

RATE BASE

1.0 PURPOSE

This evidence presents a summary of rate base for the regulated hydroelectric and nuclear facilities. In addition, it provides a description of each of the components of rate base and the methodology by which these components are determined.

2.0 OVERVIEW

This evidence supports OPG's request for approval of a rate base for the regulated hydroelectric facilities and the nuclear facilities for the test period. The rate base for the regulated hydroelectric facilities and nuclear facilities for the years 2007 - 2012 are presented in Ex. B1-T1-S1 Tables 1 and 2, respectively.

OPG's rate base forecast for the bridge year and test period is established from a forecast of net fixed/intangible assets and working capital associated with the regulated facilities. The rate base amounts for the historical period are based on actual balances for those years. Working capital consists of cash working capital, fuel inventory, and materials and supplies. The total rate base forecast for the regulated hydroelectric facilities is \$3,803.4M in 2011 and \$3,787.4M in 2012 (Ex. B1-T1-S1 Table 1). The total rate base forecast for the nuclear facilities is \$4,041.3M in 2011 and \$4,150.8M in 2012 (Ex. B1-T1-S1 Table 2).

3.0 COMPONENTS OF RATE BASE

3.1 Fixed and Intangible Assets

3.1.1 Overview

The value of fixed/intangible assets in the rate base ("net plant") is an average of the opening and closing net book value balances of the fixed/intangible assets in-service and construction work-in-progress ("CWIP") for designated capital projects during the period. The value of forecast fixed/intangible assets in-service is reduced by forecast accumulated depreciation/amortization and retirements/transfers to arrive at the net book value of fixed/intangible assets in-service. The net plant for the regulated hydroelectric facilities is forecast to be \$3,781.3 in 2011 and \$3,765.3M in 2012 as shown in Ex. B1-T1-S1 Table 1.

1 The net plant for the nuclear facilities is forecast as \$3,172.2M in 2011 and \$3,302.3M in
2 2012 as shown in Ex. B1-T1-S1 Table 2.

3

4 The net plant for the regulated hydroelectric facilities for 2007 - 2012 is presented separately
5 for each of the Niagara Plant Group and R.H. Saunders. The net plant for the nuclear
6 facilities for 2007 - 2012 is presented separately for each of Darlington, the Darlington
7 Refurbishment CWIP (a designated capital project discussed below), Pickering, Nuclear
8 Support Divisions, and Inspection and Maintenance Services ("IM&CS"). The historical net
9 plant for 2007 for both regulated hydroelectric and nuclear facilities presented in the tables
10 referenced in the preceding paragraph is the same as the net plant for 2007 presented in
11 Exhibit B in OPG's previous payment amounts application, EB-2007-0905.

12

13 Fixed and intangible assets used by both the regulated and unregulated generation business
14 units are held centrally. These assets are not included in rate base. Instead, the regulated
15 business units are charged an asset service fee for the use of these assets, as discussed in
16 Ex. F3-T2-S1.

17

18 With the exception of designated capital projects, fixed assets under construction and
19 intangible assets under development are excluded from the rate base until declared in-
20 service. OPG proposes that the forecast capital for the designated capital projects be
21 included in rate base for the purposes of determining the cost of capital component of the
22 revenue requirement. For the 2011 - 2012 test period, OPG proposes that one designated
23 capital project, the Darlington Refurbishment project, be included in rate base. OPG's
24 proposal is discussed further in Ex. D2-T2-S2.

25

26 Following a change in GAAP ("GAAP") requirements effective January 1, 2009, OPG
27 reclassified certain items previously considered to be fixed assets as intangible assets. This
28 reclassification has no impact on OPG's proposed revenue requirement, as these intangible
29 assets and associated accumulated amortization continue to be included in OPG's rate base
30 calculation. The value of net intangible assets in-service for the regulated facilities is minimal,
31 representing less than 1 per cent of the total net fixed/intangible assets in-service amount, as

1 of December 31, 2009, used in the rate base calculations. Expenditures recorded as fixed or
2 intangible assets are capital in nature and must meet the criteria for capitalization, which are
3 discussed in Ex. A2-T2-S1, section 4.1.

