

UNDERTAKING JT3.16

Undertaking

To advise whether OPG is going to answer the question; if not, why not.

To provide the detailed table used to calculate JT2.2 part (c), so that 50, 100 percent, 150, 200 and 250 percent cost overruns with respect to all of OPG project management cost, contractor costs and other costs can be performed.

Response

The table below includes data as previously submitted in JT2.2 and JT2.3. A description of the cost overrun assumptions passed on to OPG as summarized in JT2.2 (c) have been added. Further, the amounts have been updated per JT3.15 to reflect an allocation of \$260 Million to Facility and Infrastructure Projects and to decrease Management Reserve by the same amount.

OPG believes applying escalation of all costs would be incorrect and misleading for the following reasons:

- As noted in ED-11 part (c) assumption (2), each project bundle includes contingency that is "reduced prior to incurring cost growth to the project". It would not be reasonable to escalate this contingency
- As noted in ED-11 part (c) assumption (3), there is additional contingency and management reserve that was not reduced. If cost overruns were to be incurred on top of the major contracts, the contingency and management reserve would be reduced.
- OPG Project Management Costs are not subject to the same cost growth risks as contractor costs.

The following provides a summary of the pricing models utilized by OPG in the Refurbishment contracts:

- **Fixed Price** is used for well defined scope and/or when the vendor controls the majority of the risk associated with the scope of work, i.e. Re-tube and Feeder Replacement Tooling and Mockups.
- **Reimbursable Cost** is used where costs could be variable based on market conditions outside of the contractor's control, with full transparency over costs, i.e. Reactor Component Purchases – OPG agrees with the quantities required and the vendor procures at cost.
- **Target Price** is used where full transparency of scope, schedule and cost are required, where scope may not be well defined, and risk associated with the execution of the specified scope performed by the contractor rests with the contractor. OPG has full transparency of costs and pays for contractor's actual costs without profit or overhead. A Target Price is based on OPG and contractor's agreement of estimated actual costs once sufficient planning is complete. As an incentive to control contractor expenditures, contractor profit and overheads are incorporated into a fixed fee and a meaningful portion is put at risk. If the contractor actual costs are above the Target Price, disincentives are in place to reduce the fixed fee; if the contractor actual costs are below the

1 target price, the contractor shares in the savings in addition to the receipt of their
2 fixed fee.
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4 The use of the Target Price model was chosen after benchmarking other projects both
5 internal and external to OPG and reviewing different contracting models and their
6 results.
7

8 • Examples:

9 **Extended Services Master Service Agreements (ES-MSA) Contracts**

- 10 ○ An ES-MSA agreement was put in place that allows OPG to contract to two
11 vendors to delivery certain scopes of work. The contract allows for either
12 fixed price, reimbursable, or target price contracts.
13 ○ Darlington Refurbishment uses the ES-MSA contracts for Facility and
14 Infrastructure Projects and Balance of Plant related projects.
15 ○ Both these contracts are competitively bid.
16 ○ Generally, the contracts are based on target price, with some fixed price
17 scopes of work.
18 ■ The ES MSA contract requires that for Performance Fee Work (ie
19 target price) █████ of the Contractor's overheads and profits are put at
20 risk in a Performance Fee pool. The payout is based on the
21 contractor's overall performance assessed quarterly related to safety,
22 cost, human performance and schedule for all work performed.
23 ■ For example, if a contractor scores █████ on their performance score
24 card, they will receive █████ of the amount in the Performance Fee
25 Pool. If a contractor scores 1.0 then they will receive the full amount
26 contributed to the Performance Fee Pool.
27 ■ The target price or estimate can be changed by an approved Project
28 Change Authorization (PCA). This would occur when there are
29 specific changes to the contracted work requested by OPG. If the
30 target price is going to be exceeded due to contractor actions. The
31 contract disallows the contractor from earning a profit on the
32 exceeding amounts..

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34 **Major EPC Contracts – Re-tube and Feeder Replacement (RFR) Contract**

- 35 ○ OPG entered into an agreement with SNC-Lavalin/Aecon Joint Venture (JV)
36 in 2012 through a competitive bid process. A Fixed Price pricing model was
37 put in place to complete Re-tube and Feeder Replacement Tooling and to
38 construct a full-scale mock-up. A Target Price pricing model was put in place
39 for the planning activities during Definition Phase. At the end of the Definition
40 Phase, based on terms and conditions approved in the overall contract, OPG
41 may proceed with a Target Price pricing model for the Execution Phase.
42 OPG also established a Reimbursable Cost plus transparent markup pricing
43 model for the Contractor to purchase Owner Specified Materials (i.e. reactor
44 components) and other Goods required to execute the work.
45 ○ Overall █████ the Contractor's profit and overheads is at risk. There is an
46 opportunity for the Contractor to earn up to █████ additional profit and
47 overheads for improved cost and schedule performance below the target.

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 - 2
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- This model, in whole or in part, has been applied to other major EPC contracts in place including Turbine Generator, Steam Generator, and Defueling contracts. Each of these contracts has a combination of both fixed price, cost reimbursable, and Target Price components.

