Ontario Energy Board Commission de l'énergie de l'Ontario

Ontario

Market Surveillance Panel

Report on an Investigation into Goreway Station Partnership

September 2017

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Executive Summary

In this report, the Market Surveillance Panel (Panel) provides its findings further to its investigations into the conduct of Goreway Station Partnership (Goreway), a generator that operates in the wholesale electricity market operated by the Independent Electricity System Operator (IESO).

As a panel of the Ontario Energy Board (OEB), the Panel's mandate includes monitoring and reporting on the functioning of the IESO-administered markets. It also includes investigating and reporting on individual market participants' conduct, particularly where there are concerns that participants are engaged in gaming, abusing market power or otherwise acting inappropriately in the market.[1] The Panel reports on its investigations to the IESO and the OEB, and the OEB makes those reports public, redacted as required to address any confidentiality concerns. The Panel does not have the power to sanction inappropriate conduct or violations of the Market Rules, including the "General Conduct Rule".[2] Instead, that power lies with the IESO and the OEB.

Goreway is a subsidiary and joint venture of Toyota Tsusho Corporation and JERA Co. Inc. (the latter of which replaced former joint venturer Chubu Electric Power Inc. in 2016). It operates the Goreway Power Station in Brampton, Ontario. The power station became operational in June 2009, and it is composed of three natural gas-fired turbines, and a complementary steam turbine which operates using auxiliary heat from the gas-fired turbines. Goreway sells power generated at its Brampton station through the IESO-administered markets.

[1] Investigations by the Panel are governed principally by section 37 of the *Electricity Act, 1998* and Article 5 of the Ontario Energy Board's By-Law No. 3.

[2] Market Rule amendments creating the General Conduct Rule were adopted by the IESO Board of Directors on June 12, 2014. The General Conduct Rule prohibits any conduct that exploits, circumvents, manipulates or undermines the IESO-administered markets or the Market Rules, or interferes with the determination of a market price or dispatch outcome by competitive market forces. This generalized obligation is intended to fill in the gaps where activity-specific rules have not been established, and to bring Ontario in line with approaches taken in other jurisdictions and markets. The General Conduct Rule took effect on July 31, 2014, when the OEB issued a Decision and Order approving amendments to the IESO's licence to enable an alternative dispute resolution mechanism for potential breaches of the General Conduct Rule: see the OEB's Decision and Order, available on-line at:
http://www rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/445117/view/dec_order_ei_ieso_20140731.PDF

Goreway's conduct in relation to the following three elements of the IESO-administered markets was the focus of the investigations: the Real-Time and Day-Ahead Generation Cost Guarantee programs (here referred to collectively as the "GCG programs" and individually as the "RT-GCG program" and the "DA-GCG program"), the Congestion Management Settlement Credit (CMSC) payment regime, and the Day-Ahead Commitment Program (referred to as DACP). The intended purpose of each of these elements of the market is to foster a reliable supply of electricity:

- The underlying purpose of the GCG programs[3] is to promote reliability by providing market participants with an incentive to offer supply to the market. It aims to do this by guaranteeing the recovery of certain incremental costs incurred whenever an eligible generation facility starts up and is brought up to the minimum level of output that it can reliably inject into the electricity grid.
- Under the CMSC regime, the IESO makes payments to generators (among others) who are directed by the IESO to generate electricity, or to stop generating electricity, in a manner that would be uneconomic for them. These payments are calculated to compensate for the implied economic loss resulting from following these directions.
- The DACP (which replaced the former DA-GCG program in 2011) is designed to secure generation commitments from generators for the following day. By securing these commitments, the IESO can ensure a stable baseline supply of electricity and reduce the need to adjust the commitment of generators on a "real-time" basis.

The Panel has concluded that Goreway repeatedly exploited defects in the GCG program, and in doing so received at least $89 million in gamed GCG payments over the three-year period under investigation (June 10, 2009 through June 5, 2012, the "Investigation Period").[4] Goreway routinely submitted what were obviously inappropriate expenses to be reimbursed by the IESO, and ultimately borne by Ontario ratepayers.

[3] Until 2011, the GCG programs were used in both the day-ahead and real-time timeframes. Since then, the day-ahead GCG program has been replaced by the DACP, so that only the real-time GCG program remains in use today.
[4] The Panel's Investigation Period involved GCG submissions totaling $165M and resulting payments to Goreway of $139M.

The IESO ultimately conducted an audit of Goreway's GCG submissions, covering a much longer period (June 10, 2009 through to October 31, 2015).[5] The ensuing compliance action under the Market Rules was concluded by a settlement agreement with Goreway in December, 2015. The IESO concluded that Goreway submitted untrue or incomplete information in its GCG submissions, and failed to correct it despite having the correct information available to it. The settlement included the agreement that Goreway would repay to the IESO a sum [redacted] representing a substantial portion of the GCG guarantee payments received over the nearly six-year time frame covered by the IESO's audit [redacted], as well as a financial penalty of $10 million.[6]

This is a positive development, but in the Panel's view more remains to be done. The Panel has noted on more than one occasion that the RT-GCG program in its current form is over-committing eligible resources at considerable expense to Ontario ratepayers. The guarantee of start-up O&M costs, which creates little or no apparent incremental reliability benefit, creates complexity in administration and lends itself to opportunities for exploitation. The Panel acknowledges that the IESO is considering a longer-term solution to issues associated with the RT-GCG program through its Market Renewal initiative, but by the IESO's own admission that solution is many years away.

The Panel has also concluded that Goreway exploited defects in the CMSC regime in relation to its shut-down offer prices. Those prices were routinely higher than the "threshold" established by the Panel in its August 2011 *Monitoring Document on Generator Offer Prices used to Signal an Intention to Come Offline*, and there is no evidence that those offer prices were a reflection of Goreway's marginal costs during shut-down. One of the defects associated with so-called "Ramping CMSC"[7] during shut-down is that it may be difficult or impossible to detect exploitation – and quantify its impact – other than in extreme cases. Although the benefit to Goreway from exploiting the Ramping CMSC regime during shut-down cannot be quantified with precision, the Panel believes that a substantial portion of the $11.2 million in Ramping

[5] The IESO conducted audits of the GCG cost submissions of a number of generators. The IESO audit period was roughly twice as long as the Panel's Investigation Period and, as a result, reviewed substantially more GCG cost submissions than did the Panel.
[6] As discussed below, the Panel agreed to maintain the confidentiality of the amount of the settlement payment. With respect to the penalty, see http://www.ieso.ca/en/sector-participants/market-oversight/rule-compliance/compliance-enforcement/sanctions.
[7] Ramping CMSC is explained in chapter 3 of this report at sections 2.1-2.4.

CMSC received by Goreway during shut-down over the course of the Investigation Period was the result of gaming.

The Panel has repeatedly recommended that Ramping CMSC during shut-down be eliminated. The IESO recently implemented a Market Rule amendment that replaces CMSC for shutting down generators with an alternative payment mechanism. Under that mechanism, payments associated with shut-down are reduced but not eliminated entirely. The Panel has previously made known its view that the IESO's new approach adds a layer of complexity – and the almost inevitable possibility of new gaming opportunities – while, in the end, simply re-creating the same economic outcome as Ramping CMSC.

With respect to the DACP, during the Investigation Period Goreway received approximately $5.6 million in top-up payments as a result of a flaw in the calculation engine used by the IESO to schedule and compensate "day-ahead" generation. That flaw triggers payments to generators during the first hour of a given day, regardless of the economics of the generator's offer. The resulting payments amounted to an unexpected windfall, the value of which was substantial given Goreway's consistent use of high offer prices to avoid being scheduled under the DACP in favour of targeting the lucrative RT-GCG program. Goreway then spent considerable effort attempting to reproduce these large payments. After numerous experiments which did not reliably reproduce these large anomalous payments, Goreway's staff were able to identify the flaw; the Panel concludes that Goreway then pulled back, conscious of the inappropriate outcome (and of the Panel's active investigation), and did not follow through with causing deliberate replications of the anomalous DACP payments. The approximately $5.6 million received by Goreway in anomalous top-up payments were nevertheless unwarranted.

Ontario's electricity market balances a complicated set of factors embodied in the governing legislation. The IESO has a uniquely challenging task to perform in the administration of the market in the light of competing policy priorities. But the systems that are in place under the three elements discussed in this report have created opportunities for exploitation, to the serious financial disadvantage of Ontario ratepayers. The Panel has frequently commented on the substantial inefficiencies and opportunities for exploitation that are associated with different elements of the design of the wholesale electricity market. Goreway's conduct offers a clear

illustration of some of these flaws and of the market's vulnerability to exploitation by market participants.

Goreway's Response

In accordance with section 7.2.2 of the OEB's By-law No. 3, a draft of this report was given to Goreway to provide it with an opportunity to discuss the findings with the Panel. Goreway was also invited to comment on matters of factual accuracy and confidentiality. Representatives of Goreway met with the Panel, at which time Goreway requested that the Panel redact the following information from the final version of this report for the purposes of public communications:

- the amount of the settlement payment made by Goreway to the IESO, which Goreway noted was the subject of an agreement as to confidentiality with the IESO; and
- the names of personnel involved in the management or operation of the Goreway facility.

The Panel has agreed to redact this information. As a result, both public and confidential versions of this report have been prepared, the former for public communication and the latter for transmittal to the Chair of the OEB and the CEO of the IESO.

As a follow-up to its meeting with the Panel, Goreway provided a brief written response to the Panel's findings in this report, a copy of which is attached to this report as Appendix "A".

With the exception of the above description of Goreway's response and Appendix A, this report is as at December 31, 2016.

Chapter 1: Goreway's Operations in the Ontario Wholesale Electricity Market

Goreway Power Station is located in Brampton, Ontario. It became commercially operational in June, 2009. Goreway generates power using three natural gas turbines, as well as one steam turbine. The steam turbine operates whenever any one or more of the three gas-fired turbines are operating, and is fuelled by the waste heat they throw off while burning fuel. Goreway's facility can generate up to 875 MW of electricity at a given time.