4
5 The net plant amounts for the nuclear facilities reported in rate base include values for asset
6 retirement costs ("ARC"). These costs relate to the nuclear liabilities asset retirement
7 obligations ("ARO"), which is the present value of the committed costs for decommissioning
8 the nuclear stations and the nuclear waste management programs. ARC and ARO are
9 discussed in Ex. C2-T1-S2.

10
11 3.1.2 Forecast Methodology

12 OPG is using the same rate base forecast methodology that it used in the previous
13 application. OPG's forecast of net fixed/intangible asset in-service values is established
14 based on the actual property, plant, and equipment values (including intangible asset values)
15 in OPG's 2009 audited consolidated financial statements. These values are rolled forward
16 based on a forecast of fixed/intangible asset additions, retirements/transfers, and
17 depreciation/amortization on these assets to determine forecasts for 2010, 2011, and 2012.
18 The determination of net fixed/intangible assets is performed separately for the regulated
19 hydroelectric facilities and nuclear facilities.

20
21 Exhibits D1, D2, and D3 present the capital expenditure forecasts (including expenditures on
22 intangible assets) and forecast in-service additions for the regulated hydroelectric facilities,
23 nuclear facilities and the corporate groups (for projects impacting rate base), respectively.
24 The in-service additions forecasts are used to determine the fixed/intangible asset additions
25 for rate base purposes. Specifically, Ex. D1-T1-S2 Table 4, Ex. D2-T1-S2 Table 4 and Ex.
26 D3-T1-S2 Table 4 summarize the forecast in-service additions for the regulated hydroelectric
27 facilities, nuclear facilities and the corporate groups, respectively. Ex. D3-T1-S2 Table 4
28 separately presents forecast corporate in-service additions that are included in rate base for
29 the regulated facilities, and those that impact the asset service fees and therefore are not
30 included in rate base.

31

1 Chart 1 below provides a reconciliation of the forecast in-service additions from the Capital
 2 Projects exhibit (Exhibit D) with those from the Rate Base exhibit (Exhibit B) for the regulated
 3 hydroelectric and nuclear facilities for 2010, 2011 and 2012.

4
 5
 6

Chart 1 Forecast In-service Capital Additions (\$M)

	Regulated Hydroelectric				Nuclear			
	Reference	2010	2011	2012	Reference	2010	2011	2012
Regulated facility capital projects	Ex. D1-T1-S2, Table 5, line 5	60.9	42.9	51.5	Ex. D2-T1-S2, Table 4c, line 9	191.5	175.5	187.6
Corporate group capital projects entering regulated facility rate base	Ex. D3-T1-S2, Table 4, line 10	2.0	0.3	0.4	Ex. D3-T1-S2 Table 4, lines 1, 5, 9 and 11	8.8	8.0	18.3
Total in-service additions in capital projects evidence		62.8	43.2	51.9		200.3	183.4	205.9
Total in-service addition in rate base evidence	Ex. B2-T3-S1, Table 2, column (b)	62.8	43.2	51.8	Ex. B3-T3-S1 Table 2 column (b) excluding Darlington Refurbishment CWIP	200.2	183.4	205.9

7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19

The depreciation/amortization forecasts for 2010, 2011 and 2012 are determined by applying the estimated services lives and depreciation/amortization policies to the forecast of net opening fixed/intangible asset values in-service for each of the regulated hydroelectric and nuclear facilities. These depreciation/amortization forecasts are presented in Ex. F4-T1-S1 Table 1 and Ex. F4-T1-S1 Table 2. The depreciation/amortization policies are described in Ex. F4-T1-S1. There is no depreciation/amortization related to the Darlington Refurbishment project as OPG does not propose that its expended capital be returned until the project comes into service. 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 Ex B3-T3-S1 Table 2.

