

IMPROVEMENTS TO THE DSM INCENTIVE RECOMMENDATIONS FOR ENBRIDGE GAS DISTRIBUTION

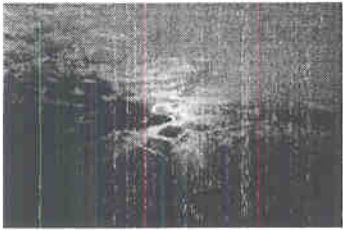



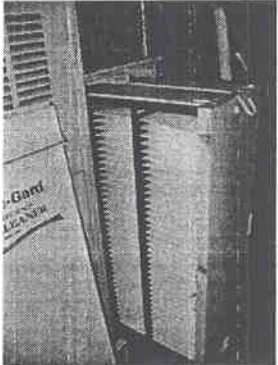


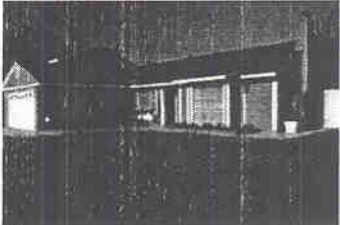


		
		
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***Improvements to the DSM Incentive
Mechanism***

Recommendations for Enbridge Gas Distribution

IndEco Strategic Consulting Inc. & Navigant Consulting Ltd.

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1 Background

This document was prepared by IndEco Strategic Consulting Inc, and Navigant Consulting Ltd. (the consulting team) on behalf of Enbridge Gas Distribution (EGD). EGD asked the consulting team to review its current shared saving mechanism (SSM) and to make recommendations for improvement. This document summarizes the recommended suggestions for improvement to the SSM (herein referred to as the Incentive Mechanism) and the results of testing that the consulting team undertook to determine how and under what conditions the new Incentive Mechanism (IM) would affect EGD.

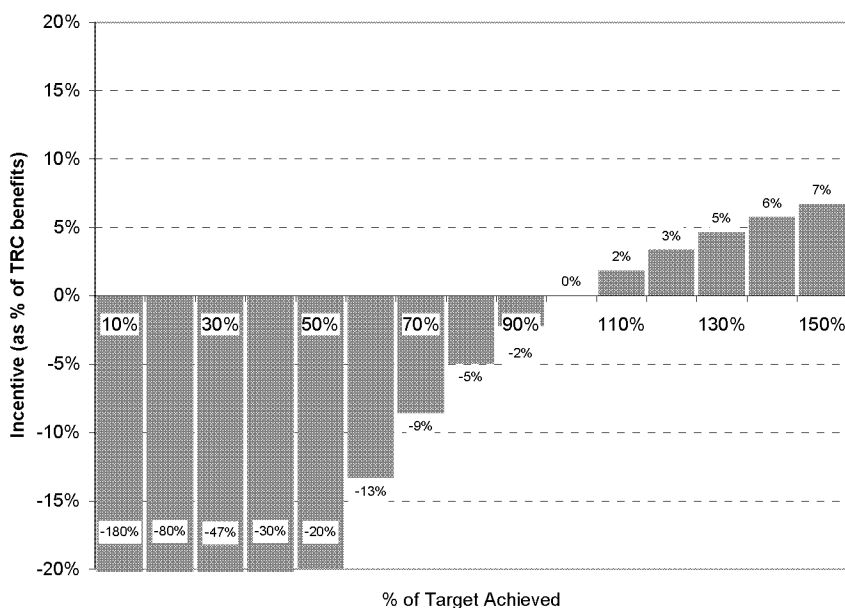
Note that EGD has proposed to base its existing volumetric DSM target in GJ instead of m^3 . For the purpose of simplicity and clarity, this report uses m^3 instead of the proposed GJ because most readers will have a greater familiarity with EGD's DSM performance and program parameters in m^3 terms than in GJ terms. It is expected that when the IM is finalized, the appropriate conversions would be made to reflect the EGD proposed GJ-based targeting mechanism.

2 EGD's SSM experience

Under EGD's current shared savings mechanism, EGD's penalty or reward is proportional to the difference between the budgeted DSM Total Resource Cost Test (TRC) (commonly referred to as the pivot point) and the actual TRC realized. The penalty or reward was 35% of the difference when the SSM was first introduced in 1999, but, in response to higher gas commodity costs, was reduced for the 2002 test year to 20%. Hence, if EGD's budgeted TRC was \$100 M and it realized an actual TRC of \$110 M, its reward would be \$2 M. Conversely, if it realized a TRC of only \$90 M, its penalty would be \$2 M.