Goreway is a subsidiary and joint venture of Toyota Tsusho Corporation ("TT") and JERA Co. Inc. ("JERA"). At the time it became operational in 2009, it was owned and operated by Sithe Global Power Goreway ULC ("Sithe"). In September, 2009, TT and Chubu Electric Power Inc. ("Chubu") acquired an interest in Goreway from Sithe, with each owning an equal 25%. In March, 2011, TT and Chubu acquired the balance of the interest in Goreway from Sithe, each now owning an equal 50% share. In July, 2016, Chubu transferred and merged into JERA all of its existing international power generation business, including its interest in Goreway.

During the key periods of investigation, the project was overseen by TT and Chubu as the self-described "project sponsors", each headquartered in Japan. Goreway's Board – composed of representatives of the project sponsors – oversees the project's performance from Japan. During most of that period, the project sponsors were represented by the former Project Manager [redacted], who was regularly present in Canada to review and oversee Goreway's on-the-ground operations. This individual was interviewed in the course of the Panel's investigation.

At the generation facility, Goreway's relevant key personnel were broadly split between operational and Energy Management sections. Actual plant operations were overseen by plant management and engineering personnel, two of whom were interviewed for this investigation [redacted]. Also on the operational side were accounting personnel, one of whom [redacted] was interviewed and whose evidence helped clarify Goreway's accounting records used to support its reimbursement claims. But much of the key activity occurred in the Energy Management group, which made the pertinent decisions with respect to Goreway's ongoing participation in the market and its interactions with the IESO. One key employee whose decision-making was central to the issues raised in this report was former VP of Energy

Management [redacted], who passed away by the time of the Panel's investigation. The record of Goreway's conduct within this group emerged largely from the documentary record and from the Panel's interviews of other Goreway staff, including other former Energy Management personnel [redacted] and its former Project Manager [redacted].

Like most natural-gas fired plants, Goreway does not generate power on a constant basis. Instead, it operates in response to market prices and reliability program incentives. "Market price" in Ontario is determined by the IESO through the matching of offers from suppliers (generators and importers) with bids from buyers (exporters and directly-connected consumers), including distributors which serve consumers connected at the distribution level.

Chapter 2: The Panel's Investigation

2.1 *The Panel's Mandate*

The Panel is empowered under the *Electricity Act, 1998* to conduct investigations into any activity related to the IESO-administered markets or the conduct of a market participant.[8] It is also required by the OEB's By-law #3 (MSP By-Law) to monitor activities related to the IESO-administered markets and the conduct of market participants. This supervisory role aims to identify, among other things:

- inappropriate or anomalous market conduct, including possible abuses of market power or "gaming";
- design flaws and inefficiencies in the Market Rules and other rules and procedures of the IESO; and
- design flaws in the overall structure of the IESO-administered markets that are inconsistent with the fair and efficient operation of a competitive marketplace.[9]

The Panel has previously characterized "gaming" of the market rules as the exploitation of opportunities to profit or benefit from defects in the design of the market, from poorly specified rules or procedures, or from circumstances that are not expressly covered by the Market Rules or procedures. An essential characteristic of gaming is that the conduct profits or otherwise benefits the market participant concerned, at the expense or to the disadvantage of the market. In extreme cases, gaming can involve fraud, deceit or manipulation of market prices.[10]

The Panel is supported in all of its work by the Independent Electricity System Operator's (IESO) Market Assessment Unit (MAU).[11] It has various powers available to ensure its ability to effectively investigate activities and conduct in the market. These powers include the ability to compel production or to enter any business premises and remove documents and information from participants to copy and review, as well as compelling the testimony of persons likely to

[8] *Electricity Act, 1998*, S.O. 1998, c. 15, Sched. A., section 37(1), online at: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_98e15_e.htm#BK95.
[9] Section 4.1.1 of the MSP By-Law, online at: http://www.ontarioenergyboard.ca/OEB/_Documents/About%20the%20OEB/OEB_bylaw_3.pdf.
[10] See the Panel's Monitoring Document: Monitoring of Offers and Bids in the IESO-administered Electricity Markets (March 2010), at p. 44, online at: https://www.oeb.ca/oeb/_Documents/MSP/MSP_Monitoring_Offers_Bids_Document_20100310.pdf
[11] The MAU provides support to the Panel pursuant to a "Protocol" between the IESO and the OEB, online at: http://www.ontarioenergyboard.ca/OEB/_Documents/MSP/msp_protocol.pdf. References in this report to investigative steps carried out by the Panel include investigative steps carried out by the MAU on behalf of the Panel.

have relevant information. They do not, however, include the power to impose sanctions on any participant, whether for violation of the Market Rules (including the General Conduct Rule) or laws of general application. That responsibility has been left to others, including the IESO and the OEB insofar as the Market Rules are concerned.

2.2 *The Investigation of Goreway*

On July 18, 2011, the Panel launched a gaming investigation into the large CMSC payments made to Goreway, and sent a formal request for information to Goreway. Through November and December of 2011, Goreway supplied some partially responsive information and met with the Panel to explain its response. In response to further questions from the Panel, Goreway provided a subsequent supplementary response received in January 2012. Thereafter, the Panel decided to exercise its formal powers to compel the production of records, and communicated to Goreway the need to preserve all relevant documentation pending formal steps to secure the evidence.

On June 5, 2012, the Panel launched two further gaming investigations, one into Goreway's receipt of anomalous DACP payments, and the other on Goreway's cost submissions under the GCG programs. Between June 6 and 14, 2012, the MAU, under the Panel's direction, attended to inspect and copy Goreway's physical and electronic records at its premises. Thereafter, a lengthy process of scanning and coding the various records and documents acquired was commenced with the assistance of third party resources. The process was considerably complicated and delayed by the need for a privilege review process before materials were released to the Panel. After a series of delays relating to privilege review as well as other technical document processing issues, the Panel retained outside counsel in October 2013 to assist in moving the process forward. The MAU gained access to the most substantial tranche of documents and records for review (although many remained undisclosed and subject to ongoing unresolved privilege claims) by July 2014. Full access to the last tranche of records was gained in late April 2016.[12]

[12] A significant number of records remained unavailable as subject to privilege claims, but the Panel determined that it was unnecessary to resolve these claims in view of the material already then available.

Following review of Goreway's documents, the Panel exercised its authority to compel the testimony of a number of Goreway personnel: its former plant manager [redacted]; an experienced former employee within the Energy Management group [redacted]; its former Project Manager installed on-site by the project sponsors [redacted]; and senior engineering and accounting personnel [redacted]. These interviews were organized and conducted between March and September, 2015.

The Panel also obtained from the IESO market and operational data for the period under investigation. This included statistical information related to prices, scheduled and actual production, settlement payments and other data.

This report is based on the information gathered from Goreway's documents and records, IESO data, and the content of the interviews taken under oath pursuant to the *Electricity Act, 1998*.

Chapter 3: The GCG Investigation

3.1 *The IESO's GCG Programs*

Prior to the introduction of the DACP program in 2011, the IESO employed the DA-GCG program to secure a reliable baseline of electricity production projected to be required for the next day. The IESO also operates the real-time generation cost guarantee (RT-GCG) program, which remains in place today and provides the same incentives to generators, but on a same-day basis. Both programs are intended to support the reliability of electricity supply, and both operate by guaranteeing to participants the recovery of certain start-up and minimum generation costs. As noted earlier, because the features of both programs were exploited by Goreway in similar ways during the Investigation Period, this report refers to them collectively as the GCG programs.

The IESO's rationale in deciding to guarantee producers their start-up and minimum generation costs is relatively straightforward. There are always costs incurred by the generator in starting up its facility and in generating electricity. Each generator has a Minimum Loading Point (MLP) – its lowest stable operating level, below which it cannot persistently inject energy into the grid – and for some generators, starting up their facility and reaching their MLP can take several hours. Because the real-time price paid to generators is uncertain when they make the decision to start-up, there is a risk that market revenues will not cover these start-up costs. Similarly, the length of time for which they will remain dispatched on-line and able to generate market revenue is uncertain when the decision to start-up is made. This risk to a generator's bottom line in turn creates a theoretical risk that they will not start their facilities unless they have a high degree of certainty that they will be able to at least recover their costs. When faced with this risk, some generators may choose to leave their facilities offline, and others may inflate their offer prices to ensure an extra margin of assurance that their production will be profitable. The former can threaten the reliability of supply on the grid and the latter can undermine the efficiency and cost-effectiveness of the market.

The Panel's investigation discussed in this section of this report was concerned with Goreway's cost submissions under the GCG programs. As noted below, Goreway went out of its way to avoid participating in the DACP, which replaced the former DA-GCG program and which does not guarantee costs in the same way.

Since Goreway commenced operations in 2009, and throughout the Investigation Period, the costs that have been guaranteed under the GCG programs fall into two broad categories: [13]

- **Start-up cost.** These are fuel costs, and incremental operating and maintenance (O&M) costs, incurred from start-up until the facility has ramped to its Minimum Loading Point;
- **Minimum generation cost.** The cost (calculated by reference to the participant's offer price)[14] of the electricity generated up to the Minimum Loading Point for the minimum period of time that the facility can safely operate before being taken off-line again.

The minimum generation cost is objectively calculated by reference to the market participant's offer price per megawatt of output multiplied by the facility's Minimum Loading Point and Minimum Run-Time[15] as registered with the IESO. Start-up costs are calculated by the participant itself; following the period for which their unit was dispatched, producers submit the sum of their claimed recoverable costs to the IESO. After accounting for revenues made over the guaranteed portion of the run, the IESO then pays the balance of the claimed amount.

Throughout the Investigation Period, participants were not required to make itemized cost submissions, but instead simply inputted a blanket total. While no automatic analysis or review occurs prior to payment, the Market Rules do allow the IESO to perform an after-the-fact audit of GCG claims.[16] As discussed further below, in this case the IESO did eventually commence an audit of Goreway's claims, from which a compliance action ensued that was ultimately concluded by a settlement agreement.