1 The net fixed/intangible asset portion of rate base is determined using a mid-year average
2 methodology. In-service additions are considered to occur at mid-year, essentially assuming
3 expenditures are spread evenly throughout the year. This is consistent with the Filing
4 Guidelines for Ontario Power Generation Inc. issued by the OEB on November 27, 2009. For
5 large in-service additions or adjustments, where the in-service addition amount or the
6 amount of an adjustment exceeds \$50M, the applicable month when the addition or
7 adjustment is recorded is used instead of a mid-year average to improve accuracy. There are
8 no capital projects with forecast expenditures greater than \$50M expected to come into
9 service during the bridge year or test period. The adjustments related to ARC effective
10 January 1, 2010 exceed \$50M and are weighted accordingly, as discussed below. The
11 Darlington Refurbishment project CWIP additions are considered to occur at mid-year.

12

13 The treatment of forecast retirements is based on the approach discussed in Ex. F4-T1-S1,
14 section 3.0. In summary, ordinarily when an asset within a class is retired, the gross asset
15 value is removed from both the cost of the asset and the related accumulated depreciation.
16 An exception to this treatment is applied if an asset is retired significantly in advance of the
17 end of the life of its asset class, in which case the remaining net book value is charged to
18 depreciation and amortization expense.

19

20 Supporting continuity schedules for the gross fixed/intangible assets in-service and related
21 accumulated depreciation/amortization are provided for each of the historical, bridge and test
22 years for the regulated hydroelectric facilities in Ex. B2-T3-S1 Tables 1 and 2 and Ex. B2-T4-
23 S1 Tables 1 and 2, respectively. Similar supporting schedules are provided for the nuclear
24 facilities in Ex. B3-T3-S1 Tables 1 and 2 and Ex. B3-T4-S1 Tables 1 and 2, respectively.
25 These supporting continuity schedules also present the gross plant and the accumulated
26 depreciation/amortization rate base amounts for the historical, bridge and test years. These
27 rate base amounts are the mid-year averages of the applicable opening and closing values
28 for those years, with the exception of the monthly weighting of the ARC adjustments for the
29 purposes of determining the gross plant rate base amounts in 2010, as described below.

30

1 The net plant rate base amounts for 2010 onwards reflect the impact of changes in the ARC
2 associated with changes in nuclear liabilities following OPG's decision to proceed with the
3 definition phase of the Darlington Refurbishment project. The change in the nuclear liabilities
4 and consequent change in ARC is discussed in Ex. C2-T1-S2. The ARC increased by
5 approximately \$843.7M for Darlington and decreased by a total of \$368.6M for Pickering A
6 and Pickering B effective January 1, 2010 as detailed in Ex C2-T1-S2 Table 3. The changes
7 in ARC are presented in Retirements, Transfers & Adjustments in the continuity schedule of
8 gross fixed/intangible assets (Ex. B3-T3-S1 Table 2) for 2010. These amounts also are
9 reflected in the 2010 gross plant at cost rate base amount.

10
11 The 2010 impact of this adjustment on depreciation and amortization expense is reflected in
12 Retirements, Transfers & Adjustments in the continuity schedule of accumulated depreciation
13 and amortization (Ex. B3-T4-S1 Table 2). For 2011, the impact of the adjustment forms part
14 of the opening balance for both gross fixed/intangible assets and accumulated depreciation
15 and amortization, and therefore enters the calculation of net plant for that year.

16 17 **3.2 Working Capital**

18 **3.2.1 Overview**

19 OPG's working capital for regulated facilities consists of cash working capital, fuel inventory
20 and materials and supplies. The fuel inventory and material and supplies values for rate base
21 are determined using a mid-year average of opening and closing balances during the period.
22 Cash working capital is determined using a lead/lag analysis. Total working capital for the
23 regulated hydroelectric facilities is forecast to be \$22.1M in each of 2011 and 2012 (Ex. B2-
24 T5-S1 Table 1). Total working capital for OPG's nuclear facilities is forecast to be \$869.1M in
25 2011 and \$848.5M in 2012 (Ex. B3-T5-S1 Table 1).

26 27 **3.2.2 Cash Working Capital**

28 Cash working capital is the average amount of capital provided by investors above and
29 beyond investments in plant and other separately identified rate base items, including the
30 other components of working capital (e.g., inventory and materials), that bridges the gap

1 between the time expenditures are made to manufacture a good or provide a service and the
2 time payment is received for that good or service.

