OPG New Nuclear at Darlington Environmental Assessment

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Generation Development

New Nuclear at Darlington Environmental Assessment
Presentation to Town of Markham
Monday April 20, 2009

ONTARIO POWER GENERATION

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Ontario Power Generation

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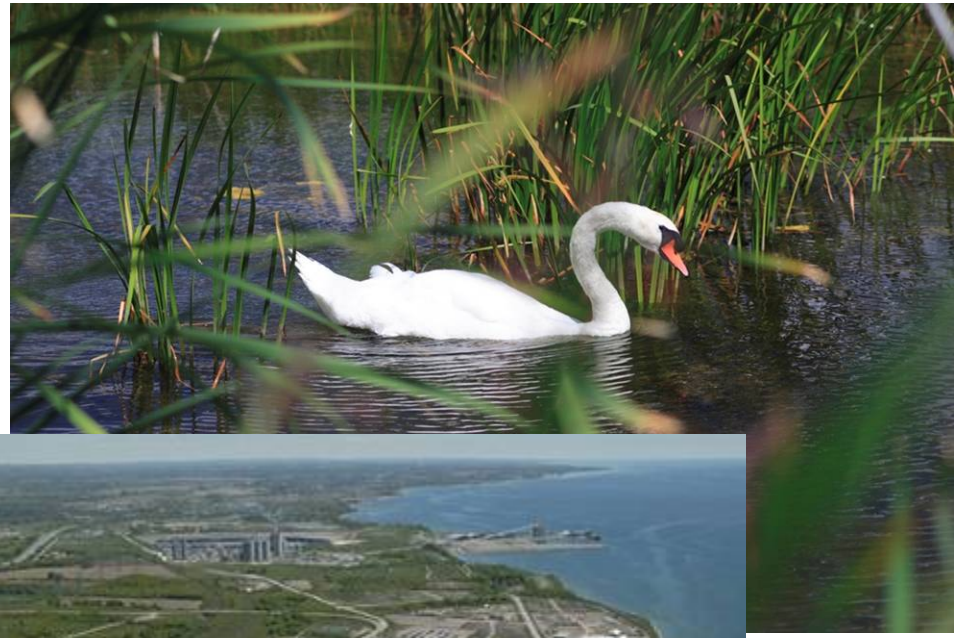


The Project - Overview

The Project

- Construct & operate a new nuclear power plant at the existing Darlington site to meet base-load electricity requirements of Ontario

OPG

- Submits an Environmental Impact Statement (EIS) and site preparation licence application for up to four nuclear units and up to 4,800 MW of electrical capacity (i.e. full build out)
- Will be the operator of the new plant

Infrastructure Ontario

- Competitive process to select a nuclear reactor vendor to construct two units
- Bids are subjected to a conformity review
- Evaluation based on
  - 80% Commercial and Schedule score
  - 20% Domestic Content score

Federal Approvals

Canadian Environmental Assessment Agency and Canadian Nuclear Safety Commission

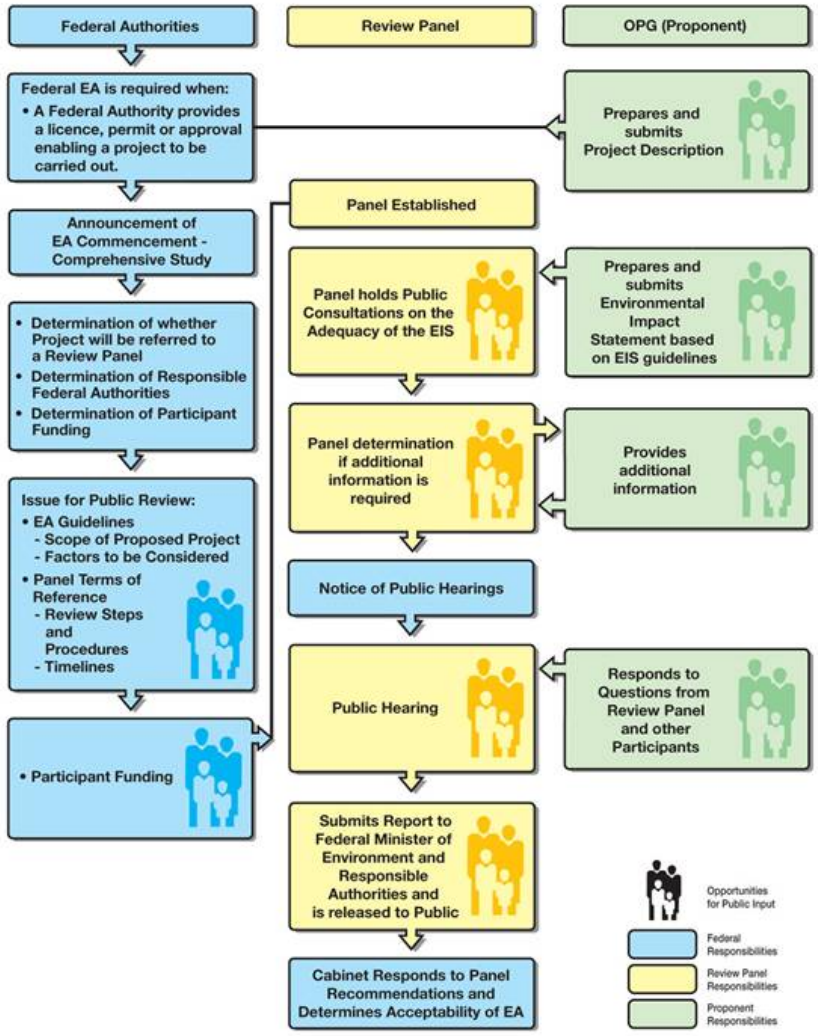
- Final EIS Guidelines and Panel Agreement and terms of reference issued
- Joint Review Panel to be established
- Canadian Environmental Assessment Agency Phase II Intervener funding to be released

