ONTARIO POWER GENERATION

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SPECIAL 2012 PROVINCIAL AUDIT PREPAREDNESS TEAM
BRIEFING PAPER
OPG CONFIDENTIAL AND PROTECTED

Evaluation Area: Nuclear Engineering

Representatives: Mark Elliott, Carla Carmichael

Background

Over the last number of business planning cycles, significant effort has been made to ensure the right sizing of the Engineering organization at Ontario Power Generation (OPG). Benchmarking other Nuclear organizations' designs and processes have been key elements of establishing OPG Nuclear Engineering business plans. In 2009, the Engineering Peer Team developed a Nuclear Fleet Initiative EN-02 Engineering – Value for Money project (EN-02), which was a key intiative that spanned three business planning cycles and involved the entire fleet to make engineering more efficient and effective. The main objective of EN-02 was to enable staff reductions targeted in the business plans by identifying 1) efficiency opportunities; 2) lower value work that can be stopped; and 3) organizational changes for enablement. In 2012, the OPG company-wide Business Transformation initiative continued with the EN-02 objective to bring the function in line with current benchmarked levels. EN-02 and the Business Transformation initiatives are reflected in the current year's 2013-2015 Nuclear Engineering business plan.

Benchmarking

OPG continues to benchmark many of its engineering programs against industry best practice. In addition, OPG regularly attends industry user groups and peer teams such as the Electric Power Research Institute (EPRI), Institute of Nuclear Power Operations (INPO) and the Candu Owners' Group (COG). Learning points from these are routinely captured into OPG's self assessment database, and management actions are monitored regularly to ensure lessons learned are implemented. For example, OPG recently concluded a self assessment in 2012 in the area of motor operated valves, and engaged a US company expert to assist developing actions to apply any learnings.

Other learnings have been captured into initiatives such as EN-02 , which relied on benchmarking showing OPG's engineering staffing levels were higher than median performers. Furthermore, differences identified in the engineering organization designs between Darlington and Pickering revealed an opportunity to standardize and streamline groups and work programs. The EN-02 initiative was direct response to this benchmarking.

A Nuclear-wide staff benchmarking study began in July 2011 following the retention of Goodnight Consulting ("Goodnight Benchmarking"), an external consultant with experience in nuclear industry staff benchmarking. When the Goodnight Benchmarking was completed in February 2012, two engineering functions, Engineering - Technical and Engineering - Plant, were identified as below benchmark. The benchmarking results were only available post-Business Transformation in 2012. As a result, some Engineering functional areas were reduced below the Goodnight benchmarks. For the 2013-2015 Business Plan, OPG realigned Nuclear Engineering staff targets to address certain areas of excess and shortfall identified in the Goodnight Benchmarking.

Evaluation Area: Nuclear Engineering

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Fleet Initiative EN-02 Engineering – Value for Money

The objective of EN-02 in 2009 was to identify efficiency improvements, work program changes and other organization changes, which would reduce the demands for engineering staff across the fleet. The scope of EN-02 included:

a. the centralization of some engineering services,
b. the identification of efficiency improvements in all engineering lines of business (mostly programmatic changes)
c. the elimination of some non-engineering and other low value work
d. an assessment of the practicality of some streamlining of the Nuclear Engineering organization

When implemented over several years, these changes would enable the staff reductions required to achieve the target benchmark levels. Change management plans, the main product of the initiative, took into account all important considerations which could affect the business, such as nuclear safety, financial performance, etc. This allowed for reductions to occur in a risk-informed manner.

The EN-02 charter contained target staff reductions (overall and by engineering department area). These were used to establish the reduction targets for the sub-initiatives. The actual reduction of staff levels was outside the scope of the initiative and therefore actions required to achieve the reductions were not contained in the charter. Based on information available and using expected attrition models, the staff reductions targeted were very close to the expected attrition. Also, other engineering staff needs, e.g. Darlington Refurbishment and potentially New Build would result in attrition to outside of Fleet Engineering.

The Pickering amalgamation was initially an explicit part of the EN-02 initiative, and the expected savings took this change into account. During 2010, it was realized that this major change had to be driven locally from Pickering and could not be driven effectively as a corporate fleet initiative. However, the anticipated amalgamated structure was used when reviewing the work programs in the station engineering departments. By 2011, the expected staff level savings from each of the change management plans projected a reduction of 57 full-time equivalent at the sites only by 2015, as summarized in Table 1 below, which does not include the Nuclear Engineering organization at corporate. When combining the expected savings from these change management plans with the expected reductions in corporate and other initiatives, the resulting work program changes would have corresponded to a reduction of 141 full-time equivalent employees by the full implementation at the end of the corresponding business planning period of 2015 in the 2011-2015 business plan.