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| Major Category | Category/ Contract Type | Base Case 2013\$ | Base Case 2014\$ | Cost Overrun Assumptions from JT2.2 |
|------------------|---|------------------|------------------|---|
| RFR | OPG Project Management | 690 | 704 | OPG Project Management extends across entire program (4 units) and will not increase in relation to level of cost growth of project. |
| | Contractor Cost | | | |
| | Tooling (Fixed Price) | | | Cost overrun risk held with vendor |
| | Mockup (Fixed Price) | | | Cost overrun risk held with vendor |
| | Owner Specified Materials (Cost Plus) | | | OPG reimburses actual costs, plus a markup of [REDACTED]. Contracts are generally in place, with quantities of these materials known - low risk of cost growth. |
| | Definition Phase (Target Price/ Fixed Fee) | | | OPG reimburses actual costs plus fixed fee for overhead and profit. [REDACTED] of the fixed fee is at risk based on contractor cost and schedule performance. |
| | Execution Phase (Target Price/ Fixed Fee) | | | OPG reimburses actual costs plus fixed fee for overhead and profit. [REDACTED] of the fixed fee is at risk based on contractor cost and schedule performance. |
| | Contingency | | | Project contingency will be utilized to offset contract growth, when required. |
| Fuel Handling | OPG Project Management | 83 | 85 | OPG Project Management extends across entire program (4 units) and will not increase in relation to level of cost growth of project. |
| | Contractor Cost | | | |
| | Defueling - Eng Services (Fixed/Firm Price) | | | Cost overrun risk held with vendor |
| | Defueling - Eng Services (Misc Reimbursables) | | | OPG reimburses actual costs, plus a markup |
| | Fuel Handling (Fixed Price) | | | Cost overrun risk held with vendor |
| | Contingency | | | Project contingency will be utilized to offset contract growth, when required. |
| Steam Generators | OPG Project Management | 63 | 64 | OPG Project Management extends across entire program (4 units) and will not increase in relation to level of cost growth of project. |
| | Contractor Cost | | | |
| | Fixed Price | | | Cost overrun risk held with vendor |
| | Target Price/ Fixed Fee | | | OPG reimburses actual costs plus fixed fee for overhead and profit. 100% of the fixed fee is at risk based on contractor cost and schedule performance. |
| | EPC Other | | | OPG reimburses actual costs, plus a markup |
| | Contingency | | | Project contingency will be utilized to offset contract growth, when required. |

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| Major Category | Category/ Contract Type | Base Case 2013\$ | Base Case 2014\$ | Cost Overrun Assumptions from JT2.2 |
|-------------------|--|------------------|--|--|
| Turbine Generator | OPG Project Management | 195 | 199 | OPG Project Management extends across entire program (4 units) and will not increase in relation to level of cost growth of project. |
| | Contractor Cost | | | |
| | Eng Serv & Equip Supply (Fixed Price) | | | Cost overrun risk held with vendor |
| | Eng Serv & Equip Supply (Target Price) | | | OPG reimburses actual costs up to the negotiated Target Price. For cost overruns, OPG and the contractor share the cost [REDACTED] |
| | Installation - Defn Phase (Target Price/ Fixed Fee) | | | OPG reimburses actual costs plus fixed fee for overhead and profit. [REDACTED] of the fixed fee is at risk based on contractor cost and schedule performance. |
| | Installation - Exec. Phase (Target Price/ Fixed Fee) | | | OPG reimburses actual costs plus fixed fee for overhead and profit. [REDACTED] of the fixed fee is at risk based on contractor cost and schedule performance. |
| | EPC | | | OPG reimburses actual costs, plus a markup |
| Contingency | | | Project contingency will be utilized to offset contract growth, when required. | |
| Balance of Plant | OPG Project Management | 216 | 220 | OPG Project Management extends across entire program (4 units) and will not increase in relation to level of cost growth of project. |
| | Contractor Cost | | | |
| | EPC & T&M | | | The ES MSA contract requires that for Performance Fee Work (ie target price) [REDACTED] of the Contractor's overheads and profits are put at risk and held in a Performance Fee Pool. Payout is based on overall contractor performance, assessed on a quarterly basis. |
| Contingency | | | Project contingency will be utilized to offset contract growth, when required. | |
| Other Costs | Islanding | 219 | 223 | The ES MSA contract requires that for Performance Fee Work (ie target price) [REDACTED] of the Contractor's overheads and profits are put at risk and held in a Performance Fee Pool. Payout is based on overall contractor performance, assessed on a quarterly basis. |
| | System Shutdown | 136 | 139 | |
| | Operations & Maintenance Support | 863 | 880 | OPG cost centre for purposes of work control, station maintenance, commissioning support, and unit control, during Refurbishment. Resources extends across entire program (4 units) and will not increase in relation to level of cost growth on major EPC project work. |
| | Facilities & Infrastructure | 820 | 836 | The ES MSA contract requires that for Performance Fee Work (ie target price) [REDACTED] of the Contractor's overheads and profits are put at risk and held in a Performance Fee Pool. Payout is based on overall contractor performance, assessed on a quarterly basis. |
| | Waste Management | 10 | 10 | |
| | New Fuel | 132 | 135 | Fixed cost to OPG to fuel refurbished units. |
| | Insurance | 114 | 116 | Estimate includes latest broker estimate based on our current Program scope and duration assumptions. |
| | Regulatory, i.e. ISR, EA, IP | 80 | 82 | Program level Oversight, Support, and Project Management extends across entire program (4 units) and will not increase in relation to level of cost growth at project level. |
| | Licensing (CNCS Fees) | 73 | 74 | Estimate from our regulator |
| | Contingency | | | Additional contingency for discrete risks held at the Program Level. |
| | Retube Waste Containers (Provision) | 220 | 224 | Waste containers are materials provided to the Program for storing waste. The quantity and estimate per container is known. |
| | Management Reserve | | | Additional management reserve for discrete risks held at the Program Level. |
| | | | 10,000 | 10,200 |