OPG

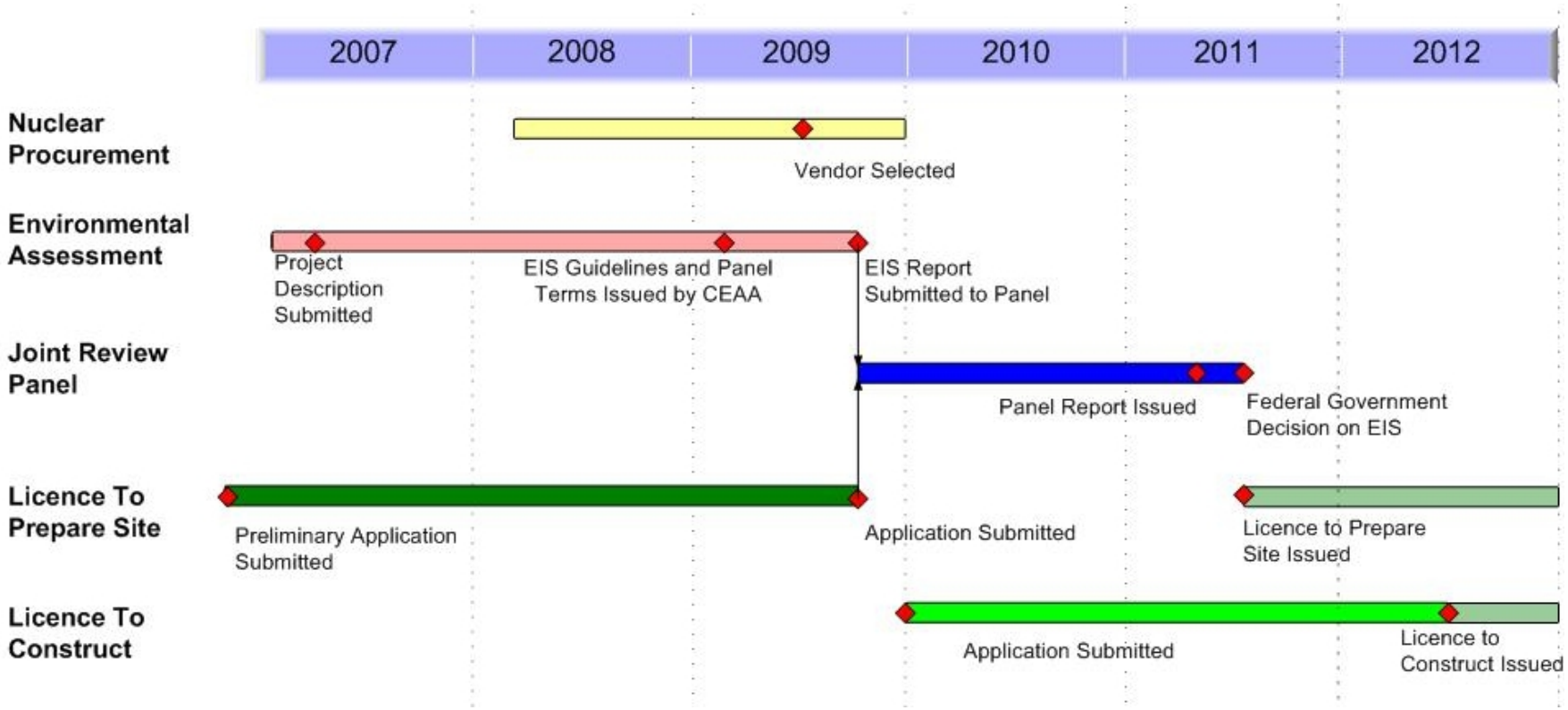
- Determine what additional work
- Continues public consultation and refine EA studies
- Submit EIS and Licence to Prepare Site application