3.1.1 Lack of Controls on GCG Submissions

The basic purpose of guaranteeing "start-up costs" is clear enough. But the IESO's Market Manual guidance on precisely what start-up costs were recoverable left it in the hands of market participants to make judgment calls as to what incremental O&M costs are recoverable.[17] The Market Manual explains that participants can recover "fuel costs for start-up and for ramping to

[13] There have been subsequent changes to the program that are discussed later in this report.
[14] Since December, 2009.
[15] The technical term is Minimum Generation Block Run-Time (MGBRT).
[16] Chapter 7, section 2.2B.2.
[17] In addition, the IESO issued an Interpretation Bulletin in August 2014 that provided guidance on the types of costs that are recoverable (or not) under the GCG programs.

the minimum loading point". It then explains that incremental O&M costs are recoverable as follows:

> Incremental O&M is a cost associated with breaker close and unit operation. These costs are avoidable if the unit does not start. Incremental O&M excludes costs that are independent of unit operation such as lighting, security and so on.[18]

It is clear, as described below, that Goreway's interpretation of this provision (and what was "incremental" or "avoidable" but for the need to start the unit) was at the very least aggressive, and in some cases plainly unreasonable. Commenting on the definition of incremental O&M in the Market Manual, a former Goreway executive [redacted] explained to his then-colleagues [redacted] that it "sounds like they are taking a lot away…..but their choice of wording is ideal." Goreway's later internal communications and conduct confirm the intention to take advantage of what it perceived to be an elastic definition of recoverable O&M costs.

The Panel recognizes that there is a certain amount of judgment that must be used in applying the standard in the Market Manual to individual costs. But the Panel does not accept that Goreway's approach was justified by vagueness in the definition. The fact that Goreway was permitted to persist for so long in the extraordinary pattern of cost recovery submissions described below also reflects the lack of any requirement to justify, on an ongoing or proactive basis, the inclusion of different costs in submissions, and the lack of routine oversight during the period covered by the Panel's investigation. Itemization of the O&M costs claimed was not required, nor was the recording of any particular methodology for allocating them to the "incremental-to-start-up" category. It is clear that either of these options would have permitted more effective spot-auditing and could have allowed the IESO to identify Goreway's conduct at a much earlier stage. This is best illustrated by reference to the specifics of Goreway's submission practices.

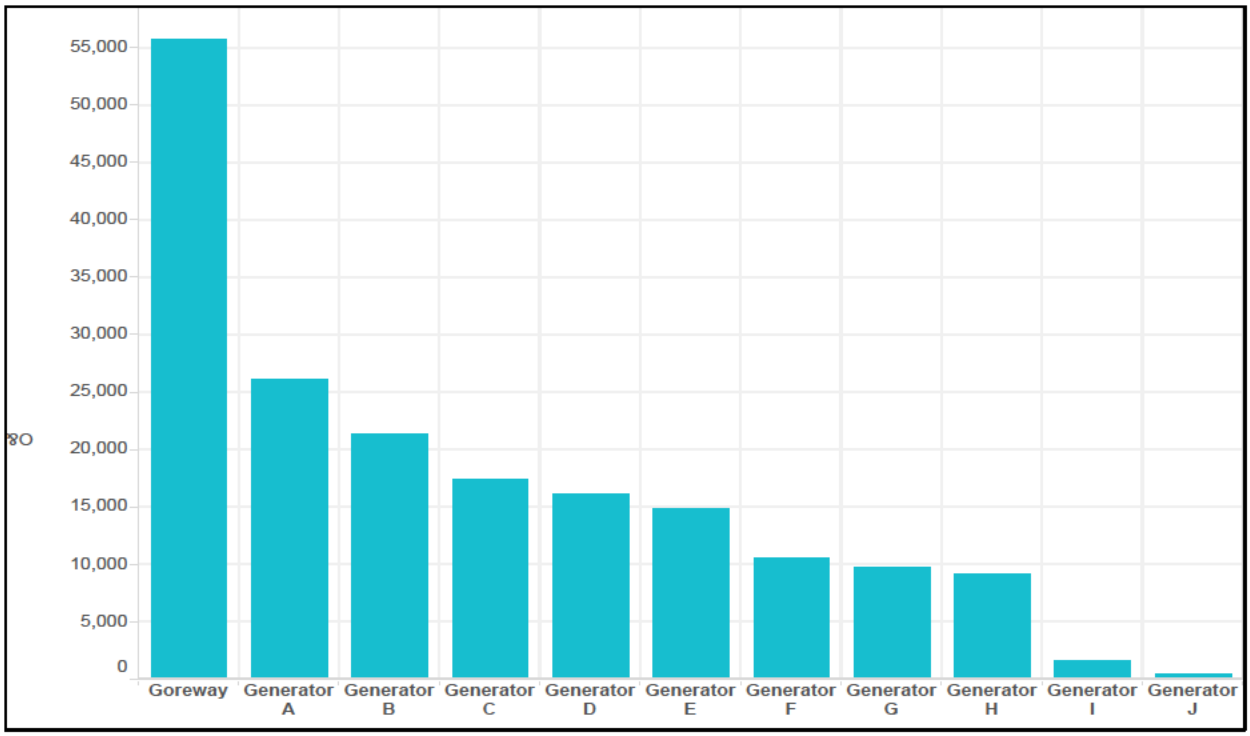
[18] Market Manual 5, Part 5.5, s. 1.6.4.1

3.2 *Goreway's GCG Submission Practices*

Goreway took more than full advantage of both the perceived elasticity of the Market Manual guidance on recoverable costs, and the lack of any meaningful review mechanism for GCG submissions short of an after-the-fact audit. From commencing operations on June 10, 2009, through to May 28, 2012, Goreway submitted more than $164 million in claims on the GCG programs. Of those submissions, Goreway received back more than $139 million in GCG payments funded by Ontario consumers over this period of less than three years, in addition to the market revenues it earned.

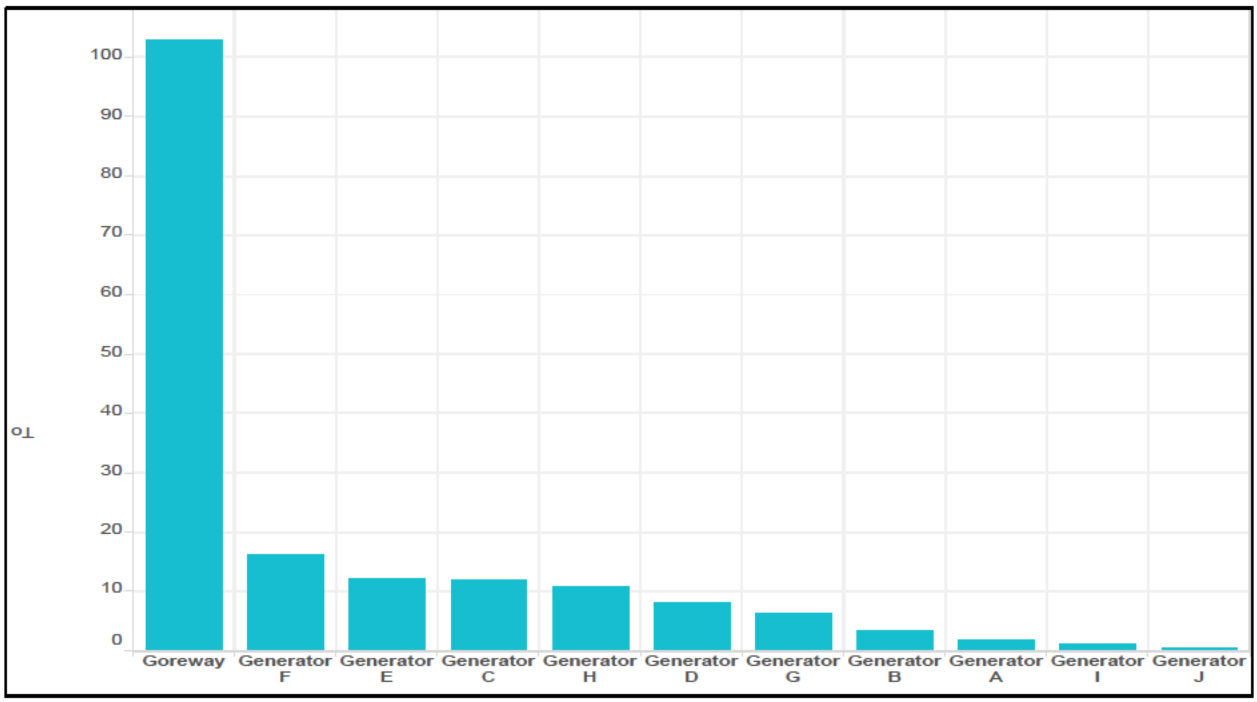
These amounts were far out of range by comparison to other gas-fired facilities with similar capacity that also participated in the GCG programs. Goreway's average per-start GCG submission for start-up O&M was $55,717, more than twice as much per start as the next most expensive facility as observed in Figure 3-1.

Figure 3-1: Average Per-Start O&M Submission by Goreway and Other Gas-Fired Facilities
June 10, 2009 – June 5, 2012
($)



In fact, Goreway's total start-up O&M submissions of over $100 million (covering 1,852 submitted starts) were far more than the combined O&M submissions from all other gas-fired generators in the Province ($75 million covering 8,924 starts) over the same time period put together. Figure 3-2 illustrates the striking variation.

Figure 3-2: Total O&M Submissions by Goreway and Other Ontario Generators
June 10, 2009 – June 5, 2012
($)



The Panel expresses no view in this report on whether other facilities' GCG claims were themselves reasonable. Having become aware of the magnitude of the claims Goreway was submitting and the guarantee payments it was receiving under the GCG programs, the Panel commenced a separate investigation of this issue on June 5, 2012 and notified Goreway accordingly.