While this mechanism appears, at a superficial level, to be "symmetric", EGD's penalty or reward is not proportional to the actual TRC it realizes for its DSM efforts. Other jurisdictions that provide an incentive based on the TRC provide a reward that is proportional to the TRC realized. Under EGD's current SSM, the penalty expressed as a percentage of TRC realized grows exponentially to the degree that EGD fails to meet its target. For example, if EGD only realized 50% of its target, the penalty would represent 20% of the TRC that EGD's DSM efforts created, whereas if it achieved 150% of its target, the reward would only represent 7% of the TRC. This is shown in Figure 1.

Figure 1 –EGD's Penalty or incentive under the current SSM (expressed as a percentage of TRC realized)



Prior to 1999, EGD did not have an SSM. In each of the years without an SSM, EGD did not achieve its budgeted m³ target. In each year since the SSM was introduced, EGD has surpassed its m³ and TRC target. This occurred in spite of the fact that EGD's annual m³ and TRC target tripled over the period, and resulted in significant incremental benefits to DSM program participants, to society and to EGD through the payment of the SSM incentive. A summary of EGD's program results since 1995 is shown in Table 1 (note that the 2000 and 2001 SSM claims have not been finalized yet).

Table 1 – EGD DSM Performance from 1995

<i>Program Year</i>	<i>Budget</i>			<i>Actual</i>			<i>SSM</i>		
	<i>Gas Savings (10⁶ m³)</i>	<i>TRC / Pivot Point (\$M)</i>	<i>O&M (\$M)</i>	<i>Gas Savings (10⁶ m³)</i>	<i>TRC (\$M)</i>	<i>O&M (\$M)</i>	<i>SSM Calculated (\$M)</i>	<i>SSM Claim (\$M)</i>	<i>SSM Claim as % of TRC realized</i>
1995	12.8	\$133	\$2.7	3.9		\$2.1			
1996	29.0	\$80	\$5.0	18.8		\$2.9			
1997	47.3	\$130	\$5.8	18.6		\$2.9			
1998	44.6	\$133	\$5.0	36.2		\$3.6			
1999	31.3	\$43	\$4.7	52.0	\$57	\$6.1	\$4.8	\$4.8	8%
2000	41.8	\$56	\$7.3	59.0	\$75	\$9.2	\$6.5	N/A	
2001	67.9	\$133	\$12.0	82.4	\$173	\$11.8	\$13.7	N/A	

On the face of it, it would appear that EGD's SSM has been working – the TRC realized through EGD's DSM efforts has been greater than the TRC originally budgeted in each year the TRC has been in place. However, the SSM exposes EGD to considerable risk of having to pay a significant penalty if the TRC realized through its DSM efforts is less than budgeted for reasons outside EGD's control. Similarly, the SSM exposes ratepayers to the risk of paying a significant incentive to EGD if the TRC exceeds the budget for reasons outside EGD's influence.

3 Key drivers of SSM variability

As stated, under the current SSM, EGD's penalty or reward is proportional to the degree to which the actual TRC realized through its DSM efforts exceeds its budgeted TRC target. The determination of TRC is a complex calculation, with many input variables. Almost all of these variables are outside EGD's direct control. Program design elements, such as advertising expenditures and customer incentives, are partially controllable by EGD, but are also subject to external negotiation during the annual regulatory process.

Exogenous factors that influence the actual m^3 realized by EGD's DSM programs include weather, and for prescriptive programs (e.g. residential), free riders, and unit savings of specific DSM measures or technologies over the "do nothing" scenario or base technology.

In addition to the above factors that influence m^3 , the determination of TRC is influenced by other exogenous factors. These factors include:

- Actual and forecast commodity costs
- Measure life, and
- Incremental cost of the DSM measure.

Taken together, these exogenous factors have a significant influence on the TRC and hence on EGD's penalty or incentive under the current SSM.