Joint Review Panel

- Undertakes public/technical review; holds public hearings
- Issues report to Federal Minister of the Environment



Major/Indicative Milestones



Environmental Assessment - Overview

OPG has completed baseline data collection

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OPG is considering potential effects and mitigations

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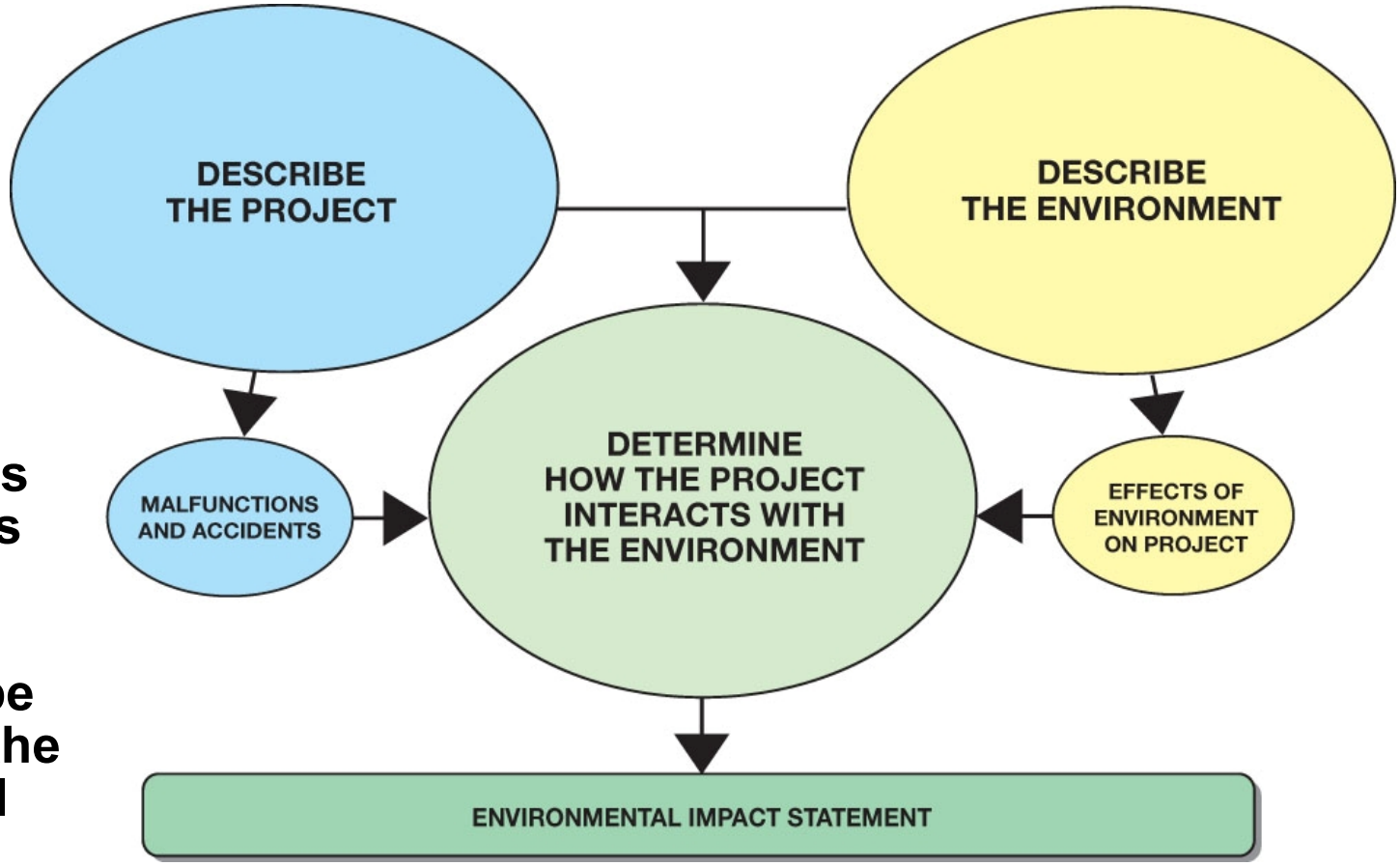
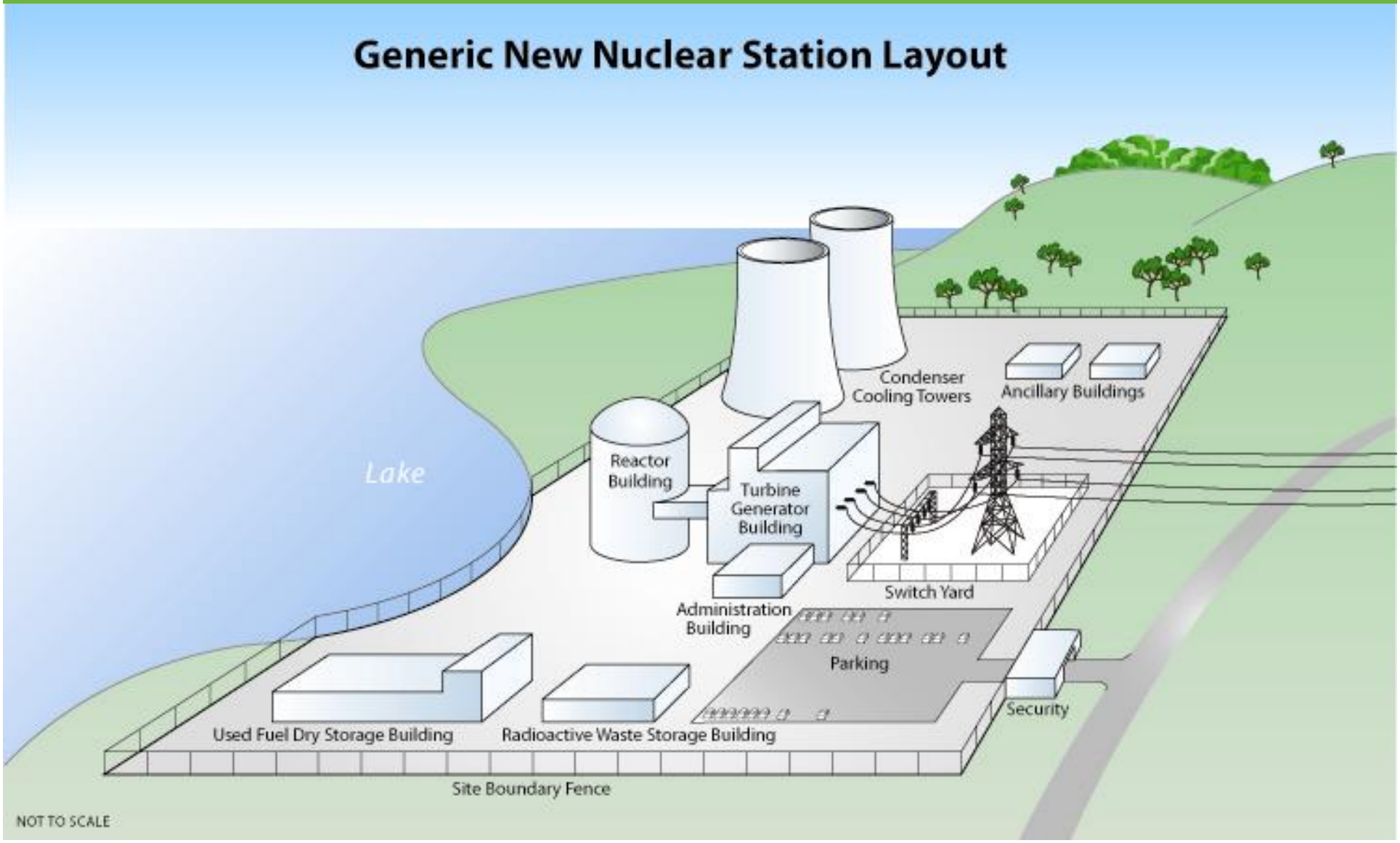
All of this will be documented in the environmental assessment