The initial objectives of the nuclear fleet initiative EN-02 were met and all the required change management plans were completed by the end of 2011. When these plans are fully implemented, it is

Evaluation Area: Nuclear Engineering

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Table 1: EN-02 Expected FTE Savings at Sites

EN-02 Initiative	Expected savings (FTE) - across the fleet[1]
Performance Engineering Work Program changes and other efficiencies	16 (includes 3-4 FTEs per site savings from system IQ implementation in ER-01)
Components and Equipment Engineering Work Program changes and other efficiencies	15
Major Components consolidation	5
Drawing Office consolidation	3
Reactor Safety work program review and centralization	18
Total	57

1 The expected savings was estimated by each initiative owner and associated site Managers based on the contents of the change management plan.

expected that the anticipated savings will be achieved. Progress reports have been documented each quarter in 2012, and some of the EN-02 sub-initiatives have now become Business Transformation initiatives in 2012.

Business Transformation (BT) and the Proposed 2013-2015 Business Plan

In 2012, OPG re-organized into a centre-led organization structure, including bringing together all engineering functions across the fleet into one division lead by the Chief Nuclear Engineer, enabling consolidations and effeciencies to be planned as highlighted in Table 2 below. The company-wide Business Transformation (BT) established end state organization structures which are expected to be achieved over the next several years with initiatives developed and continuing to evolve to make OPG become more efficient and effective across the entire organization .

The 2013-2015 business plan for headcount levels were derived using a model that takes the lower of 2012-2014 Business Plan targets or attrition-based forecasts. Attrition-based forecasts assume a 10% rehire to fill critical roles. OPG also incorporated the Goodnight Benchmarking into the headcount for the 2013-2015 business plan shown in Table 2 by making minor adjustments to the Nuclear BT end state organization to partially correct for variations from industry average staff levels in three functional areas: Engineering - Technical, Engineering Plant, and Construction/Maintenance Support. The adjustments net to zero change in the overall Business Transformation staff reduction, but the distribution of headcount within Nuclear was an increase in the Nuclear Engineering job family end state to address the shortfall identified in the benchmarking. The overall trend between 2010 actual

Evaluation Area: Nuclear Engineering

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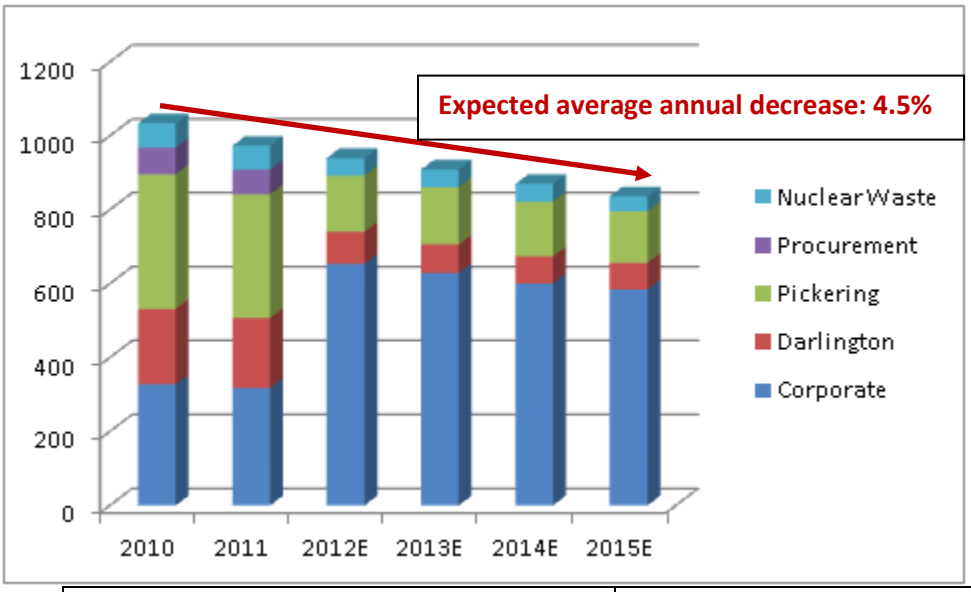
headcount to planned 2015 headcount continues show a reduction while managing business risks. An overall reduction of 198 headcount is expected which equates to an average annual decrease of 4.5%.