In evidence recently filed with the OEB (Exhibit A7, Tab 2, Schedule 1, of RP 2002-0133), EGD proposed a number of enhancements to the DSM mechanisms aimed at mitigating EGD's exposure to these exogenous factors. For example, EGD proposed to "lock-in" key program parameters during the budget cycle to reduce the variability of the calculated m^3 and TRC. If free riders and incremental savings over the base case were locked-in, the calculated m^3 savings from a given program would be almost solely dependent on customer take-up. This would allow EGD to determine reasonably accurately that 5,000 customers participating in a given program would generate 50,000 m^3 . Since EGD can influence customer take-up through advertising, incentives and other program parameters, EGD would be able to make some adjustments to its programs during the year in an effort to achieve its m^3 target.

Similarly, for determination of TRC, if forecast commodity costs, measure life and incremental costs of the DSM measure were also locked-in, EGD would have much greater certainty that the same

5,000 customers participating in the example program would generate a TRC of \$100,000.

These enhancements will provide greater certainty to EGD, ratepayers and stakeholders regarding key exogenous variables, and allow EGD to focus on those variables that it has the greatest influence on.

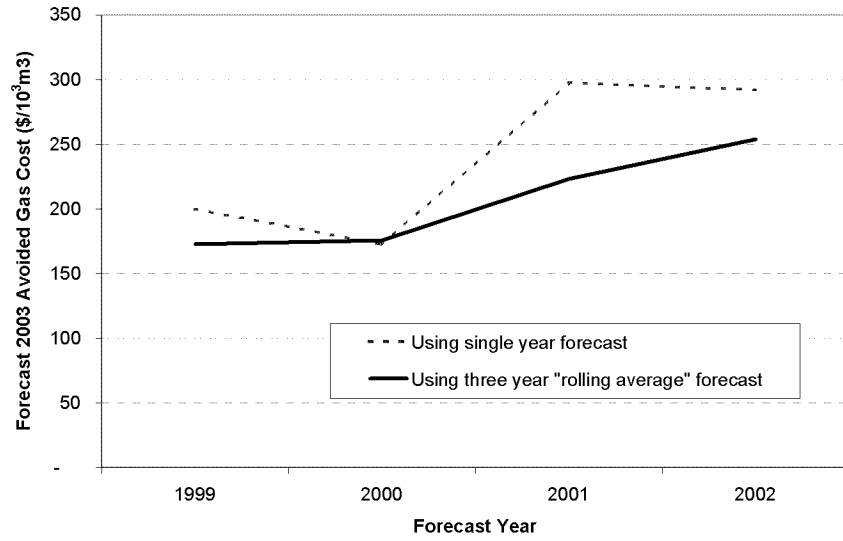
4 Dealing with gas price volatility

As discussed, one of the key factors affecting the TRC is the natural gas commodity cost forecast. Recent volatility in gas prices has had a dramatic influence on the TRC (particularly changes from the gas price spike in 2000-2001). This volatility was the primary reason that EGD's share of the TRC benefits realized in excess of the target TRC benefits (the pivot point) was reduced from 35% to 20% in the SSM calculation for 2002.

While such adjustments could continue to be made on an as-needed basis, it is more desirable to develop a mechanism to mitigate this volatility "at the source". Several options were explored, most of which were variations on "locking in" the gas price, as is proposed for other parameters contributing to EGD's m³ and TRC results.

It is proposed that EGD's gas price forecast for any given future year be based on the average of the past three years forecasts for the same year. For example, the forecast gas price in 2006 would be based on the three previous forecasts for gas prices in 2006 and this price forecast would be used for determining the actual TRC results. This would smooth the year over year volatility in gas price forecasts. It would spread the impact of a price spike (or decline) over a three year period, and smooth out the calculated TRC, and the incentive to EGD. However, the full impact of the change in price will ultimately be accounted for. An example of how this smoothing might appear is illustrated in Figure 2.