The Project –Principle Buildings and Structures



EA Study Areas/Spatial Boundaries

Site Study Area – existing Darlington site

Local Study Area ~ 10 km from the Project Site

- Most environmental effects within LSA

Regional Study Area ~ 50 Km from the Project site

- Largely socio-economic effects
- Cumulative effects

EA Studies

- Atmospheric Environment
- Surface Water Environment
- Aquatic Environment
- Terrestrial Environment
- Geology, Hydrogeology and Seismicity
- Radiation and Radioactivity
- Ecological Risk Assessment
- Socio-Economic Conditions
- Physical and Cultural Heritage Resources
- Land Use &Transportation
- Accidents & Malfunctions
- Human Health
- Aboriginal Interests
- Emergency Response Planning


Cup Plant

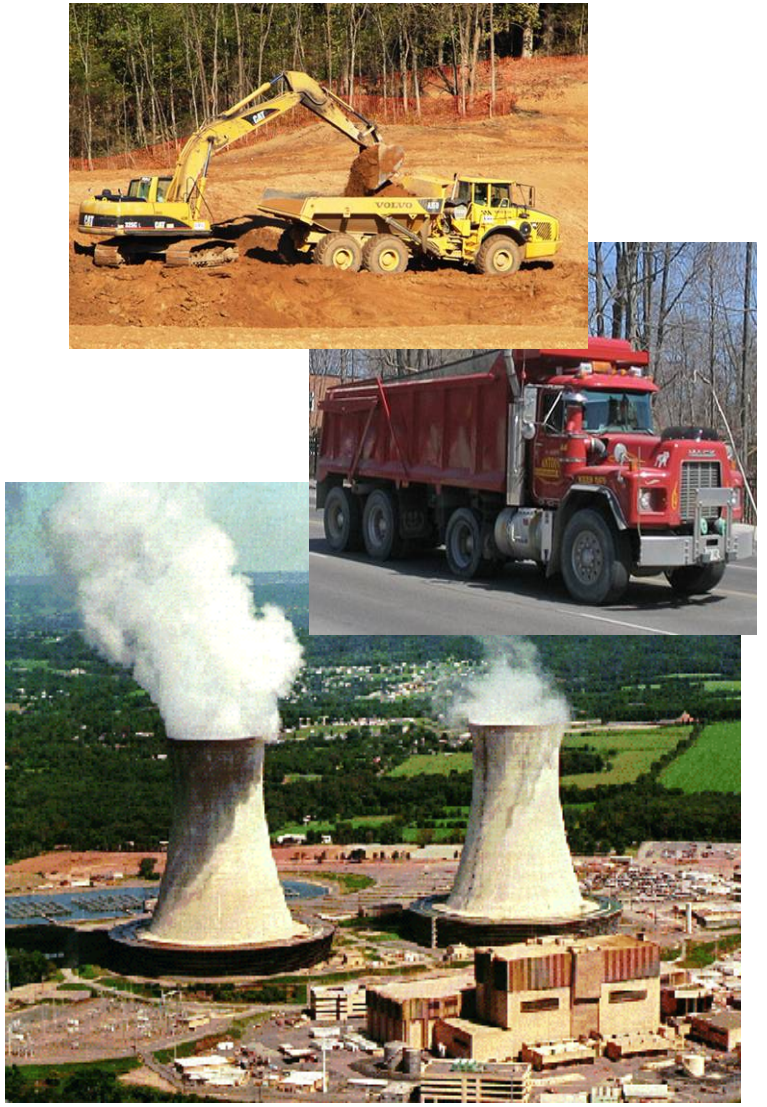

Showy Lady Slipper

Potential Environmental Effects Assessed for Significance

Significance assessment uses criteria such as magnitude, geography, duration, probability, importance, societal value

Some of the effects to be assessed:

- Loss of some aquatic species (fish and other organisms) from lake infill and cooling and service water intake and discharges
- Loss of meadow
- Loss of butterfly habitat during migration
- Loss of nesting areas for Bank Swallows



Social and Economic Environment
Key Workforce Assumptions

Site Preparation and Construction Phase

- Up to 300 persons Project Team
- Up to 100 Site Preparation workforce
- Up to 3,500 Construction workers at peak
- 35% of the workforce drawn from Regional Study Area based on Statistics Canada skilled labour distribution

Operations and Maintenance Phase

- Up to 1,400 workers per two reactor units
- Up to 2,000 workers for Mid-life Refurbishment
- Up to 100 workers for periodic construction of additional waste storage facilities
- 84% of the Operations and Maintenance workforce drawn from RSA based on DN Site place of residence data