3
4 For regulatory purposes, cash working capital is calculated using net lag days, which is the
5 difference between the time that revenue is received by OPG and the time that expenses are
6 paid. The revenue lag is compared to the expense lead, and the net lag is applied to each of
7 OPG's expenses to determine the cash working capital amount.

8
9 As part of its last application, OPG conducted a lead/lag study to determine cash working
10 capital requirements for the regulated hydroelectric and nuclear businesses. The study was
11 filed as Ex. B4-T1-S1 in EB-2007-0905. The results from this study were approved by the
12 OEB as the cash working capital components of rate base for 2008 and 2009. As discussed
13 in Ex B1-T1-S2, in this application OPG has calculated cash working capital by applying the
14 net lag days resulting from the EB-2007-0905 lead/lag study to the relevant expenses in
15 2008 and 2009. The results of this approach are presented in Ex. B1-T1-S2.

16
17 Given the relative stability in the level and types of expenses used in the cash working capital
18 calculation, and its modest size relative to the total rate base, OPG has used the 2009 cash
19 working capital amount for the bridge year and the test period. The only notable change in
20 the lead/lag analysis from that approved by the OEB in EB-2007-0905 relates to the
21 implementation of the harmonized sales tax that will replace the goods and services and
22 provincial sales taxes in Ontario effective July 1, 2010 (see Ex. F4-T2-S1). This change
23 produces a reduction in cash working capital as described in Ex. B1-T1-S2, section 4.0.

24 25 3.2.3 Fuel Inventory

26 The hydroelectric generating stations do not require any fuel inventory. Nuclear generating
27 stations maintain a nuclear fuel inventory as well as an inventory of fuel oil for standby
28 generators. The cost of the inventory of fuel oil is minimal compared to that of nuclear fuel.

29

1 The nuclear fuel inventory includes the following:

- 2 • Uranium concentrate
- 3 • Uranium dioxide
- 4 • Manufactured fuel bundles

5

6 As described in Ex. F2-T5-S1, the supply chain for nuclear fuel consists of the purchase of
7 uranium concentrate, the purchase of services to convert the uranium concentrate into
8 uranium dioxide, and the purchase of services to manufacture fuel bundles that contain the
9 uranium dioxide. OPG maintains inventories at each stage of this supply chain and maintains
10 ownership of the work-in-process throughout the supply chain, as described in Ex. F2-T5-S1.
11 The nuclear fuel inventory costs represent the accumulation of costs incurred by OPG during
12 the supply chain process.

13

14 Fuel inventory is valued using the weighted average costing method. The nuclear fuel
15 inventory quantities and values for 2010 to 2012 are forecast based on the actual closing
16 nuclear fuel inventory quantities and values as of December 31, 2009, and expected fuel
17 deliveries and usage during the forecast period. Discussion of nuclear fuel deliveries and
18 usage is found in Ex. F2-T5-S1.

19

20 3.2.4 Materials and Supplies

21 Materials and supplies consist of consumable supplies and spare parts. Both OPG's
22 regulated hydroelectric and nuclear facilities maintain materials and supplies, with the
23 regulated hydroelectric facilities typically requiring a minimal amount (less than \$1M) of
24 materials and supplies on hand. The rate base materials and supplies value, which is net of a
25 provision for accumulated obsolescence, is the average of the opening and closing balances
26 during the period. OPG's inventory management system records materials and supplies
27 inventory based on orders, receipts, issuances and returns using an average costing basis.
28 The inventory valuation of materials and supplies is based on the average unit price of each
29 item times the quantity on hand.

30

1 OPG's financial statements for the regulated facilities include the current materials and
2 supplies inventory balance and a long-term materials and supplies inventory balance. In
3 accordance with GAAP, materials and supplies are valued at the lower of average cost and
4 net realizable value. The determination of net realizable value of the materials and supplies
5 takes into account various factors including technological obsolescence, the remaining life of
6 the related facilities in which the materials and supplies are expected to be used, and
7 adjustments required as a result of performing physical inventory counts. Charges incurred
8 as a result of valuing nuclear materials and supplies at the lower of cost and net realizable
9 value are reflected in the inventory adjustments recorded in nuclear OM&A, as discussed in
10 Ex. F2-T2-S1, and reduce the nuclear materials and supplies balance in rate base. Following
11 the change in GAAP Guidance for Inventories (CICA Handbook section 3031), which OPG
12 implemented effective January 1, 2008; these inventory adjustments are reversed through
13 nuclear OM&A when the net realizable value exceeds cost.