Figure 2. Effect of using a three year running average for gas prices



5 Proposed incentive mechanism

The proposed incentive mechanism is designed to address a set of principles, while accommodating practical considerations to simplify its application. The IM principles relate both to the public perspective (ratepayers), and the private perspective (the Company). The principles to be addressed include:

- ◆ **Risks and rewards should not be too high** – from EGD’s perspective, the risk associated with the penalty is quite substantial when the target cannot be met. From ratepayers’ and society’s perspective, the incentive under the existing system may be excessive. The IM should have neither onerous penalties, nor excessive rewards. It should be in keeping with the benefits achieved and the risks assumed by other similarly regulated companies to achieve commensurate benefits.
- ◆ **The target ought to have meaning** – a number of stakeholders consulted made clear their desire to ensure that the target was meaningful, and to encourage incremental savings near the target. (This is in sharp contrast to incentive mechanisms that include a ‘dead-band’ around the target where the utility would be indifferent to incremental savings.) On the other hand, if DSM is to be integrated into business plans and treated as an operational program, not just as a regulatory requirement, it is reasonable that EGD should receive a reward when it fulfills its end of the ‘social contract’.
- ◆ **The IM should encourage the utility to invest in DSM** – particularly where there are opportunities to go beyond the target, the incentive mechanism should encourage the utility to invest additional resources in DSM programs, and provide an appropriate return based on the risks for doing so.
- ◆ **The IM should reflect benefits created** – the incentive should be based on results achieved for ratepayers, not just effort expended. Ideally, the incentive should also give the company the information required to enable the business benefits (e.g. ROI) to be estimated, so that DSM investments can be compared against other potential utility investments.

In addition to these principles, practical considerations suggest that ideally the IM would be simple to calculate and understand.

Instead of basing the penalty or incentive on the difference between the budgeted TRC and the actual TRC, the proposed incentive mechanism is driven primarily by EGD’s actual m³ savings

compared with the budgeted m³ savings. EGD's incentive would also be partially dependent on the actual TRC realized.

The key elements of the proposed incentive mechanism are as follows¹:

- An incentive of 10% of the DSM budget (e.g. \$1 M based on a DSM budget of \$10 M), if EGD achieves or exceeds its m³ target, plus
- A variable incentive for exceeding the target based on 12% of the actual TRC realized prorated by the degree to which EGD's m³ savings exceed the m³ target. The prorata adjustment would be determined according to the following equation:

$$\text{Prorata Adjustment} = ((\text{actual m}^3/\text{budget m}^3) - 1) / (\text{actual m}^3/\text{budget m}^3)$$

The following example illustrates how the prorata adjustment to the realized TRC would occur for results in excess of the target. If EGD realized 125% of its m³ target, the prorata adjustment would be 25%/125% or 20% and the variable incentive would represent 12% x 20% = 2.4% of the TRC realized. EGD's total incentive in this case would be the sum of:

- the incentive of \$1 M (10% of the DSM budget of \$10 M), plus
- the variable incentive representing 2.4% of the total TRC realised.

In another example, if EGD realized 110% of its m³ target, the prorata adjustment would be 10%/110% or 9.1% and the variable incentive would represent 12% x 9.1% = 1.09% of the TRC realized. EGD's total incentive in this case would be the sum of the fixed incentive of \$1 M (10% of a \$10 M DSM budget), plus the variable incentive, representing 1.09% of the total TRC realised.

¹ Consideration was given to two additional components, but these were subsequently rejected as unnecessary. The first was a penalty for failing to meet the target. This was rejected because the reward at the target was deemed an adequate incentive to ensure that the target was met. Other jurisdictions have come to the same conclusion, and penalties are not normally used for DSM programs. The second was a cap on the size of the SSM. This was initially considered because of the concern by some parties that recent SSM awards were too large. The proposed IM offers significantly smaller rewards on the upside. Within the likely range over which the Company might be expected to deliver DSM, the benefits of creating additional TRC and paying out a small fraction of it to EGD are deemed significant. As well, the total incentive payments can be expected to be lower than payments under the existing SSM.

6 Impact of the proposed IM on EGD

In determining and evaluating the impact of the proposed IM on EGD, a number of assumptions were made. An assumed DSM budget and DSM portfolio was developed based on EGD's DSM experience over the past three years. The key parameters of the assumed budget and DSM portfolio are as follows:

- Annual fixed DSM budget of \$2 M
- Variable DSM budget of \$8 M
- Annual DSM target of $89 \times 10^6 \text{ m}^3$ (based on an average variable cost of approximately $\$0.09/\text{m}^3$ saved)
- Expected TRC of \$160 M (based on an average TRC value of $\$1.80 / \text{m}^3$ saved).

