

Ontario Energy Board

IN THE MATTER OF the *Ontario Energy Board Act*,
1998, S.O. 1998, c.15, (Schedule B);

AND IN THE MATTER OF an Application by Ontario
Power Generation Inc. for approval, pursuant to Part 1, Par-
agraph 5.2 of Ontario Power Generation Inc.'s Generation
Licence EG-2003-0104, of a Reliability Must-Run Agree-
ment for the Thunder Bay Generating Station between On-
tario Power Generation Inc. and the Independent Electricity
System Operator.

**SUBMISSIONS OF
ENERGY PROBE RESEARCH FOUNDATION
("ENERGY PROBE")**

June 7, 2013

**ONTARIO POWER GENERATION INC.
RELIABILITY MUST-RUN AGREEMENT
THUNDER BAY GENERATING STATION**

EB-2013-0061

**Energy Probe Research Foundation
Submissions**

Background

Energy Probe Research Foundation ("Energy Probe") is an intervenor in this proceeding and filed interrogatories to OPG Inc. ("OPG") on April 27, 2013. Its three interrogatories addressed Issue #3 as formulated by the Board:

"What are the incentive effects, if any, of the reliability must-run agreement?"

and, more specifically, addressed S.4(b) of OPG's Letter of Application of February 27, 2013 ("Letter") which indicates that the monthly fixed payment is designed to compensate OPG for costs "that would be avoided by OPG if the facility is de-registered" and "is based on a forecast of fixed costs".

Energy Probe received the interrogatory responses of OPG on May 13, 2013 and determined that OPG's response to its Interrogatory #1(b) was incomplete. By letter of May 27, 2013, Energy Probe requested that OPG provide the specific information it had requested in Interrogatory #1(b) and OPG provided that information (the "OPG follow-up response") on May 29, 2013.

On May 21, 2013, the Board's Procedural Order #2 provided that any intervenors that wish to file written submissions in respect of the issues in this proceeding shall file those submissions with the Board and serve them on all other parties on or before June 7, 2013. In its written submissions below, Energy Probe offers its comments and analyses of OPG's approach to the avoidable cost test that it has submitted to support the monthly fixed payment that it has requested.

Energy Probe's comments offer a brief overview of the relevant economic and regulatory concepts that may assist the Board. However, due to the complexity of the issues involved, it cannot provide a comprehensive explanation in its submission in this proceeding.

1. Some Basic Economic Concepts

Energy Probe agrees that the avoidable cost test is an appropriate method for calculating the monthly fixed payment in this proceeding because, according to conventional economic logic, a single-product enterprise that covers its variable costs will continue to operate. However, this does not mean that the enterprise would thereby be profitable. Indeed, it may not be profitable because its revenues may still be insufficient to cover its fixed costs.

In conventional economic theory, a cost is “variable” if it changes when a single-product enterprise changes its level of output. Typical examples are factory-level labour and purchased inputs of resources. When the production level changes, the costs of these inputs also change.

A cost is “fixed” if it must be incurred in a lump in order for any output at all to be provided and does not vary when the output level changes. It does not become variable in either the short run or the long run.

A cost is “sunk” if it cannot be escaped for some limited period of time after which it becomes escapable. An example is the property tax payment associated with enterprise’s continued ownership of its factory or other building. More generally, a cost that is fixed need not be sunk, and a cost that is sunk need not be fixed.

Thus, if a single-product enterprise sets its output level to zero (i.e. shuts down, exits the market), it will nonetheless continue to incur fixed costs (if any) and its sunk costs (for whatever time period they persist). Hence, as long as revenues cover the non-sunk variable costs, the enterprise will not shut down.

The multi-product enterprise raises other pertinent issues. A cost that is variable in the single-product enterprise may be a joint or common cost in the multi-product firm. In such case, it is difficult to determine the total variable cost of each product or service provided.

An example is the compensation of an airline pilot where the aircraft provides both passenger and cargo service on the same flight. The airline is thus in two lines of business. If it exits one (say, the cargo business), the pilot’s compensation is not reduced because it is set independently of the business mix. If so, the pilot’s compensation remains the same when the cargo business is shut down even though labour costs are usually regarded as variable. It is also sunk until some point in time when it may be possible to terminate the pilot’s employment.

