nuclear Operators (WANO), CANDU Owners Group (COG), Modus Strategic Solutions, and independent peer reviews conducted by industry experts.

2. Project Assurance 3-Year Outlook

As events, trends, and risks are identified, the Assurance team collaborates with accountable project/line owners and all internal and external assurance providers to prioritize oversight activities. This includes identifying the appropriate scope for project self-assessments, Nuclear Oversight, Internal Audit, WANO support missions, and other external reviews as requested by management. This agile "check and adjust" cycle ensures activities evolve to meet project demands and enhance performance.

The 2020-2021 Integrated Assurance Plan can be found in **Appendix 3**, and outlines the assurance activities currently planned for Unit 3. Plans are subject to change as project risks evolve; as such, the integrated plan will be continually assessed and adjusted as needed.

The following key areas will be prioritized over the next three years:

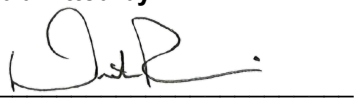
- Turbine Generator (TG) Controls Upgrade: the TG Controls upgrade will be performed for the first time on Unit 3; therefore, additional oversight on this project has been planned. For example, in addition to the WANO Member Support Mission conducted in October 2019, Internal Audit performed a Unit 3 TG readiness audit in Q1 2020, identifying opportunities for improvement in baseline schedule development.

- Resourcing and Management of Unit Overlap: the simultaneous refurbishment of multiple units will present new risks including in the areas of resource management, scheduling, and work management. A divisional self-assessment focusing on the overlap between Units 3 and 1 is currently scheduled for Q1 2021 to help identify and mitigate the risks.

- Implementation of COVID-19 Defence Protocols: the implementation of the COVID-19 protective measures in March 2020 and the possibility of continued future project impacts created a need for an assessment of the protocols implemented to protect the safety of workers and maintain project work. These areas will be a focus of internal self-assessments, as well as external oversight bodies such as Nuclear Oversight and Internal Audit.

- Incorporation of Lessons Learned and Key Performance Metrics: early indication of project performance will be key in confirming that the Unit 2 lessons learned that have been incorporated into the Unit 3 schedule are generating the expected results. This will be a focus of internal self-assessments, as well as external oversight bodies.

Submitted by:



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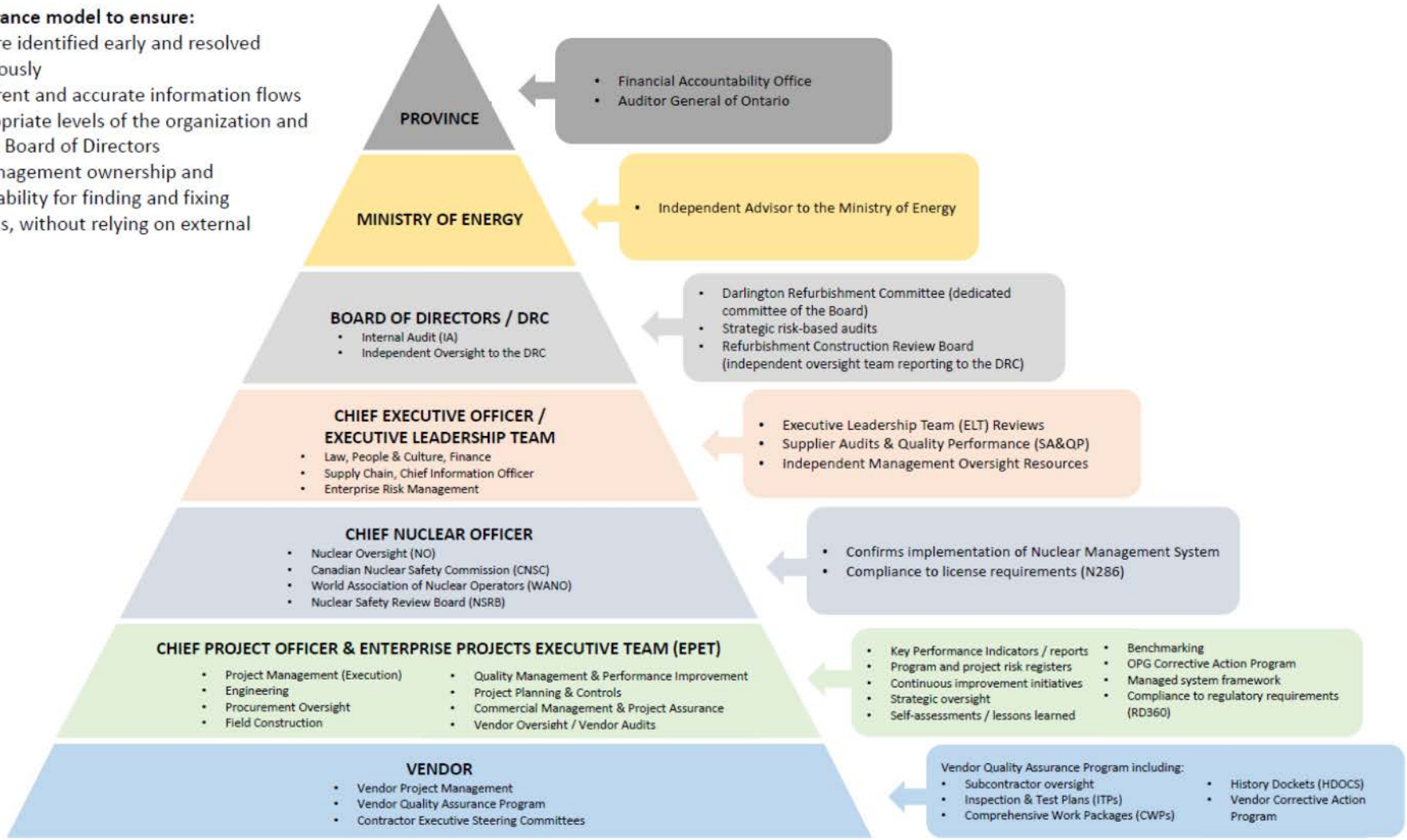
APPENDICES