Based on the information gathered as part of the investigation, from documents, witness interviews and electronic records, at least six major issues with Goreway's GCG submissions over the Investigation Period were identified. Altogether, these major issues resulted in

Goreway receiving at least ***$89 million*** in ineligible payments through the GCG programs during the Investigation Period:[19]

- **Costs without any supporting records to indicate a real expenditure.** Over the Investigation Period, Goreway submitted more than ***$17 million*** in O&M costs than it actually incurred or could identify a justification for, even in its own records.[20]
- **Fuel Storage & Transportation Charges.** Storage & transportation cost is a fixed, non-variable monthly fuel charge incurred entirely independent of whether Goreway operates or stands idle. There is no reasonable basis to regard these as in any way related to starting up its facility. Goreway submitted over ***$46 million*** of these costs despite knowing they were not properly claimable.
- **Costs submitted merely because they were "variable".** Goreway separated out all of its actual costs into "fixed" and "variable" items. This division was seemingly based on whether the cost of these items *ever* varied, not whether they were incremental costs related to or caused by the need to start-up and ramp its facility to the Minimum Loading Point. It then submitted *every penny* of its entire facility cost into the GCG programs for reimbursement, so long as it was deemed "variable" in nature. Over the Investigation Period, these claims totaled over ***$33 million***. The Panel is not in a position to determine what proportion of this $33 million might have legitimately been eligible for recovery and therefore has not included any of this amount in what it has determined to be clearly ineligible cost submissions by Goreway (*i.e.*, the $89 million figure noted above) – although some of that global sum is clearly improper.
- **Long-Term Service Contract.** Included among these "variable" items were charges under a long-term service contract Goreway had with General Electric (GE), the manufacturer of the turbines at its facility. Although these costs had a variable element, the fact of a start-up was only one of the variables that determined what was payable to GE. Goreway nevertheless submitted the *entirety* of the charges under this maintenance

[19] This calculation consists (as particularized in the bulleted list) of $17M in costs with no supporting records; $46M in storage and transportation costs; $6.5M in "steam fuel" costs; and $23M in ineligible long-term maintenance cost less the $4M of those ineligible long-term maintenance costs which are already subsumed in the $17M figure that covers costs with no supporting records. The $89M figure does **not** include any of the $33M in "variable" operating & maintenance costs, reflecting the Panel's conservative approach in arriving at this minimum figure for the purposes of this report.

[20] This figure excludes the period June through December, 2009, for which no records exist to show Goreway's methodology for submitting O&M costs at all.

contract into the GCG programs – a total of over ***$11 million***. The Panel has estimated from Goreway's own internal records that as much as $7 million in these GE contract costs were over-submitted. However, given that some portion of these costs was likely eligible, the Panel has again excluded this amount from its estimate of clearly ineligible cost submissions by Goreway.

- **Speculative Long-Term Capital Costs.** On top of the long-term service contract payments, which at least were legitimately paid to GE, Goreway submitted over ***$23 million*** in costs for what it speculated would be future, possible expenditures on maintenance in the long-run. These charges – characterized in Goreway's internal documents as "Balance of Plant Long Term Maintenance" – were never recoverable under the GCG programs. Goreway's own records show that the submitted total was nearly $4 million more than even its own internal records could support.
- **"Steam Fuel" Costs.** In 2009, Goreway submitted to the GCG programs ***$6.5 million*** in "steam fuel costs". However, steam turbines do not consume fuel; they operate by harvesting the waste heat generated by the gas-fired turbines. In addition, Goreway did not commit its steam turbines through the GCG programs and therefore no costs associated with the steam turbine, even if incurred, were eligible for recovery. These were clearly ineligible and it is not clear how Goreway could have thought otherwise.

While some proportion of Goreway's specific claims may be viewed as aggressive, but arguable, components of "start-up cost", the large majority of the costs outlined above were clearly ineligible to be guaranteed and paid by Ontario electricity consumers. Conservatively, at least $89 million of Goreway's submissions were clearly ineligible by any reasonable measure. As described below, it is also clear from the result of the IESO's audit that these practices continued well beyond the period covered by the Panel's investigation.

Some of these categories of claims warrant further elaboration.

3.2.1 Ineligible Storage and Transportation Costs

To guarantee access to a defined volume of gas storage and delivery of the physical product, Goreway maintained long-term contracts with Enbridge, Union Gas and TransCanada Pipelines. The actual monthly cost of these contracts (roughly $1.3 million) did not meaningfully vary month to month in any way based on consumption.

Reflecting the reality that these costs were simply fixed expenses incurred to ensure Goreway's ability to operate when it chose to do so, Goreway's internal expense tracking categorized them as "fixed". Like all of Goreway's expenditures, these costs were all recorded in an ongoing, updated spreadsheet called "VOM-Monthly". Developed by senior management (particularly former Project Manager [redacted]), the spreadsheet broke out costs into various categories, with the over-arching division being between "fixed" items and "variable" items. Consistent with Goreway's accounting category codes, VOM-Monthly accurately records these storage and transportation costs as "fixed". In their interviews, two Goreway staff [redacted] acknowledged that they were in fact fixed, and that they should never have been submitted as start-up costs under the GCG programs. Goreway's former Project Manager [redacted] surprisingly claimed not to have understood this to that level of detail, stating that Goreway's former Energy Management executive [redacted] "told us that gas transportation cost can be claimed under GCG. We trusted [his] explanation…according to [him], [he] knew everything about the GCG, then he brought a list of claimable items under GCG". But other former staff [redacted] had no difficulty acknowledging that there was no relationship between the decision to start the facility and the volume of storage and transportation charges:

> Q. Would the number of starts affect the amount you had to pay for these storage and transportation costs?
>
> A. Oh, you mean would we have to pay more if we ran a lot, for example?
>
> Q. Yes.
>
> A. No. That would be the same.

For twenty of the months within the Investigation Period, the Panel was able to recover or reconstruct Goreway's internal record of its monthly GCG submissions. Over the twenty months of actual records, Goreway submitted $28.285 million in storage and transportation costs for reimbursement under the GCG programs. This exceeds the amount shown in Goreway's internal accounting records as having actually been expended for the same periods (a total of $26.66 million). Based on the evidence collected through this investigation, the Panel concludes that

Goreway submitted its entire storage & transportation costs through the GCG programs, totaling over $46 million over the Investigation Period.[21] Given the $1.6 million overage in submissions over the twenty months for which complete records exist, it is possible that Goreway submitted – and recovered from Ontario consumers – even more.

3.2.2 Ineligible Variable Operating & Maintenance Costs

Shortly before Goreway commenced commercial operation in June, 2009, the IESO announced an anticipated change to the RT-GCG program that would allow participants to make claims for incremental O&M costs incurred as a result of starting the facility.[22] Here is how one former executive [redacted] reacted in an email to Goreway staff:

> Put a bow on it… Christmas came early!

In fact, "Christmas" arrived in December as scheduled, when the IESO implemented the rule change; it lasted throughout the Investigation Period and beyond. The Panel concludes that, during the Investigation Period, Goreway submitted a total of $33.1 million in variable O&M costs for recovery from Ontario consumers. Because of the nature of these costs, it is difficult now to quantify precisely what percentage of them were ineligible and what portion were legitimately incremental costs incurred as a result of start-up and ramping to the Minimum Loading Point.[23] The Panel has therefore not included these costs in its estimate of the amount of GCG payments that Goreway obtained by exploiting the program. However, from a review of Goreway's methodology, it is clear that a substantial portion of this $33.1 million is the result of over-claiming under the GCG programs.

As described above, Goreway's actual expenditures were tracked in the ongoing VOM-Monthly spreadsheet, and internal records of its GCG calculations have been recovered for approximately 20 months of the investigation period. These expenditures were divided into "fixed" items and "variable" items. For example, employee salary costs were placed in the "fixed" category, whereas all employee overtime was marked "variable". Although the logic of viewing overtime

[21] This context includes an exchange among former employees and representatives of the Project Sponsors [redacted] on November 11, 2010, reflecting a discussion with a former Goreway executive [redacted] and a decision that Goreway should "fight the TCPL price hike" (for storage and transport cost) "but that we'll ultimately stay indifferent by passing it through as GCG".

[22] These costs were previously only recoverable under the day-ahead GCG program.

[23] As discussed below, at least some resolution was reached in the course of the IESO audit. However, even in a formal audit it may be impossible to define the allowable amount with exactitude.

costs as "variable" is understandable, in other cases there is no apparent or reasonable underlying justification: postage (which varied every month) was categorized "fixed", as was government relations and project-related travel. By contrast, all maintenance costs, chemicals, water and backup power supplies were all placed in the "variable" bucket.

Goreway then submitted all of the facility's "variable" costs to the GCG programs in their entirety. There was no attempt to analyze what (if any) portion of each of those costs were in fact incremental costs attributable to starting the generators and ramping to the Minimum Loading Point, and which of those costs were associated with generation beyond that point. Instead, Goreway simply aggregated all of the costs it deemed variable and divided it by the number of starts it incurred for the month. Obviously, not every penny of these costs could have been caused by starting up and ramping to Minimum Loading Point, though Goreway proceeded to claim reimbursement for all of them just the same.

A number of the "variable" costs bear no conceivable relationship to the process of starting up and ramping the generators. For instance, from June 2009 through August of 2010, Goreway classified "Grounds/Building Service" as variable and submitted those costs for payment through the GCG programs; "Grounds/Building Service" included charges such as landscaping.[24] These costs were reclassified as fixed in September 2010, but in doing so, senior management [redacted] searched for other costs that might be substituted for them to mitigate the revenue impact, reflected in this and other internal exchanges:

> I moved 705010 Grounds/Building Service to Fixed. Can we move any items from [fixed] to [variable] for GCG claiming purpose? How about CSA bonus?[25]

Other examples of Goreway's claimed costs include toolboxes, locks, ear muffs and rain jackets. When questioned about these matters, accounting staff [redacted] could not think of how these costs would be caused by start-up or ramping to the Minimum Loading Point as the GCG programs require for costs to be eligible for recovery.[26] Goreway executives resisted correcting

[24] More than $300,000 was paid for landscaping between June 2009 and August 2010.
[25] By "CSA bonus", the author [redacted] is referring to bonus amounts payable to GE under its long-term service and maintenance agreement with Goreway discussed below.
[26] There is, however, no evidence that accounting staff [redacted] were involved in decision-making as to what to submit into the GCG program.

the approach to GCG submissions out of an obvious desire to maintain the level of revenue being received under the GCG programs. As one of them [redacted] put it:

> If we transfer some variable items to [fixed], we can claim less GCG payment. That is not good for Goreway.