Conversely, a cost that is sunk may be specific to one of several of the enterprise's product lines. The firm produces products A and B each with dedicated machinery. If it shuts down production of A, it may be able to dispose of the A-dedicated machinery in the secondary market after an estimable time period. Accordingly, the costs associated with the A-dedicated machinery become "unsunk" or "escaped" after that period of time.

2. The Avoidable Cost Test: Certain Pertinent Elements

The "avoidable cost test" relies on the economic concepts discussed above. However, as a regulatory and administrative tool, it must deal in some way with the indeterminacies indicated above.

A cost is "avoidable" for the test if it can be eliminated (or shed) following a hypothetical shutdown. While a variable cost can be varied with the change in production level, such cost may or may not be avoidable for the regulatory purpose of the test. Accordingly, the "costs" in the avoidable cost test are those short-run variable costs that reduce to zero when the revenue stream becomes zero plus the sunk costs (including product-specific fixed costs) that can be escaped within the relevant time period established by the regulator.

In the above example, if the airline pilot's compensation were determined separately for passengers and cargo, then that cargo-based compensation would reduce to zero immediately when the airline exits the cargo business on that flight. Accordingly, only that portion of the total cost of pilot compensation is avoidable for the regulatory purpose for which the test is used. If the pilot's compensation does not depend on the business mix, then following a hypothetical shutdown of the cargo business, there would be no change in total compensation unless the flight itself is shut down.

Institutional factors may render a variable cost unavoidable. Union rules, may, for example, require the pilot to be paid at the same level even if the airline cancels the flight. Accordingly, pilot compensation would be an unavoidable cost following a hypothetical shutdown for that period of time in which the pilot's employment cannot be terminated.

For greater certainty, the economic definition of a "sunk cost" is equivalent, for the regulatory purpose of the test, to an "unavoidable cost". A cost that is sunk may become "unsunk" and so a cost that is unavoidable may become avoidable. "Avoidable" and "escapable" are interchangeable terms.

a. Irrelevance of “Fully Allocated Costs”

The avoidable cost test applies an additional criterion with respect to common costs. Suppose the airline operates only the flight in question and rents terminal space from the airport for the waiting area for passengers on that flight. If the airline exits the passenger business on that flight, the terminal rental cost remains the same due to the governing contractual terms¹; it is a sunk cost. If the airline had adopted the procedure of “fully allocating” all costs for profitability analysis or other purpose, the shutdown of the passenger business would cause the airline to now attribute all of the terminal rental cost to its cargo business even though the level of cargo activity had not changed and requires no passenger terminal.

Note that the terminal rental cost previously allocated to the passenger business on that flight has not been shed. It has simply been re-allocated. Since the terminal rental cost could not be avoided in whole or in part upon a hypothetical shutdown of the passenger business, neither the total of that cost nor the portion thereof allocated to the passenger business would properly be considered as avoidable for the regulatory purpose of the test.

It follows that the basis of the allocation is completely irrelevant to the underlying issue of avoidability. The allocation of the terminal rental cost might, for example, be calculated on the share of total weight on the flight. If passenger weight was 30% of total passenger and cargo weight, an allocation rule might plausibly assign 30% of the terminal rental cost to the passenger business.

Indeed, there will usually many allocation rules that are “reasonable”. However, regardless of the rule, the ultimate issue remains the factual question of avoidability following hypothetical shutdown.

b. Re-Captured Costs

Note further that determining whether a cost would or would not actually be shed is sometimes problematic. Multi-product firms frequently re-assign some or all labour and capital resources to different uses following shutdown of one product or service. However, because the avoidable cost test is based on a hypothetical shutdown, what the enterprise actually does or plans to do following an actual shutdown is not part of the test.

¹ unless that contract allows termination, perhaps with a penalty.

If the firm is expanding an existing business or starting a new business, then the costs transferred from the closed operation are associated with an incremental revenue source and are properly considered avoidable in their previous use; they have been shed in that use. Viewing those costs as “transferred” merely emphasizes the fact that they could have been shed directly and similar expansion costs incurred by acquisition of the resources on the market.