Socio-economic Effects in Regional Study Area

Factor	Implications for Regional Study Area (based on 2 units)		
	Existing DNGS (4 units)	**Site Preparation and Construction (2 units)**	**Operations and Maintenance (2 units)**
Employment *(average # direct and indirect jobs) per year over phase)*	6,800	3,800	3,700
Associated Population *(average # persons per year over term)*	21,000	9,500	9,200
Associated Housing *(average # units over term)*	7,100	3,300	3,200
Household Income *(annual average $ per year over term)*	$ 485 M	$250M	$255M

Socio-Economic Effects in York Region

Factor	Implications for York Region (Partial)		
	Existing DNGS (4 units)	**Site Preparation and Construction (2 units)**	**Operations and Maintenance (2 units)**
Employment *(average # direct and indirect jobs) per year over phase)*	50	300	90
Associated Population *(average # persons per year over term)*	50	600	160
Associated Housing *(average # units over term)*	30	170	50
Total Household Income *(annual average $ per year over term)*	$3M	$20M	$6M
ICI Floor Space (annual average ft2 per year over term)	26,000	165,000	50,000

Preliminary Cumulative Effects Assessment

- 34 other projects and activities considered
- Focus on four areas of the environment:
  - Aquatic
  - Terrestrial
  - Visual landscape
  - Socio-economic environment
- Six nearby projects overlap in time
  - Detailed examination to determine whether any effects overlap, particularly traffic and nuisance effects
- Effects anticipated to be local, contained
- Unlikely that additional mitigation measures are necessary

GROWING DURHAM
GROWTH PLAN IMPLEMENTATION STUDY

Durham Region / York Region — ***Energy from Waste Facility***

407 EAST Environmental Assessment

Transit — ***Extension of GO Rails Service from Oshawa to Bowmanville***

Clarington Energy Business Park

Ontario — ***Highway 401/Holt Road Interchange Improvements***

Malfunctions, Accidents and Malevolent Acts

OPG is examining the environmental effects of low probability malfunctions & accidents in the EA

- **Conventional -** inadvertent release of chemicals
- **Radiological -** a release of radioactivity
- **Nuclear -** serious damage to the fuel bundles and/or the reactor core and could result in an acute release of radioactivity to the environment
- **Malevolent Acts -** an intentional attempt to cause damage

Mitigations

- Protective actions consistent with Ontario Nuclear Emergency Plan
- Evacuation Time Estimate Studies:
  - A detailed Evacuation Time Estimate study has been done specifically for the new nuclear station at Darlington

Likely/Preliminary Conclusions

Environmental effects predicted from New Build

- Primarily during site preparation and construction phase
- Primarily within 3 km of the site
- Can be managed, mitigated
  - **Proposed commitment to mitigation & follow-up actions**
- Number of Benefits

EIS and Licence to Prepare Site application, when submitted, will be posted to OPG's Project Web site

Communications & Consultation Spring 2009

Stakeholder & Community (February – March)

- Briefings
- Workshops
- Roundtable Dialogues

Community Information Sessions Round #5 (April – May)

- Bowmanville - Tuesday April 21, 2009
- Courtice –Thursday May 7, 2009
- Orono – Wednesday May 6, 2009
- Newcastle – Tuesday April 28, 2009
- Oshawa - Wednesday April 22, 2009
- Cobourg - Thursday April 23, 2009
- Peterborough – Tuesday May 5, 2009
- Whitby – Wednesday April 29, 2009

Next Steps

Date	Activity	Status
Feb/March 2007	Pre-submission Consultation on Project Description	√
April 2007	OPG submits EA Project Description to CNSC	√
June 2007	Define Study Areas	√
Fall 2007	Public Consultation Round #2	√
Fall 2007 – Summer 2008	Establish Environmental Baseline (environmental components; valued ecosystem components)	√
Spring 2008	Public Consultation Round #3	√
Spring/Summer 2008	Determine Possible Project – Environment Interactions	√
Summer/Fall 2008	Identify Environmental Effects, Possible Mitigations, Determine Residual Effects	√
Fall 2008	Public Consultation Round #4	√
Winter 2008/Spring 2009	Determine Significance of Residual Effects	underway
Winter 2008/Spring 2009	Examine Effects of Environment on Project; Follow-up and Monitoring	underway
Spring 2009	Public Consultation Round #5	underway
2009	EIS and Licence to Prepare Site Application Submission	

Contact Us

www.opg.com/newbuild

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