For the assumed budget and DSM portfolio and under this proposed incentive mechanism EGD would: (1) realize an incentive of approximately \$1 M based on recent DSM budgets if it met its m^3 savings target, (2) realize a higher incentive if it exceeded its m^3 target.

While the key parameters (as described above) were derived based on recent EGD DSM budgets and actual performance, these parameters may change due to a different DSM program mix in EGD's DSM portfolio or as a result of negotiations to "lock-in" key program assumptions for evaluation and audit purposes. If the forecast parameters for EGD's actual DSM budget and performance targets are significantly different from the assumed budget and performance parameters given above, EGD would need to make commensurate adjustments to the proposed IM to reflect the changes. For example, if the average variable cost assumed of $\$0.09 / \text{m}^3$ saved rose to $\$0.12 / \text{m}^3$ saved, the variable incentive of 12% on the actual TRC above target may need to be adjusted upward to 16%, to provide a similar incentive for EGD to invest its shareholder's funds to exceed the target. Otherwise, EGD may have an insufficient incentive (i.e. return on expenditures is too low) to encourage the company to invest in DSM initiatives beyond the target with shareholder funds. Similarly, if the "target" TRC resulting from EGD's forecast DSM activities were only \$120 M (versus the assumed TRC of \$160 M), the variable incentive would need to be increased to provide EGD with sufficient incentive to invest shareholder funds for DSM initiatives to exceed the target.

6.1 Backcast Results

If the proposed IM had been in place in 1999, 2000 and 2001, EGD would have realized incentives that were approximately 50% lower than under the current SSM structure. Table 2 provides the comparative results for the proposed IM versus the Shared Saving Mechanism based on EGD's actual DSM results from 1999 onwards.

Table 2 – Retrospective Comparison of Proposed IM and Shared Saving Mechanism

Year	% of m³ budget achieved	% of TRC budget (Pivot Point) achieved	Calculated SSM * (\$M)	Incentive under proposed IM (\$M)
1999	166%	132%	\$4.8	\$3.9
2000	141%	133%	\$6.5	\$3.7
2001	121%	129%	\$13.7	\$4.8

* Based on budgeted TRC versus actual TRC, does not reflect results of adjustments made in the settlement process

6.2 Scenario Testing Results

In order to determine how EGD would fare under the proposed IM, a series of scenarios were developed. Broadly speaking, three types of scenarios were explored:

1. Scenarios in which EGD m³ results vary from its m³ target and the TRC impact varies in proportion to the m³ results
2. Scenarios in which the m³ results are on target, but the TRC impact varies from target (i.e., TRC does not vary in proportion to m³ results)
3. Scenarios in which EGD is on target, but chooses to use either contingency funding or its own shareholder funding to meet or exceed the m³ target.

The results of these scenarios are presented below and compared with EGD's penalty or incentive under the current SSM.

Scenario 1: Varying m³ Results with TRC Proportional to m³

As shown in the Table 3 below, EGD would not be penalized if the actual m³ results fell below the m³ target under the proposed IM. For actual m³ results greater than the m³ target, EGD would be slightly better off under the proposed IM for results than with the current SSM for performance up to just over 105% of the m³ target, but the incentive under the proposed IM would be less than EGD would realize under the current SSM for results that are more than 105% of the m³ target.

Table 3 – Comparison of Proposed IM and Current SSM²

Scenario	Penalty/Incentive under Current SSM (\$M)	Incentive under Proposed IM (\$M)
80% of m3 and TRC target	-\$6.4	
85% of m3 and TRC target	-\$4.8	
90% of m3 and TRC target	-\$3.2	
95% of m3 and TRC target	-\$1.6	
At target		\$1.0
105% of m3 and TRC target	\$1.6	\$2.0
110% of m3 and TRC target	\$3.2	\$2.9
115% of m3 and TRC target	\$4.8	\$3.9
120% of m3 and TRC target	\$6.4	\$4.8

Figure 3 graphically illustrates how the proposed IM compares with the current SSM over a wider range of performance than shown in Table 3.

² Assumes a DSM budget of \$10 M.