On the other hand, if labour and capital are re-assigned to an existing activity with no expansion of output, then the associated costs are not avoided and not properly considered avoidable for the purpose of the test

This somewhat subtle issue has been fully discussed in the Canadian context. In *Commissioner of Competition v. Air Canada*², the question arose whether the cost of passenger meals on a given flight was avoidable or not. Generally speaking, such cost would be considered an avoidable cost of operating the flight because it would no longer arise if the flight were shut down. However, if the airline operated more than one flight on the same route, the passengers flying that route on the cancelled flight might simply take different flights of the same airline. In case of such “re-capture”, the cost of meals and ticket revenue would be incurred on those other flights even though total airline costs and ticket revenue would not change.

The economic experts called by the parties disagreed on the avoidability of passenger food costs. The expert for Air Canada stated that re-captured meal costs were simply a re-allocation of total food costs to different flights and opined that those costs were unavoidable. The Commissioner’s expert opined that such costs were avoidable.

In deciding the issue, the Tribunal distinguished between a cost re-allocation and re-captured passenger costs:

[116] It is true that when Air Canada cancels a schedule flight, the fixed costs it had previously allocated to that flight are now distributed among the remaining flights. The result is that the fixed costs attributed to each remaining flight rise because the same amount of fixed costs are now spread over a smaller number of flights. However, the total fixed costs actually incurred have neither increased nor decreased because, by definition, they do not vary with changes in activity; they are unavoidable costs.

² *Commissioner of Competition v. Air Canada* 2003 Comp. Trib. 13

[117] The same cannot be said with respect to the food costs on the remaining flights; food consumption on those flights, and hence food costs thereon, have increased to the extent of passenger recapture and the resulting higher load factors, assuming excess capacity had existed on those flights. In the Tribunal's understanding, it cannot be said that the food costs on the cancelled flight have merely been reallocated to the remaining flights.

[118] The principal issue is whether excess capacity permits passenger recapture on the remaining flights on the relevant route. Relevant evidence could include the number of flights, historical load factors, the number of passengers, and importantly, the number of flights offered by competing air carriers.

When a flight is cancelled, both food costs and ticket revenue from that flight disappear in the single-product airline. However, in the case of a multi-flight airline, if the food costs and ticket revenue are recaptured on other flights of the airline, the activity levels on those other flights have increased. As a result, recapture following shutdown does not simply re-allocate food costs incurred prior to shut down. The key issue is whether there is an expansion of activity elsewhere in the multi-flight airline. If so, the food costs of re-captured passengers are incremental costs of the expansion and are properly considered avoidable for the purpose of the avoidable cost test.

c. The Relevant Time Period

The choice of the relevant time period noted above is a critical part of the avoidable cost test, because conventional economic theory does not identify it and because the test is a regulatory/administrative tool adopted for a specific purpose, in this case, the determination of the monthly fixed payment.

To illustrate, assume the airline pilots' collective agreement requires 2 years' notice before termination. Then, a pilot's annual compensation is a sunk cost for two years following a hypothetical shutdown of the flight in question and hence is unavoidable for two years. That annual cost would become avoidable only after 2 years.

Now, if the relevant time period for the test is arbitrarily set at 2 years, none of the pilot's annual compensation would be considered avoidable for the test. However, if the relevant time period is 3 years, one year of compensation would be considered avoidable in the test.

Accordingly, total cognizable avoidable costs generally increase with the length of the relevant period. In an adversarial environment where revenues allowed to the applicant reflect its avoidable costs, the applicant can be expected to argue for a longer relevant time period while its opponents will argue for a shorter period.

Since the relevant time period is not established by economic theory, the regulator must use its discretion while avoiding an arbitrary decision. In short, the relevant time period must be reasonable in the circumstances.

3. OPG's First Response to Interrogatory #1(b)

On the basis of the above, Energy Probe submits that OPG's conceptual understanding of the avoidable cost test is mistaken.

Energy Probe's Interrogatory 1(b) asked:

What is (are) the time period(s) used to distinguish each cost or cost category in Table 1 as avoidable rather than unavoidable?

In its first response to this interrogatory, OPG stated:

If a cost was deemed reasonably avoidable with a period of one to two years following shutdown of the plant then it was considered variable and recovery was included in the contract.