1. Darlington Refurbishment Project Assurance Model
2. Detailed Accountabilities and Reporting
3. 2020-2021 Integrated Assurance Plan

Appendix 1: Darlington Refurbishment Project Assurance Model

Layered assurance model to ensure:

- Issues are identified early and resolved expeditiously
- Transparent and accurate information flows to appropriate levels of the organization and the OPG Board of Directors
- Line management ownership and accountability for finding and fixing problems, without relying on external parties.



Appendix 2: Detailed Accountabilities and Reporting

1. *Board of Directors – Accountabilities and Reporting*

   i) *Board Independent Resources*

   To assist the Board in maintaining the capability to independently test the effectiveness of programs, and to confirm the accuracy and completeness of Program information provided by Management, the Board will continue to retain independent resources and receive reports from the assurance bodies identified in the table below.

Board of Directors Independent External Oversight Advisor	The Board of Directors, through the Darlington Refurbishment Committee (DRC), has retained the Refurbishment Construction Review Board (RCRB) to provide independent assessments approximately 3-4 times per year of Program performance, risks, and opportunities, and provide observations and recommendations to the DRC.
Minister of Energy's Independent Oversight Resource	The Minister of Energy continues to retain an expert that regularly reports on the health of the Program to the Minister. This expert has unfettered access to all Program information and to the Program management team, and also participates on the DRC in an "ex-officio" capacity, co-reporting to the Minister with the Chair of the Darlington Refurbishment Committee.
Internal Audit	The Internal Audit team's responsibilities remain unchanged, and they continue to maintain functional independence from management. Audit results regarding key gaps in meeting operational, compliance, or regulatory objectives are reported quarterly to the Board.
Nuclear Safety Review Board (NSRB)	NSRB accountabilities remain unchanged. It continues to provide an annual presentation to the Board regarding their independent view of Darlington Nuclear plant operations, and any impact the Program may have on the operating units.

   ii) *Board Reporting*

   Given the impact of the Program on OPG's finances and operations, reporting to the Board continues to occur across a number of Board committees:

Darlington Refurbishment Committee	*Focus:* Execution performance of the Program *Principle ELT Rep:* Chief Project Officer (CPO) *External Input:* Insights provided by RCRB; Minister of Energy's Independent External Oversight Resource *Audit Feedback:* Audit results both from Internal Audit and Nuclear Oversight applicable to the Program
Generation Oversight Committee	*Focus*: Potential impacts of Refurbishment on operating unit safety, the health of training programs needed to support Refurbishment activities. *Principle ELT Rep:* Chief Nuclear Officer (CNO) *External Input*: Insights provided by the NSRB, WANO / INPO, Canadian Nuclear Safety Commission (CNSC) *Audit Feedback*: Audit results both from Internal Audit and Nuclear Oversight applicable to Nuclear Operations
Audit and Risk Committee	*Focus*: Application of internal control environment, financial implications of Refurbishment, impact on cash flow and financing and financial implications of cost recovery *Principle ELT Rep*: Chief Financial Officer *External Input*: External Auditor; specialized resources as needed. *Audit Feedback*: Performance and setting of Strategic Audit Plan and internal audits related to the Program