Figure 3 – Comparison of Penalties and Incentives under Current SSM versus Proposed IM

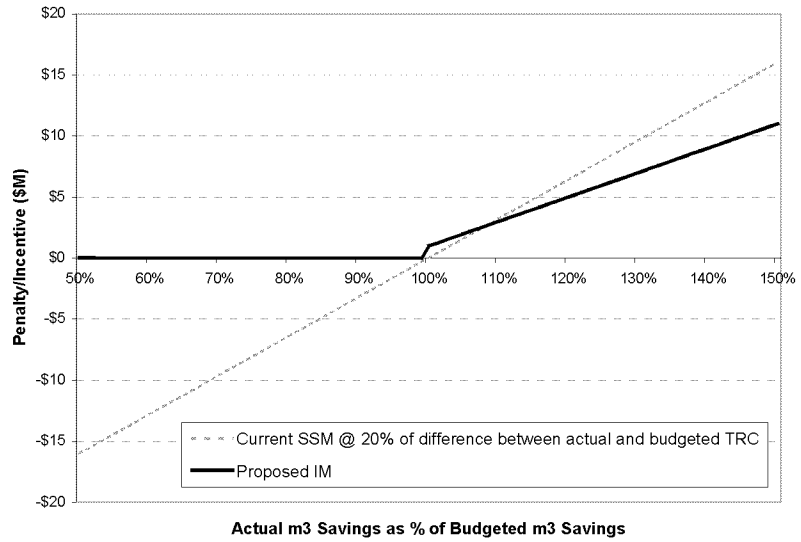
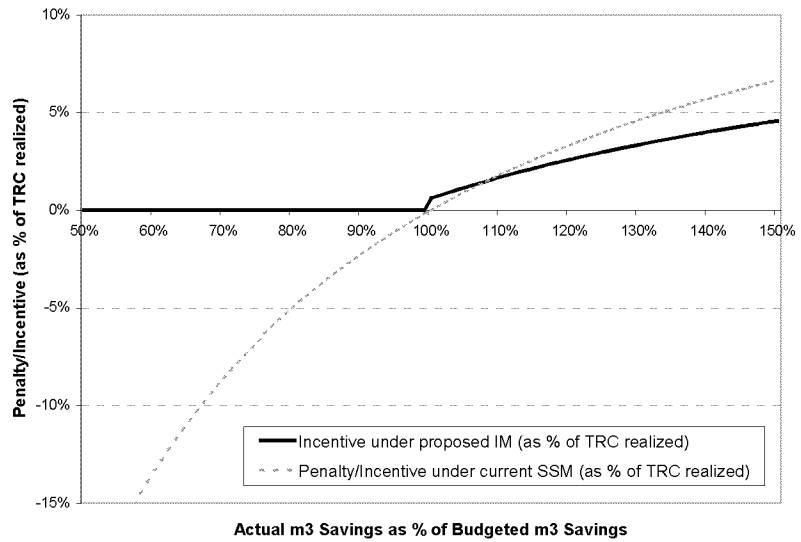


Figure 4 presents the same information, only in this figure the penalty or incentive is expressed as a function of the TRC realized.

Figure 4 – Comparison of Penalties and Incentives as Percentage of TRC under Current SSM versus Proposed IM



One of the key features of the proposed IM is that 1) in addition to the DSM budget provided by ratepayers, EGD would have the option to spend its own shareholder funds on DSM activities in an effort to exceed its m³ target, and 2) the reward for achieving DSM results above and beyond those originally budgeted is sufficient to encourage EGD to commit its own shareholder funds to DSM activities. This feature provides EGD with flexibility to commit its own funds as it deems appropriate. The proposed variable incentive rate also ensures that DSM program participants capture the vast majority of the incremental TRC realized through EGD's shareholder funding of DSM activity. For example, EGD would realize only 12% of the incremental TRC benefits if it spent \$1 M of its shareholder funds and was able to increase m³ and TRC results from 100% of target to 110% of target.

Scenario 2: On Target for m³, but Varying TRC Results

The preceding scenarios are based on the simplifying assumption that EGD's TRC results will be proportional to its m³ results (i.e., if EGD realized 105% of its m³ target, then it would also realize 105% of its TRC target). However, EGD's recent DSM performance (as shown in Table 2) clearly indicates that the TRC results will vary independently from the m³ results. This is not surprising given the fact that the TRC is based not only on m³ results, but also several factors that vary independently from the m³ results.