As suggested above, the usual reasoning starts with a characterization of a cost as either variable, fixed and/or sunk. In the next step, the classification of those costs as avoidable or unavoidable is undertaken having regard to the relevant time period. The fact that a cost is variable does not automatically render it avoidable, and a fixed cost that is "product-specific" is not automatically unavoidable. OPG's response is precisely the opposite of the usual approach to the test.

In Energy Probe's view, OPG's description of the avoidable cost test in its first interrogatory response indicates a fundamental misunderstanding of the test. If OPG has followed this understanding throughout its cost analysis, then its estimate of the required monthly payment is very likely wrong.

4. OPG Follow-up Response

In the OPG follow-up response, OPG provides the specific information that Energy Probe had requested for each cost. Except for property taxes, the indicated time required to avoid each indicated cost in Table 1 is either “immediately upon plant closure” or “within one year”. Energy Probe thanks OPG for providing this additional data.

However, Energy Probe also notes that the OPG follow-up response appears to indicate a different understanding of the basis of the test. As stated therein,

The time periods used by OPG to determine if costs are avoidable rather than unavoidable are provided in the table below, which replicates the cost categories from Schedule D Table 1 of the RMR Agreement.

Now, the time periods used by OPG determine cost avoidability, not variability. It is not clear to Energy Probe whether OPG is correcting the conceptual error in its first interrogatory response or not.

Indeed, Energy Probe has difficulty understanding what OPG means by the “avoidable cost test”. As indicated above, the test is highly conceptual and relies on a sophisticated application of economic and regulatory concepts. Its Letter provides no indication that its methodology has taken these concepts consistently into account.

5. Avoidability of OPG’s OM&A Costs

Energy Probe now considers the individual cost items in Schedule D Table 1 of Attachment 1 to the Letter as elaborated thereon in OPG’s follow-up response.

a. Labour (\$17.3 million)

In Schedule D Table 1 of the OPG follow-up response, OPG indicates that approximately \$17.3 million of labour costs are avoidable within one year of plant closure. It further states that, having regard to demographics and collective agreements, all staff would be discharged from OPG or reassigned with the Company within this period of time.

Energy Probe submits that only the labour costs associated with planned discharges arising from a hypothetical shutdown can be properly classified as avoidable. The labour costs shed due to retirements (if this is what OPG means by “demographics”) are not shed as a consequence of a hypothetical shutdown that the test requires and should be excluded.

To the extent that existing labour is simply moved to other activities within OPG, the costs thereof are not properly classified as avoidable unless further information is provided. Only if that labour will be deployed to areas of expansion of revenue-generating activity can the labour cost properly be considered avoidable.

To the extent that union contracts require OPG to continue to pay labour compensation whether they are working or not (as with airline pilots), those labour costs would remain constant following shutdown. They are clearly unavoidable in the period of time in which those workers cannot be terminated.

b. Direct Assigned (\$5.8 million)

The avoidability of these costs is very unclear because the cost is not sufficiently described. Energy Probe submits that further information about this \$5.8 million cost is warranted.

c. Business Unit Support-Direct (\$0.4 million)

This activity is not described in sufficient detail. How these costs would be avoided is not indicated. If these costs are simply re-allocated to other support functions with no corresponding increase in activity, they should not be considered avoidable.

d. Central Support-BU Allocated (\$5.3 million)

As presented, these costs appear to be costs previously allocated to the Generating Station that would be re-allocated elsewhere following a hypothetical shutdown. Accordingly, they should not be considered avoidable.

e. Materials (\$1.2 million)

OPG indicates that these costs are part of direct work execution that would cease immediately upon plant closure. These costs are properly considered avoidable.

f. Other (\$4.3 million)

OPG indicates that the majority of these costs are for direct work execution that ceases immediately upon closure. As such, the majority of these costs are avoidable. However, a portion of the remaining costs are apparently “related to staffing” and treated in a manner similar to OPG’s treatment of Labour discussed in (a) above. Energy Probe’s comments in (a) above apply to these costs.