Compensation, Leadership and Governance Committee	*Focus:* Succession planning, compensation, incentives and retention in support of the Program, internal and external communications, stakeholder relations, and reputation management strategies, plans and metrics *Principle ELT Rep:* SVP, Human Resources; SVP, Corporate Affairs *External Input:* Management's compensation advisors (presently Willis Towers Watson), independent compensation advisors (presently Hugessen Consulting) *Audit Feedback*: Results applicable to succession planning and Human Resource policy application to the Program

2. *Chief Executive Officer and Enterprise Leadership Team (ELT) – Accountabilities and Reporting*

   The Chief Executive Officer (CEO) is accountable for providing robust oversight to ensure that the CPO and CNO are effectively finding and correcting issues that carry implications for the Program and OPG. The CEO utilizes the broader ELT to ensure that the company's financial, risk, legal, human resources and ethics programs and standards are properly applied to the Refurbishment Program, as well as ensures timely and complete reporting to the Board:

Enterprise Leadership Team Quarterly Review	Reviews the performance of the Darlington Nuclear Refurbishment Program on a quarterly basis, including: • CPO report on Program status including safety, quality, schedule and cost • Chief Financial Officer report on financial controls application, and other financial implications • Chief Risk Officer report on enterprise risks that stem from or impact the Program and on the effectiveness of the risk management program • General Counsel report on legal and ethics issues • Human Resources report on staffing, training, and safety performance • Internal and external audit and assessment reports • Insights provided by the RCRB
Internal Audit	Internal Audit verifies that management has designed and operated robust processes and controls to meet Program and enterprise objectives. The Strategic Audit Plan includes risk-based audits aligned with the Program top risks and objectives. Management reviews and acts to resolve the findings and recommendations resulting from the Strategic Audit Plan.

3. *Chief Project Officer – Accountabilities and Reporting*

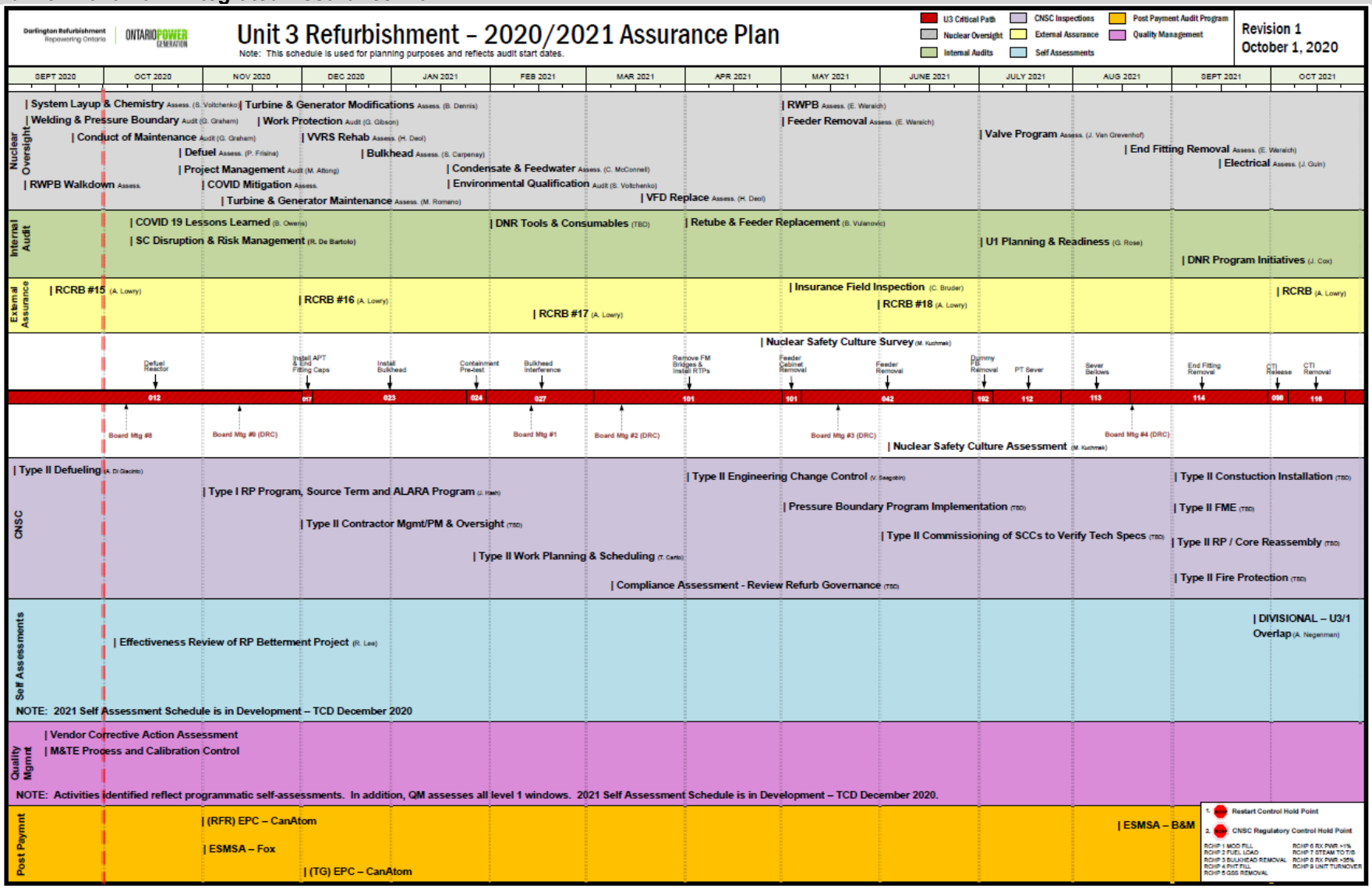
   The CPO and Enterprise Projects Executive Team are accountable for execution of a robust set of oversight and assurance programs to ensure that issues are identified, reported, evaluated and corrected. These programs and structures look at all elements of the Darlington Nuclear Refurbishment Program and report up to the Chief Executive Officer:

Enterprise Projects Executive Team	Actively monitors and assesses project performance to determine if activities are progressing on plan and that safety, quality, schedule and cost requirements are being met.
Project Planning & Controls Organization	Establishes cost and schedule baselines, and maintains controls for changes to the baselines. Ensures cost and schedule compliance, and complete and accurate metric and progress reports.

Commercial Management & Project Assurance Organization	Oversees the multi-layered Program Assurance framework, manages the Program Management System, conducts surveillances of projects and contractors, and raises any gaps promptly. Provides support for management of contracts used in execution of the Program.
Project Management, Execution, and Support	Oversees project deliverables executed by OPG and contracted vendors, and the day-to-day progress of the projects. Removes barriers to expedite the work and ensures that quality requirements are achieved on time and on budget. Project Managers maintain specific metrics for safety, quality, schedule, cost, and promptly address and escalate performance gaps.
Quality Management Organization	Through direct assessment and intervention confirms that contractors, subcontractors and suppliers are meeting quality expectations and that all needed regulatory documentation is being created and maintained. Performs specialized and regulatory required quality inspections.
Contractor Executive Steering Committees	Steering committees have been established for each major supplier to ensure key issues and oversight findings are escalated and addressed expeditiously.
Contractors / Vendors	During contract formation, provisions were included that require implementation, oversight and assurance processes on the part of each contractor. Contractors are responsible for establishing and executing these programs to ensure that their activities, and those of their subcontractors, meet requirements. OPG continues to monitor contractor compliance in this area.

4. *Chief Nuclear Officer and Nuclear Management System – Accountabilities and Reporting*

   The CNO, through the Nuclear Management System and the Nuclear Executive Committee, is accountable for execution of robust operations, oversight and for ensuring that established programs are implemented in accordance with the Nuclear Management System:

Nuclear Executive Committee	Provides assurance that project performance is following the Nuclear Management System and that corrective actions are taken when issues cross from the Project into the Nuclear Management System.
Regulatory Affairs	Manages interfaces with external regulators such as the CNSC, Ministry of Labour, Ministry of Energy, and performs assessments of compliance. OPG anticipates and addresses issues in a way that maintains and builds regulatory confidence.
Industry Assistance and Assessment (WANO / INPO)	Nuclear industry organizations are utilized by Management to provide assistance in significant risk areas to help understand the current state of performance relative to industry standards and to help develop gap closure plans. They periodically evaluate corporate and station performance; comparing performance to established industry standards and highlighting significant gaps. The results of these evaluations are reported to the CNO and CEO who direct the development and implementation of plans addressing the areas for improvement. This information is shared with the Board of Directors.
Nuclear Safety Review Board (NSRB)	Provides independent assessment of continued safety of operating units, application of the Nuclear program, quality assurance, and the safe return to service of units.
Nuclear Oversight Organization	Conducts audits and assessments to ensure that the Program meets the requirements of the Nuclear Management System. The findings are reported to the CNO and CPO for action, and are shared with the NSRB and the Generation Oversight and Darlington Refurbishment Committees of the Board.

Appendix 3: 2020-2021 Integrated Assurance Plan