Goreway's methodology for claiming these variable costs was recorded internally from the fall of 2010 forward. Before that period, its variable costs submissions do not appear to have been based on any methodology at all – from June, 2009 until the fall of 2010, it does not appear that Goreway had *any* process to calculate variable costs for recovery under the GCG programs. For part of this period, it appears to have simply submitted arbitrary O&M values for reimbursement, and simply ignored the Market Rules governing eligible costs.

The mechanics of Goreway's methodology as applied from the fall of 2010 forward also shows that steps were taken to "smooth" the numbers to avoid "setting off alarms" at the IESO by submitting numbers that displayed too much volatility. The total variable O&M expenses recorded for a three-month period would be averaged, and the rolling average submitted for reimbursement. In at least one instance where this methodology would still have resulted in a submission that appeared out of line, a former Goreway executive [redacted] simply ignored the internal calculations and used the March 2011 figure for variable O&M costs for the May 2011 submission.

3.2.3 Ineligible Contractual Service Agreement Costs

Goreway had a long-term Contractual Service Agreement (CSA) with GE, the manufacturer of its turbines. The CSA's payment mechanism was based on a formula which increased the amount payable to GE based on a combination of (a) the number of generator start-ups and (b) the number of generator operating hours. Although there is some justification for claiming some incremental costs associated with start-up under the GCG programs to the extent that a generator start-up increased what was payable under this agreement, Goreway submitted 100% of the charges under the CSA into the GCG programs for reimbursement, a total of $11.4 million during the Investigation Period. From a review of Goreway's own budgeting documents, the Panel estimates that Goreway over-claimed roughly $7 million in CSA costs as these were unrelated to start-up and ramping to the Minimum Loading Point.

3.2.4 Ineligible Long Term Maintenance

On top of these CSA costs, Goreway submitted over $23 million in so-called "Long Term Maintenance" ("LTM") costs for reimbursement. These stand out as particularly troubling. In short, the LTM costs were never incurred and were based on grossly exaggerated expectations of the cost of future maintenance and even capital equipment replacement, amortized back over a twenty year period. Nevertheless, Goreway made cost submissions for them on a "per-start" basis under the GCG programs.

Inflationary Calculation

Several features of the way these so-called "costs" were calculated are worth explaining in more detail. First, Goreway's $23 million-plus submission included over $3.8 million *more* than its own forecast could support. That is because Goreway forecast its LTM costs based on the number of actual, "mechanical" starts of its turbines from a non-operating state. But the LTM costs Goreway claimed through the GCG programs were based on the much higher number of so-called "IESO starts", each of which resulted in a claim for $25,000 in projected LTM expense. For example, in July, 2010, Goreway had only eight "mechanical" starts for the month, but submitted LTM costs for 31 "IESO starts". Goreway forecast $200,000 as the resulting LTM expense, but claimed $775,000 from the GCG programs. Similarly, in August of the same year, Goreway forecast an LTM cost of $50,000 arising from its two mechanical starts, but claimed another $775,000 for another 31 "IESO starts".

What is an "IESO start"? Whereas a "mechanical start" involves actually turning the generators on from a non-operating state, an "IESO start" was created by Goreway's practice of "cycling" its turbines. Goreway's strategy was to ramp down its production and idle the facility at a "full-speed, no-load" state where its turbines continued to operate, but the facility would be removed or "ramped off" from the power grid. It would then quickly restart production (usually within two hours). In each case, Goreway would submit another full set of start-up costs – which, in the case of LTM, were not actually incurred. The clear purpose of this cycling was to increase the number of opportunities for a fresh GCG submission, including all of the various problematic "start-up costs", as well as generating Ramping CMSC payments (discussed later in this report). It was summarized this way in a report [redacted] to the Project Sponsors in Japan:

> Goreway keeps the number of stopped equipment to a minimum when the system is taken off-line the first time, thus saving as much as possible the start-up cost for connecting the second time. In this way, the margin obtained from the second start-up cost is increased.

Arbitrary Estimation

Another problem with Goreway's LTM submissions is that they were entirely arbitrary. There was no objective analysis of the likelihood of various LTM costs actually arising (or how they would be exacerbated by an individual start-up and ramp to the Minimum Loading Point). To the contrary, they were reverse engineered to fill a budget gap in Goreway's business plan. In September, 2009, faced with a budgetary shortfall of $5.5 million, members of Goreway's energy management team at the time [redacted] contacted their then-Project Manager [redacted], informing him that they believed they had a way to bridge this shortfall. Their solution was to include an extra $25,000 per start in Goreway's budgeted GCG revenue, an increase which they estimated to be worth an additional $5 million for 2010, themselves acknowledging that this could be considered "aggressive budgeting". Simply put, the LTM number was fabricated to generate more GCG revenue. In later correspondence, Goreway staff made attempts to reverse engineer an LTM plan that would "support the currently used $25,000 per start", but many of the components of this plan are clearly excessive, and there is little evidence to support the reasonableness of the overall exercise.

This conclusion is underscored by Goreway's conduct in January 2012, when preparing documents for an IESO audit. Goreway managers provided the IESO with a LTM plan that contained excessive, fictitious future costs. The "IESO LT main plan" submitted to the IESO by Goreway was about $33.3 million more than Goreway's own internal LTM maintenance plan presented in Goreway's 2012 budget. It is difficult to avoid the conclusion that the costs in the plan submitted to the IESO were false, misleading, and artificially inflated to assist Goreway in negotiating with the IESO regarding potentially allowable costs. It included, for example, a

proposed expense of $27.2 million for a second set of "hot gas path spares" that Goreway had no intention of purchasing and which would be entirely redundant.[27]

3.2.5 Ineligible Steam Fuel Submissions

Finally, Goreway submitted fuel costs associated with the minimum output of its steam turbine to the GCG programs from June 10, 2009 through December 8, 2009. These costs were submitted even though the steam turbine does not typically consume gas, and despite the fact that Goreway was not committing its steam turbine through the program - making it ineligible for any associated cost recovery. Goreway submitted approximately $6.5 million in ineligible fuel costs for its steam turbine. In short, Goreway claimed for gas to fuel a turbine that does not consume gas, through a cost-recovery program for which that turbine was not even eligible.

3.3 *The IESO Audit*

The fact that the GCG programs are vulnerable to exploitation by participants is obvious from the revenue that Goreway was able to improperly obtain, as described above. But the only recourse that has, until recently, been available under the Market Rules to protect against such abuses has been a right on the part of the IESO to audit participant cost submissions[28] – an expensive, time-consuming process that still runs the risk of missing inappropriate claims. The IESO has itself acknowledged that the cost recovery framework should "require minimal auditing and administrative effort"; clearly the GCG programs as they have been operated in the past, particularly with the inclusion of O&M claims, do not accomplish this.

The IESO ultimately did conduct an audit of Goreway's GCG submissions, covering the period June 10, 2009 through to October 31, 2015.[29] The IESO then initiated a compliance action under the Market Rules, which concluded with a settlement agreement with Goreway in December, 2015. The IESO concluded that Goreway submitted untrue or incomplete information in its GCG submissions, and failed to correct it despite having the correct information available to it.

[27] Another less financially significant, but still troubling problem with Goreway's Long Term Maintenance costs submissions is that Goreway double dipped. In 2011 Goreway incurred $390,000 in costs for the replacement of three gas turbine inlet filters. Goreway twice claimed this amount through the RT-GCG program, once through LTM cost submissions and another time through VOM cost. These costs were not even eligible for submission once, let alone twice. Goreway ultimately admitted to this duplicative submission and returned these funds.
[28] If abuses are identified in the course of such an after-the-fact audit, the IESO can require repayment of inappropriate amounts or impose fines under the Market Rules.
[29] The IESO conducted audits of the GCG cost submissions of a number of generators.

The settlement included the agreement that Goreway (guaranteed by the Project Sponsors) would repay to the IESO a significant sum over a forty-month period, as well as a $10 million financial penalty. The precise figure recovered is subject to an agreement as to confidentiality as between Goreway and the IESO;[30] however, it represents a substantial portion [redacted] of the roughly [redacted] in total GCG payments received by Goreway over a six-year period between June 2009 and October 31, 2015.

To provide some context, payouts to Goreway under the GCG program during the Panel's roughly three-year Investigation Period[31] (*i.e.* about half as long as the period under audit) was over ***$139 million***. The Panel's approach to quantifying the minimum of $89 million in ineligible submissions during that three-year period has been conservative, but it reflects at least 64% of submissions being ineligible. The IESO audit, by contrast, appears to have treated well under half of Goreway's GCG claims during the six-year audit period as ineligible. Figure 3-3 illustrates the disparity between the Panel's conclusions with respect to the Investigation Period, and the IESO audit recovery over the six-year audit period.

Figure 3-3: IESO Audit Recovery and Total GCG Payments, Compared to the Panel's Conclusions and Total GCG Payments June 10, 2009 – June 5, 2012 ($)

It is not clear to the Panel whether this disparity is due to a change in Goreway's behaviour after the Investigation Period, or to a different approach to determining the eligibility of Goreway's GCG submissions by the IESO audit team.

[30] As noted in the Executive Summary, the Panel agreed to maintain that confidentiality in the public version of this report. [31] As noted above, the Investigation Period covers June 10, 2009 through June 5, 2012.
[31] As noted above, the Investigation Period covers June 10, 2009 through June 5, 2012.