Table 2: Nuclear Engineering – Operations Headcount



	Pre - Business Transformation			Post - Business Transformation Phase 1			
Division	**2010 Actual**	**2011 Actual**	**2012 Feb Actual**	**2012 Forecast**	**2013 Plan**	**2014 Plan**	**2015 Plan**
Corporate	328	318	324	653	629	601	585
Darlington	204	189	212	87	77	73	71
Pickering	364	335	300	152	155	148	140
Procurement	72	67	66	-	-	-	-
Nuclear Waste	66	64	65	48	48	48	40
Total	**1,034**	**973**	**967**	**940**	**909**	**870**	**836**

Evaluation Area: Nuclear Engineering

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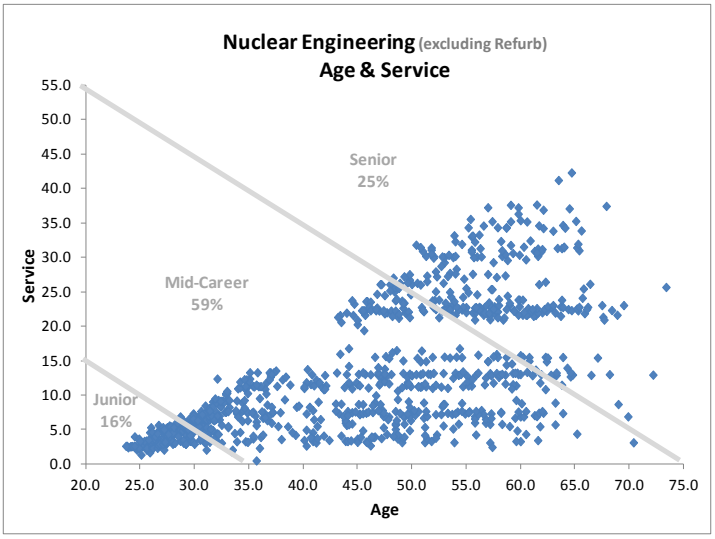
Engineering Demographics

The Engineering job family has approximately 20% of employees that are eligible to retire in the next two years. As Shown in Table 3 below, as of August 31, 2012, 25% of the workforce are in a Senior category. OPG has implemented a number of initiatives to address the need to reduce staffing demands through BT, while developing the talent to execute key required roles using programs such as the

Table 3: Engineering Demographics



Emerging Talent Program, the New Graduate Trainee Program, the Nuclear Engineering Intern Program, and long-term workforce planning.

Emerging Talent Development

OPG has developed a program to identify any individuals meeting the definition of *Emerging Talent*, such that at an early stage individuals who are high performers and demonstrate the potential and interest to excel at a position *two* levels above current roles are considered Emerging Talent. This process identifies, screens, develops and tracks a targeted population of high potential, junior employees for the purpose of increasing the talent pool of future leaders. The objective of the Emerging Talent program is to accelerate the development of Nuclear's Emerging Talent to populate succession candidate pools for key leadership positions in OPG Nuclear sooner than otherwise in the normal course of business.

Evaluation Area: Nuclear Engineering

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New Graduate Trainee Program

For the past several years, OPG has had a two-year Nuclear Engineering New Graduate Trainee Program. The Nuclear Engineering New Graduate Program is designed to ensure that OPG Nuclear Engineering has sufficient trained and competent staff for present engineering positions and to provide a potential source to meet succession planning needs for the future.

The New Graduate Training Program is 24 months in duration. At the start of the program, the trainee participates in a two-day orientation session, followed by seven weeks of in-classroom training. On completion, the trainee reports to two developmental rotations for a period of approximately four months each in different Nuclear Engineering departments before reporting to back to the original department (home base) for the balance of the training program. The trainee gains valuable engineering experience upon reporting to home base, including a four-week shift cycle rotation. On their 24-month anniversary, the trainee is eligible to be reclassified to Assistant Technical Engineer/Officer (OR Assistant Engineer Scientist Technical Officer, OR Associate Design Engineer) in the home base department, based on satisfactory performance as determined by the supervisor.

Nuclear Engineering Intern Program

An experiential learning program, the Nuclear Engineering Intern Program has been designed to complement the Nuclear Engineering New Graduate Trainee Program. In particular, the Nuclear Engineering Intern program provides a means of assessing and developing the capabilities of Engineering and Applied Science students, who may become the future generation of Engineering New Graduate hires.

An internship in OPG Nuclear is a paid work experience of 12 to 16 months in duration. An integral part of post-secondary study, University students are employed in settings which provide work experience related to academic programs and career objectives. Some universities refer to the Internship as a professional experience year (PEY). OPG provides internship opportunities to students who are registered in an Internship degree or PEY program at their University and, have completed three years of a four-year, or four years of a five-year, Engineering or Applied Science Degree Program. Upon completion of an Internship work term, successful candidates must return to school to complete the academic requirements of the Degree Program.

The Intern program at OPG Nuclear continues to grow and be successful. For this reason, a number of the positions are centrally funded through the Workforce Development Plan.

Long-Term Work force planning

The long-term demand incorporates strategic milestones into consideration such as Pickering end-of-life. This requires careful balancing of demographics through the modelling of attrition, new-hiring, and

talent development. Table 3 below shows the longer term demand and supply of the entire Engineering job family throughout OPG Nuclear, including Nuclear projects such as Darlington Refurbishment, and considers the strategic milestones of the overall company.

Table 3: Long-Term Demand vs Supply – Engineering Job Family