OPG indicates that another portion of costs depends “on the future of the plant but would cease immediately if the plant were de-commissioned upon plant closure”. It appears that such costs would not be avoided following plant closure but would continue until de-commissioning. Accordingly, they are not avoidable before plant closure or between closure and de-commissioning.

g. Projects (\$0.98 million)

OPG indicates that these costs are part of direct work execution that would cease immediately upon plant closure, and are appropriately classified as avoidable.

h. Insurance (\$0.8 million)

OPG indicates that these costs “would largely cease if the plant were decommissioned upon closure”. If decommissioning is co-terminus with closure, then insurance costs are avoidable. If not, avoidability does not occur until decommissioning.

OPG also states that insurance costs would cease if the property were sold. In this view, insurance costs are escapable only after some period of time following shutdown (i.e., the time needed to sell the property); accordingly, they are sunk rather than fixed. Again, cost avoidability depends on the time period involved in selling the Thunder Bay property.

i. Property Taxes (\$1.67 million)

OPG states, somewhat ambiguously, that the property tax amount “can be reduced” upon closure and eliminated upon sale of the property. It is not clear how OPG could reduce its property tax cost following a hypothetical closure, because it would continue to own the plant. However, if it could reduce the tax liability within a short time following closure, that reduction of tax would be avoidable. The magnitude of this portion of tax is not indicated.

It appears that the balance of the tax would be payable until the Thunder Bay property were sold. No indication of the length of time needed to sell is provided and so no assessment of cost avoidability can be made. However, if the property could not be sold for say 2 years given the market conditions, the associated property tax would be inescapable hence unavoidable in that period.

j. Financing Cost on Working Capital (\$0.3 million)

OPG claims avoidability because this cost would be eliminated immediately upon closure because the coal inventory and the materials/supply inventory would be run down to zero value through use or deterioration (“fully obsolesced”) by the date thereof.

OPG’s explanation misconstrues the test. While, in practice, OPG management may choose to delay closure until the inventories have been consumed or otherwise reach zero value, the test asks whether the financing charges would continue after a hypothetical shutdown, not an actual shutdown the timing of which is under management control. There can be little doubt that inventory financing charges would continue to be incurred after a hypothetical shutdown, but the time required to liquidate those inventories (or work them down through use) is not provided, so the extent of cost avoidability cannot be assessed.

6. What Is the Relevant Time Period in this Proceeding?

The OPG Letter adopts the following time periods:

- a. the fixed payment is to be paid monthly (=1/12 of the total annual avoidable costs)
- b. the reliability must-run agreement is subject to annual review
- c. costs avoidable within 1-2 years (as per OPG’s first response to Energy Probe Interrogatory 1(b)) or within 1 year (as indicated in the OPG follow-up response) are avoidable for the purpose of the test.

Energy Probe is unsure of OPG’s position on the relevant time period.

Energy Probe suggests that because the amount of the fixed payment is part of the annual review of the reliability must-run agreement, the relevant time period should be set at one year, and the following guidelines should apply *inter alia*, having regard to OPG’s desire to measure costs on an annual basis:

- Any annual cost that is immediately and fully avoidable upon a hypothetical shutdown should be considered avoidable for the test if the relevant time period is set at 1 year.

- If an annual cost cannot be shed at all until the end of one year following shut-down, then none of that annual cost can be considered avoidable for the test if the relevant time period is set at 1 year.
- If only a portion of an annual cost can be shed within a year following shut-down, then only that portion can be considered avoidable for the test if the relevant time period is set at 1 year.

7. Final Comments

Energy Probe has reservations about OPG's understanding of the principles and methodology of the avoidable cost test. It is particularly concerned about OPG's

- i. reliance on fully-allocated costs for certain cost items
- ii. failure to distinguish sunk costs and institutional factors that render certain variable costs unavoidable
- iii. apparent acceptance of re-assigned costs as avoidable
- iv. not providing sufficient information to assess avoidability of certain cost items
- v. occasional failure to distinguish between the avoidability consequences of a hypothetical shutdown and those of an actual shutdown
- vi. failure to propose a non-arbitrary relevant time period.

In light of these concerns, Energy Probe respectfully urges the Board to require OPG to re-determine the fixed monthly payment on the basis of conventional avoidable cost methodology.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

June 7, 2013

**Lawrence P. Schwartz, Ph.D.
Consultant to Energy Probe**