3.4 *The IESO Stakeholder Engagement on the RT-GCG Program*

In October, 2015, the IESO commenced a stakeholder engagement to consider changes to the then-current RT-GCG program. The Panel was an active participant in the stakeholder engagement, providing written submissions in that forum as well as to the IESO's Technical Panel. At the most fundamental level, the Panel has questioned the extent to which the RT-GCG program is needed. The RT-GCG program in its current form is over-committing eligible resources at considerable expense to Ontario ratepayers, and less costly alternatives for meeting any domestic reliability concerns should be implemented in the near-term. Among other things, the Panel has estimated that payments for O&M have exceeded a quarter of a billion dollars since 2010, with little or no apparent incremental reliability benefit. Eliminating the guarantee of start-up O&M costs from the RT-GCG program would likely reduce the cost of the program by more than $30 million annually. Moreover, the complexity of administering the RT-GCG program is associated entirely with O&M cost recovery. Also of concern is that the program allows resources to operate profitably, on an all-in basis, and still receive a guarantee payment under the program, an outcome which the Panel does not believe is reasonable. [32]

The IESO has, nevertheless, proceeded with proposals that would continue to permit the recovery of O&M costs despite the complexities of the audit mechanism that are entirely associated with that category of expenses, and despite there being no demonstrable need to guarantee these costs for reliability reasons. The Panel acknowledges that the IESO is considering a longer-term solution in the form of an enhanced intra-day unit commitment program that would replace the RT-GCG program. However, by the IESO's own admission that solution is many years away and it remains unclear to the Panel why changes to the program that have the potential to save millions in costs should not be made immediately. Goreway stands as a clear example of how generators are able to exploit the GCG regime and of how difficult and time-consuming it is to address. The Panel is concerned that the same situation remains in place today.

[32] The Panel's November 2016 Monitoring Report contains a review of the RT-GCG program, and contains further details regarding the Panel's participation in recent discussions related to that program: https://www.oeb.ca/oeb/_Documents/MSP/MSP_Report_May2015-Oct2015_20161117.pdf

3.5 *The Panel's Findings on Goreway's Conduct in Relation to the RT-GCG Program*

The Panel has concluded that Goreway gamed the GCG programs throughout the Investigation Period. The program suffers from a number of defects, including the fact that O&M costs are recoverable at all, the limited guidance available in relation to cost eligibility and the absence of meaningful controls on cost submissions. Goreway was able to – and repeatedly did – exploit these defects. At least $89 million of the $139 million in GCG payments that Goreway received during the Investigation Period was, in the Panel's view, obtained through that exploitation.

Chapter 4: The CMSC Investigation

4.1 *CMSC*

The Panel's December 2016 report, *Congestion Payments in Ontario's Wholesale Market: An Argument for Market Reform*,[33] contains a detailed explanation of what CMSC payments are and the rationale for them. It also highlights that CMSC payments have resulted in inefficiencies and inappropriate wealth transfers, and that the CMSC regime has shown itself to be susceptible to gaming. The description below is at a higher level, which the Panel believes is sufficient to provide the necessary context for the purposes of this report.

Under Ontario's Market Rules, market participants make offers to sell electricity, or bids to buy it. These offers and bids state the prices at which they are prepared to sell or buy different quantities of power. The offers and bids from all market participants provide a basis for the IESO to establish the price at which the market will clear.

For public policy reasons, Ontario has adopted a uniform pricing system. Under that system, all Ontario wholesale buyers and sellers of electricity either pay, or get paid, the same price, regardless of location and regardless of the relative expense of actually delivering electricity in a region. Uniform pricing is not the North American norm; most other markets in North America accept variances in pricing from region to region based on local supply and demand conditions.

The decision to implement uniform pricing resulted in the IESO developing a "two-schedule" or "two sequence" market design which both sets the price at which transactions will be settled, and ensures feasible, reliable production and consumption schedules for participants. The discussion that follows focusses on how the system works in relation to generation facilities; however, the same generally also holds true for dispatchable load facilities.

4.1.1 The Market Sequence

The first of the two sequences is called the "market sequence" or "unconstrained sequence". The market sequence ignores any physical limitations associated with limited transmission capacity within the Province, and identifies the purely economic solution to matching supply and demand. In other words, the market sequence considers the bids and offers in order to determine a

[33] On-line at: https://www.oeb.ca/oeb/_Documents/MSP/MSP_CMSC_Report_201612.pdf

province-wide schedule of what each participant would generate or consume on a purely economic basis, if there were no transmission limitations.

The price calculated in this sequence is called the Market Clearing Price (MCP), and it is calculated for every five-minute interval. This is the price at which market transactions within Ontario will be settled. All internal market participants pay or are paid the MCP, regardless of their location in the province. The MCPs are averaged each hour into the Hourly Ontario Energy Price (HOEP).

4.1.2 The Dispatch Sequence

Of course, there *are* transmission limitations, and the market schedule is often not one that is actually physically feasible. To ensure that supply and demand are kept in balance, the IESO also produces the "dispatch sequence" for every five-minute interval that contains feasible schedules for what each participant should generate.

The dispatch sequence determines a "local price" (or "nodal price") for each facility in the province. These nodal prices reflect the relative supply and demand conditions at the particular facility, and reflect (among other things) the applicable transmission limitations that affect that facility as a result of its geography and that of the local grid. In areas where electricity supply is abundant, nodal prices are low compared to the MCP; in areas where supply is limited, the nodal price will be relatively high. The nodal price, in effect, is what the market price would be in the area absent the uniform pricing policy Ontario has adopted.

Sometimes, the dispatch sequence and the market sequence will generate the same result for a particular facility. In that case, the operating profit implied by a participant's bids and offers will be identical under both sequences. But whenever there is a divergence between the result of the market sequence and the result of the dispatch sequence, the implication is that participants are being required to generate power in a way that diverges from their economically optimal ideal.

4.1.3 CMSC Payments

Congestion Management Settlement Credit (CMSC) payments are a feature of the two-schedule system. CMSC payments are notionally intended to compensate market participants for

operating profit losses that result from transmission constraints. [34] This principle was incorporated into the Market Rules by providing that CMSC will be paid to compensate generators whenever their dispatch schedule differs from their market schedule.[35]

A generator is said to be "constrained on" when the dispatch schedule instructs it to produce more electricity than is indicated in the market schedule. On the other hand, a generator is "constrained off" when the dispatch schedule instructs it to produce *less* electricity than the market schedule would indicate. CMSC payments are made whenever a facility is constrained on or constrained off.

CMSC payments made by the IESO are recovered from wholesale market participants based on their consumption through what is referred to as an hourly "uplift" charge that is ultimately passed on to the end consumer. As such, end consumers of electricity fund CMSC payments through their electricity bills.

4.2 *"Ramp Rates" and their Effect on CMSC Payments*

4.2.1 Ramp Rates

Electricity generators cannot start up or shut down their facilities instantaneously. Nor can they instantly increase or decrease the amount of power they are injecting into the grid. The maneuvering speed with which a particular facility can increase or decrease its generation level is referred to as its "ramp rate". Generators submit "ramp rates" to the IESO that indicate the amount of time required to increase or decrease their output, including the length of time it takes to start up or shut down the unit altogether. These rates are submitted in megawatts per minute, and can vary based on whether the unit is ramping up or down, as well as at different output levels.

[34] Market Design Committee, Final Report, January 29, 1999, Volume 1, chapter. 3, p. 3-8, online at: http://www.ieso.ca/Documents/mdc/Reports/FinalReport/Volume-1.pdf.
[35] Market Rules, chapter 9, section 3.5.1. The implementation of this intention in the Market Rules does not expressly restrict CMSC payments to circumstances where the divergence is the result of transmission constraints, a flaw on which the Panel has commented before. See, for example, page 28 of the Panel's December 2016 report on CMSC payments: https://www.oeb.ca/oeb/_Documents/MSP/MSP_CMSC_Report_201612.pdf .

4.2.2 Ramping Multiplier

During market trials, the IESO observed frequent price spikes during periods when demand was increasing. That was because during these periods, some slower generators were not capable of increasing output as quickly as the increase in demand. In those cases, a more expensive generator with a faster ramp rate would be dispatched to meet that demand, resulting in a price spike. The IESO's response was to modify the market sequence and model generators as though they could ramp faster than they can in reality, in order to reduce price volatility. Until 2007, the IESO treated facilities in the market sequence as though they could ramp 12 times faster than their actual ramp rate. Since then, the IESO has reduced this ramping multiplier to 3 times the actual ramp rate, where it remains today.

4.2.3 Ramping CMSC Payments

The dispatch sequence which governs actual production in consideration of real-world limitations (such as transmission constraints) is not affected by this artificial multiplier. The result is that all facilities ramp faster in the market schedule than in the dispatch schedule. This creates a divergence between the two schedules anytime a facility is changing production levels. And because CMSC payments are made anytime a participant's market and dispatch schedules diverge, the ramp rate multiplier effectively created a new subset of CMSC payments - CMSC paid as a result of ramping a facility up or down, referred to as "Ramping CMSC". These payments do not directly serve the original purpose of CMSC in compensating for circumstances where transmission constraints prevent a facility from operating at the economically optimal level determined by the market sequence.

Once the offer price of a generator that is online becomes uneconomic relative to the MCP and/or the nodal price, the sequence in which it has become uneconomic will begin to ramp down the facility. When both sequences start ramping down the facility, the ramping multiplier causes the market schedule to reach the targeted output level faster than the dispatch schedule, creating an artificial wedge between the schedules and triggering a CMSC payment. In the case of Ramping CMSC, the dispatch schedule is greater than the market schedule, implying the generator is being instructed to produce more than it otherwise would. This is known as the facility being "constrained on". The market schedule during shut-down represents an infeasible output level given the generator's ramping capabilities as submitted to the IESO.

The precise amount paid for Ramping CMSC is affected by several variables:

- **Output level.** The higher the initial output level from which the generator is ramping down, the greater the constrained-on quantity, and the higher the resulting CMSC payment.
- **Submitted ramp rate.** The slower the generator's submitted ramp rate, the longer the ramping period, the greater the constrained-on quantity and the higher the resulting CMSC payments.
- **Offer price.** The generator's offer price for the ramp down period. Higher offer prices lead to higher CMSC payments.
- **Frequency.** The number of times a generator ramps down. More shut-down events mean more opportunities to earn Ramping CMSC.