14
15 Materials and supplies could be consumed in the production process, utilized as part of
16 OM&A or capital projects, or charged against a previously established provision such as
17 nuclear liabilities. Materials and supplies consumed in the production process or utilized in
18 OM&A projects are included in OM&A expense as incurred. Materials and supplies utilized in
19 capital projects that meet the capitalization criteria outlined in Ex. A2-T2-S1, section 5.1 are
20 included either in CWIP or in-service fixed assets depending on whether the related asset
21 has been declared in service. Materials and supplies charged against a previously
22 established provision draw down the balance in that provision.

23
24 The nuclear materials and supplies values for 2010 to 2012 are forecast based on the actual
25 closing materials and supplies balance as of December 31, 2009 and expected consumption,
26 purchases, charges related to valuation at the lesser of cost and net realizable value during
27 the forecast period, and the projected annual contributions to the end of life obsolescence
28 provision.

29

1 **4.0 RATE BASE TRENDS**

2 Regulated hydroelectric rate base decreases by a small amount each year over the 2007 -
3 2012 period mainly as a result of the net impact of continued depreciation/amortization of in-
4 service fixed/intangible assets and additions of new in-service fixed/intangible assets. The
5 total decrease in 2012 as compared to 2007 is \$123.7M, averaging approximately \$25M per
6 year over the five-year period.

7

8 The rate base for the nuclear facilities remains relatively stable over the 2007 to 2009 period.
9 Net plant decreased by relatively small amounts over the period mainly as a result of the net
10 impact of continued depreciation/amortization of in-service fixed/intangible assets and
11 additions of new in-service fixed/intangible assets, while fuel and material and supplies both
12 increased. The trend in fuel inventory balances is discussed in Ex. F2-T5-S1. Nuclear
13 materials and supplies closing inventory increases over the 2007-2010 period (Ex. B3-T5-S1
14 Table 1), in support of generation reliability improvement initiatives; specifically, ensuring the
15 right materials are available to support planned outage and maintenance activities, as well as
16 allow urgent response to forced outages. Actual materials & supplies inventory closing
17 balance for 2009 is essentially on target with the forecast in the last filing (<1 per cent
18 variance).

19

20 Materials and supply closing inventory growth is forecast to decrease significantly in 2011 (as
21 a result of process improvement initiatives being undertaken to ensure inventory is better
22 matched to requirements), with a reduction in closing inventory forecast for 2012.

23

24 The rate base for nuclear facilities is expected to increase by \$490.6M from \$3,421.4M in
25 2009 to \$3,912.0M in 2010 primarily as a result of the full year impact of the net increase to
26 ARC for the regulated facilities recorded on January 1, 2010. This change results from
27 OPG's decision to proceed with the definition phase of the Darlington Refurbishment project.
28 Fuel inventory and nuclear materials and supplies are also expected to continue to increase
29 in 2010. The trend in fuel inventory balances is discussed in Ex. F2-T5-S1.

30

1 The rate base for nuclear facilities is expected to remain largely stable over the 2010 - 2012
2 period. The decrease in the rate base resulting from net impact of continued
3 depreciation/amortization of in-service nuclear fixed/intangible assets and additions of new
4 nuclear in-service fixed/intangible assets over this period is being generally offset by the
5 expected growth of the Darlington Refurbishment CWIP balance due to continued
6 expenditures on the project.

7

8 Additional detail regarding in-service additions for regulated hydroelectric operations and
9 nuclear facilities, and corporate capital projects impacting rate base is provided in Exhibits
10 D1, D2 and D3, respectively. Additional detail on depreciation and amortization expense is
11 provided in Ex. F4-T1-S1 and F4-T1-S2.