In order to determine the impact that these types of results (that more accurately represent reality) would have on EGD incentive, three sets of two scenarios for assumed m³ performance were tested. The three sets were based on EGD achieving 90%, 100% or 110% of its m³ target. For each set, EGD's TRC results were assumed to be either 15% lower or 15% higher relative to EGD's m³ performance (eg, for m³ performance of 90%, assumed TRC performance would be either 75% or 105%). The test results highlight 1) the extreme sensitivity of the current SSM to small changes in the TRC (even when EGD simply meets its m³ target), and 2) the degree to which EGD's actual m³ results versus target would drive the incentive under the proposed IM:

- If EGD does not achieve its m³ target, it would not receive an incentive, regardless of how TRC results vary from target.
- For actual m³ results close to target, EGD's incentive is essentially fixed and unaffected by small variances in TRC performance.
- For m³ results above target, EGD's incentive is much less sensitive to changes in the TRC due to exogenous factors.

Table 4 – Comparison of Proposed IM and Current SSM When TRC Results Vary independently from m³ Results

Scenario	Penalty/Incentive under Current SSM (\$M)	Incentive under Proposed IM (\$M)
90% of m3 target, but only 75% of TRC target	-\$8.0	
90% of m3 target, but 105% of TRC target	\$1.6	
100% of m3 target, but 85% of TRC target	-\$4.8	\$1.0
100% of m3 target, but 115% of TRC target	\$4.8	\$1.0
110% of m3 target, but 95% of TRC target	-\$1.6	\$2.7
110% of m3 target, but 125% of TRC target	\$8.0	\$3.2

Scenario 3: Exceeding m³ Target with Contingency Funding

EGD has proposed that in addition to its DSM budget, it have access to contingency funds in order to help meet its m³ target on an as-needed basis. Strictly speaking, the contingency funds would not be intended to help EGD exceed its m³ target. However, there may be circumstances due to uncertainty regarding expected program penetration or other factors where EGD uses some or all of the contingency funding in an effort to meet its m³ target and ends up exceeding the m³ target. In these circumstances, EGD's m³ target could be adjusted upwards by the lesser of (1) the contingency funding that was spent expressed as a percentage of the original budget, or (2) the percentage by which EGD exceeded its original m³ target.

For example, if EGD spent contingency funds representing 10% of its DSM budget and exceeded its original m³ target by 8%, EGD's m³ target would be increased by 8% (i.e., the lesser of 10% for contingency funding and the 8% by which EGD exceeded its original m³ target). In this case, EGD would be deemed to have met, but not exceeded, its adjusted target. In another example, if EGD spent contingency funds representing 5% of its DSM budget and exceeded its original m³ target by 15%, the m³ target would be increased by 5% (i.e., the lesser of 5% for contingency funding and the 15% by which EGD exceeded its original m³ target). This preserves the original intent of the contingency funding (to help EGD achieve the target) and allows the m³ target to be adjusted as necessary if the contingency funds contributes to EGD exceeding its m³ target.

However, in those years when EGD chooses to (1) access the contingency funds to meet its target and (2) contribute shareholder funding to surpass its target, further refinements in the methodology used to adjust the m³ target are necessary. Essentially, the adjustment should reflect the relative degree to which contingency funds and EGD shareholder funding contributed to exceeding the target. The simplest method would be to attribute performance over target based on the relative share of "excess" funding provided by the contingency funding and by EGD shareholders. As discussed previously, the deemed contribution of contingency funding to exceeding the target could not exceed 10% (the proposed level of contingency funding).

For example, if EGD's contingency spending was \$1 M and its shareholder funding was \$2 M in a given year, it could be argued that 1/3 of any results over the m³ target (up to the 10% limit of the contingency funding) were attributable to the contingency funds and the other 2/3 of any results over target were attributable to EGD shareholder funding. These adjusted results (i.e., exclusive of EGD

shareholder funding) would then be used as the basis for adjusting the target as described previously. For example, if EGD achieved 115% of its m³ target and spent \$1M in contingency funding and \$2M in shareholder funding, the budgeted m³ target would be adjusted upwards by 5% (i.e., 1/3 of 15%). In another example, if EGD spent \$1M in contingency funds representing 10% of its original DSM budget plus \$500,000 of its shareholders' money, but realized 130% of its m³ target, the target would only get adjusted upwards by 10% (representing the maximum contingency funding) and the additional 20% would be deemed to be a direct result of EGD's shareholder funding.