4.2.4 Generator Control of Ramping CMSC

Market participants in Ontario commonly choose for themselves when they wish to ramp down their generators and remove them from service, known as "shutting down". Deliberately shutting down can be done for a variety of legitimate business reasons. In order to ensure that the generator shuts down, a participant signals that intent by purposely increasing its offer price to make its supply uneconomic, triggering a shut-down.

During shut-down the participant is paid the equivalent of their offer price in CMSC payments, for all constrained-on megawatts. The higher a generator's offer price during shut-down, the higher its resulting CMSC payment. This differs from CMSC paid as a result of transmission limitations, because during shut-down the generator ramping down is intentionally uneconomic. In other words, the generator is permitted to name its own price for the shut-down period, and inflate its own CMSC revenue by doing so.

Ramping CMSC is considered "self-induced" CMSC by the Panel due to the market participant's ability to dictate, in large part, when and how much CMSC is paid. The degree of operator control is greatest with respect to the offer price used to shut-down. Because higher offer prices directly result in higher CMSC payments, gaming concerns can arise when an offer price used to induce a shut-down of the facility is higher than is necessary to achieve the operational objective of shutting down.

4.2.5 The Monitoring Document

The Panel first articulated concerns over possible exploitation of Ramping CMSC in its January 2009 Monitoring Report.[36] Pending a permanent, rules-based solution to the issue, the Panel issued its *Monitoring Document on Generator Offer Prices used to Signal an Intention to Come Offline* on August 19, 2011 (the Monitoring Document).[37] The Monitoring Document sets out guidance to generators regarding the level of offer prices which normally would not trigger a gaming investigation if a generator raises its offer price to signal an intention to shut down. This includes the establishment of an offer price "threshold" or gauge that is clear, objective and set at a level which provides generators with a reasonable assurance that the desired outcome of shutting down would be achieved. Specifically, the Monitoring Document states:

> [W]here there are bona fide business reasons for a generator to come offline, the [Panel] normally would not consider a gaming investigation to be warranted where the generator's offer price does not exceed the greater of (i) 130% of the generator's 3-hour ahead pre-dispatch constrained schedule [nodal] price, or (ii) the generator's marginal (or other incremental or opportunity) cost.

The Panel has articulated its concerns about Ramping CMSC payments in more detail in the time since the Monitoring Document was published. These concerns are described further below.

4.3 *Ramping CMSC Paid to Goreway*

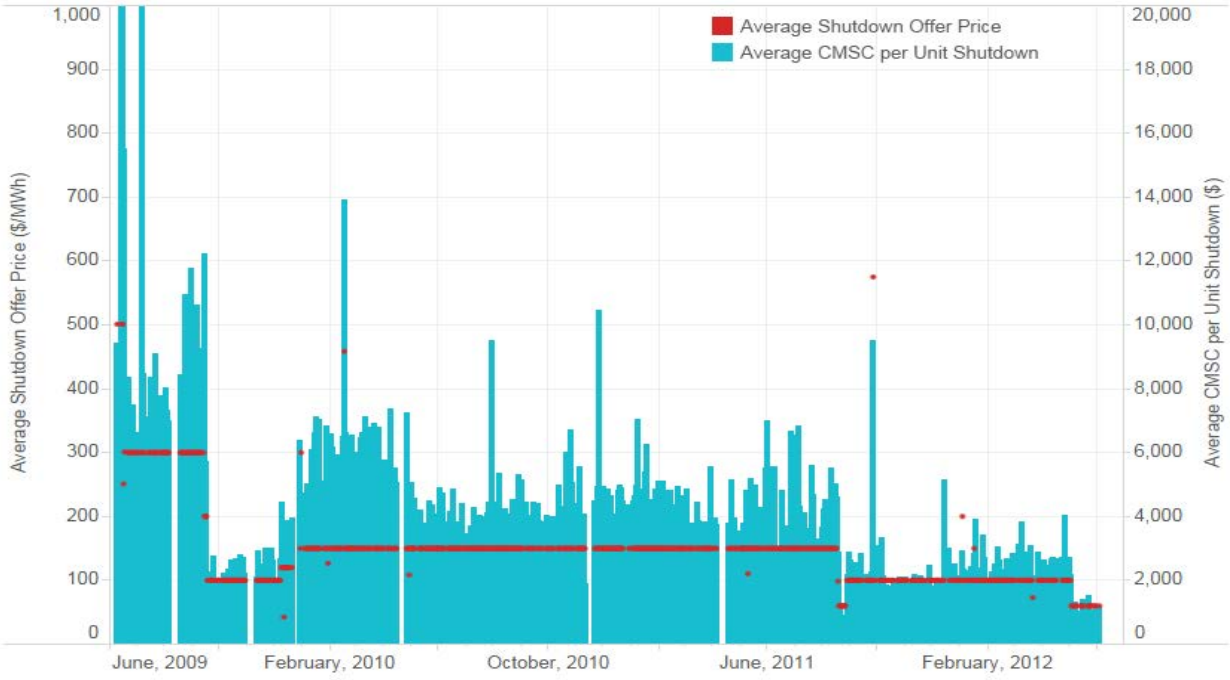
Over the course of the Investigation Period, Goreway received approximately $11.2 million in Ramping CMSC payments associated with shutting down. A substantial proportion of these payments were, in the Panel's view, inappropriate and unnecessary. Throughout the period under investigation, Goreway set its offer prices for the predominant purpose of generating additional CMSC payments and not for *bona fide* operational reasons associated with shutting down. The Panel also has concerns about variations to Goreway's submitted ramp rate, discussed below.

[36] Panel Monitoring Report, January 2009, pp. 213-17, online at:
https://www.oeb.ca/oeb/_Documents/MSP/msp_report_200901.pdf
[37] In June 2011, the Panel posted a proposed Monitoring Document for stakeholder comment. The Panel received comments from five stakeholders, including Goreway. The Monitoring Document as adopted is online at:
https://www.oeb.ca/oeb/_Documents/MSP/MonitoringDocument_GeneratorOfferPrices_20110819.pdf

4.3.1 Goreway's Shut-Down Offer Price

As reflected by the red line in Figure 4-1, Goreway's shut-down offer price remained consistent for long periods, with $149/MWh being the price used for the most protracted period.

Figure 4-1: Goreway's Shut-down Offer Price and Resulting Revenue
June 10, 2009 – June 5, 2012
($)



The very consistency of Goreway's shut-down offer prices in the face of fluctuating costs, such as natural gas prices, belies the possibility that its shut-down offer prices were a genuine function of its costs. A former member of Goreway's personnel interviewed by the Panel [redacted] was unaware of any analysis of Goreway's marginal costs in determining the shut-down offer price, and none of the documents obtained by the Panel suggest that any such analysis took place.

Goreway's shut-down offer prices were not driven by its actual costs, nor do they reflect any variability in market conditions. And although they were set with complete autonomy by Goreway's Energy Management group [redacted], both his supervisors and the project sponsors were all well aware that higher shut-down offer prices resulted in greater CMSC payments.

Goreway's reaction to the publication of the Panel's Monitoring Document in August, 2011 is instructive in this regard. As described above, the Monitoring Document introduced an offer price threshold at the higher of 1.3 times the three-hour ahead pre-dispatch nodal price or marginal cost. Upon release of the Monitoring Document, Goreway dramatically dropped its shut-down offer price from $149/MWh to $59/MWh. Internal Goreway email correspondence from a former senior Goreway executive [redacted] to a Project Sponsor representative [redacted] explains that this was an experiment with an offer price of $59/MWh to see whether it was sufficient to achieve a self-induced shut-down; there was no suggestion that Goreway chose this offer price based on an assessment of its marginal costs or the 130% price "threshold" in the Monitoring Document. Indeed, a review of IESO data supports the Panel's conclusion that $59/MWh was regularly above this threshold.

Within two weeks of implementing the $59/MWh shut-down offer price, Goreway increased its shut-down offer price to a consistent $99/MWh. This decision was made by a former Goreway executive [redacted] after a single staff report from [redacted] indicated that difficulty had been experienced the previous evening successfully shutting down using the $59/MWh offer price. The Energy Management team immediately began to use a revised $99/MWh price "effective immediately" at this former executive's [redacted] instruction, in order to mitigate "operational risk".[38] The obvious effect was to restore some of the Ramping CMSC Goreway lost in the move down from $149/MWh to $59/MWh.

The Panel found little objective support in the evidence obtained from Goreway for the conclusion that a constant $99/MWh offer was necessary to avoid any particular "operational risk". IESO data reviewed over the period showed no clear instances in which an offer price of $59/MWh would have ultimately failed to result in a successful shut-down and, indeed, suggests the contrary.[39] Instead of implementing the Monitoring Document's approach, Goreway simply

[38] Goreway's internal communications consistently reflect that, where there is any explanation of the choice of shut-down offer price at all, it consisted of little more than one former executive's [redacted] assertions that he set the offer price sufficiently high to ensure absolute certainty that Goreway would be able to achieve a shut-down on demand. In his interview, Goreway's former Project Manager [redacted] confirmed that this, not any form of cost analysis, was his understanding of the basis for the selection of the shut-down offer prices. In another interview, a former Energy Management employee [redacted] indicated that she believed there were cases where staying within the guidelines in the Monitoring Document would not have been sufficient to achieve a shut-down.

[39] During periods where Goreway employed a shut-down offer price of $59/MWh, there was never a shut-down hour in which the nodal price exceeded $59/MWh for more than two intervals, making it highly unlikely that Goreway would have failed to shut-down at that offer price.

acceded to the decision by a former Goreway executive [redacted] to use a consistent number.

IESO data confirms that the chosen offer prices – both at the level of $59/MWh, and at the level of $99/MWh – put Goreway routinely at odds with the Monitoring Document, exceeding the 130% threshold on over 99% of its shut-downs through the end of the Investigation Period. And as noted above, it is already clear that Goreway was not basing its shut-down offer prices on any assessment of its marginal cost.

4.3.2 Goreway Misleads the IESO as to the Basis for its Shut-Down Offer Prices

As noted above, the Panel has found no evidence that Goreway's shut-down offer prices were a genuine function of its costs. Yet, well before the Monitoring Document, in a June 2010 email exchange with IESO staff relating to a Stakeholder Engagement exercise, Goreway had made this very claim, stating that its shut-down offer prices, which were $149/MWh at the time, were cost-based. In this exchange, a former Goreway executive [redacted] insisted that the notion that Goreway was "earning" CMSC during shut-down was a misnomer, and that in fact it was simply "receiving CMSC that reflects the cost to ramp off". When pressed further on this claim, this employee did not back down, claiming that "a 900 MW plant like Goreway does not stop on a dime… there are additional heat rate and O&M costs incurred when we shut down". Anticipating the concern that Goreway's Ramping CMSC revenue might be seen as extraordinary, he claimed that Goreway was a unique plant in the Ontario market, comparing it to a "freight train".

This former executive [redacted] forwarded this exchange to Goreway's former Project Manager [redacted]. He explained that his goal in this exchange was to cause IESO staff to suggest that these costs instead be treated as a start-up cost (and thus recoverable under the GCG programs discussed elsewhere in this report). Goreway's former Project Manager praised this as "[s]mart negotiation!"[40] Regardless of whether anyone at the IESO was misled by Goreway's

[40] The balance of the exchange illustrates Goreway's mindset about its dealings with the IESO. Goreway's former Project Manager wrote: "Smart negotiation! If she wants to see concrete evidence of $6000 for ramp down, can we provide something that can convince her?" This former senior Goreway executive did not offer any suggestion in response other than to "see how it plays out".

false claims regarding its costs, this illustrates Goreway's approach to dealing with the market operator.

4.3.3 Project Sponsors Aware of the Profitable Nature of Ramping CMSC

It is unclear whether this misleading claim to the IESO by [redacted] was shared with others beyond Goreway's former Project Manager. Regardless, internal company reporting makes it clear that the Project Sponsors were well aware of the highly profitable impact of Ramping CMSC. For example, the 2011 Q4 presentation to the Board reflects Goreway earning 173.9% of budgeted CMSC revenues. The explanation for the resulting $5M positive revenue impact found in the written presentation notes that "[t]his [CMSC] revenue opportunity primarily arises in situations where we intentionally bid very high prices to ensure the IESO will ramp down the plant. Also, the plant is paid the high price during the approximately 30 minute ramp off period." It is clear that CMSC payments were understood at the highest levels to be a revenue source that was net profitable for Goreway, with its net profitability heavily influenced by the offer price decisions made in the Energy Management group, generally by former executive [redacted].

4.3.4 Goreway's Changing Ramp Rates

As discussed above, slower ramp rates extend the period during which Ramping CMSC is paid, leading to higher total payments. Over the period of the investigation, Goreway's slowed its submitted ramp rates – increasing the time necessary to shut-down, thus increasing the time period over which CMSC was paid.

In its initial shut-down profile commencing June 10, 2009, Goreway's operational profile spreadsheet noted a 33-minute shut-down time from the plant's full four-turbine operating state. A second profile prepared a month later (July 5, 2009) appears to use the same 33-minute shut-down time, but to commence the operational shut-down 14 minutes after receiving instruction to start shutting down, for a total shut-down period of 47 minutes. In his interview for purposes of this investigation, one of Goreway's senior operations staff [redacted] was unable to confirm or explain this apparent 14-minute extension in the profile spreadsheet prepared in collaboration with the Energy Management group, in particular former executive [redacted], but explained that from the operational point of view he was only concerned with following the shut-down procedure upon receiving instruction to do so from Energy

Management. A further updated shut-down profile was then identified from 2011. This shut-down profile required 46 minutes in total, with an initial 13-minute period consisting of only slightly slowing the output of the gas turbines from 85 MWh to 80 MWh, before beginning to slow them in earnest. The net effect of both of the modified profiles was to extend the period for which CMSC was paid by 13-14 minutes beyond the original 33-minute ramping time – and thus to increase CMSC payments to Goreway.

In his interview, this operations manager indicated that by 2011 Goreway had decided that the 33-minute shut-down was insufficiently safe for a variety of technical reasons. It is outside the Panel's expertise to fully assess the reasonableness of this suggestion. However, the surrounding context raises questions about whether safety was the only factor. This individual's employee evaluation for 2010, for example, contains a performance category for "Startup and shut-down profiles". He was found to have "exceeded" requirements in this category, with these comments:

> Multiple profiles were created to improve plant flexibility and increase CMSC revenues comparing [*sic*] to competitors (significant financial impact).

In his interview, this operations manager acknowledged understanding that longer shut-down times resulted in larger CMSC revenue, but professed to have little recollection or understanding of whether he was being positively appraised for this effect. He acknowledged that contributions to higher revenues had an impact on his personal bonuses, as did other employees including the former overall plant manager [redacted]. From the Energy Management perspective, one former employee [redacted] explained that "we had to follow the ramping profiles exactly or it would cost us on revenue that we were expecting". She also understood it was considered favourable if Goreway generated at a higher output when the shut-down process started, because this generated higher CMSC revenues. In fact, Goreway could – and on some occasions did – safely shut-down faster than the ramp rates submitted to the IESO.

While the Panel is not able to draw firm conclusions as to the appropriateness of Goreway's shut-down practices from a technical perspective, the evidence obtained during the investigation suggests that the ramp rates may well have been slower than technically required. The Panel is of the view that one of the flaws in the CMSC regime is that it is difficult to detect – other than in truly extreme cases – whether exploitation of the rules is in fact occurring as a result of

manipulation of the shut-down process. The line between legitimate technical reasons for a generator claiming that it must ramp up or ramp down at a certain speed, and slowing the ramp rate in order to increase the value of CMSC payments, is hard to detect in the absence of explicit statements as to the motivation for changes.

4.4 *Market Rule Changes Regarding Ramping CMSC*

The Panel has, on more than one occasion, recommended that Ramping CMSC paid during shut-down be eliminated. Although the market, if not Goreway, has been somewhat responsive to the guidance provided in the Monitoring Document, generators continue to exceed the offer price "threshold" established by the Panel under the Monitoring Document.[41]

Proposed changes to the rules that govern Ramping CMSC during shut-down have been brought forward by the IESO from time to time, and been defeated. In May, 2013, the IESO launched a further stakeholder engagement that included the issue of eliminating Ramping CMSC during shut-down. Goreway made numerous submissions on the issue, first opposing its inclusion in the process at all, then questioning its materiality and suggesting that the Panel's 2011 Monitoring Document had adequately dealt with any problem.[42] Ultimately, despite numerous objections by Goreway and others, a Market Rule amendment was approved that would reduce, but not eliminate, Ramping CMSC during shut-down. The IESO's approach replaces CMSC for shutting down generators with an alternative payment mechanism called the "ramp-down settlement amount" which is the lesser of conventional CMSC or a "ramp-down settlement amount". The "ramp-down settlement amount" is calculated in a similar fashion to CMSC. The Panel has expressed the view that this approach adds a layer of complication – and the almost inevitable possibility of new gaming opportunities – while in the end, simply re-creating the same economic outcome as Ramping CMSC. After several postponements, the Market Rule amendment took effect in December 2016.[43]

[41] For example, see the Panel's Report on an Investigation into Possible Gaming Behaviour Related to Congestion Management Settlement Credit Payments by Greenfield Energy Centre LP, July 2014 (http://www.ontarioenergyboard.ca/oeb/_Documents/MSP/MSP_Report_Investigation_Greenfield_20140717.pdf)
[42] (http://www.ieso.ca/Pages/Participate/Stakeholder-Engagement/SE-111.aspx) (http://www.ieso.ca/Documents/Amend/mr2015/MR_00414_R00_Amendment_Proposal_Ramp_Down_CMSC_v5.0.pdf)
[43] http://www.ieso.ca/Documents/consult/se111/SE111-20160519-Communication.pdf

Goreway's conduct illustrates the appetite of market participants for CMSC revenue, and the resulting detriment to Ontario consumers. It remains the Panel's view that more must be done by the IESO to eliminate this longstanding flaw.

4.5 *The Panel's Conclusions on Ramping CMSC Paid to Goreway*

The Market Rules have allowed CMSC payments to be manipulated by market participants in numerous ways. Generators can receive CMSC payments as a result of self-induced differences between the market and dispatch schedules, as a result of the generator choosing to shut down. Generators can manipulate the value of CMSC payments to their financial advantage by choosing to use a higher-than-necessary offer price in order to become uneconomical and shut down. Generators can also manipulate the value of CMSC payments by slowing their ramp rate during shut-down, in a way that is not readily detectable or amenable to review. It is clear to the Panel that Goreway took advantage of these well-known defects in the Market Rules.

The Panel has concluded that Goreway exploited defects in the CMSC regime in relation to its shut-down offer prices. Despite an initial, modest behavioural change in its shut-down offer pricing, Goreway's offer prices were routinely higher than the guidance set out by the Panel in its Monitoring Document, and there is no evidence that those offer prices were a reflection of Goreway's marginal costs during shut-down. One of the defects associated with Ramping CMSC during shut-down is that it may be difficult or impossible to detect exploitation – and quantify its impact – other than in extreme cases. Although the benefit to Goreway from exploiting the Ramping CMSC regime cannot be quantified with precision, the Panel believes that a substantial portion of the $11.2 million in Ramping CMSC payments received by Goreway during shut-down over the course of the Investigation Period was the result of gaming.

It remains the Panel's view that more must be done by the IESO to eliminate longstanding flaws associated with the CMSC regime, particularly in light of the obvious ease and frequency with which Goreway was able to exploit it.

Chapter 5: The DACP Investigation

In June, 2012, while its investigation of Goreway's conduct in relation to CMSC payments was underway, the Panel opened a second gaming investigation. This investigation inquired into a series of 29 payments made to Goreway between January 14 and April 2, 2012 totalling approximately $5.6 million, which constituted "top-up payments" under the IESO's Day-Ahead Commitment Process or DACP.

5.1 *The DACP*

The DACP is one of two mechanisms in use by the IESO to schedule electricity generation from eligible non-quick start generators. The DACP (which replaced the DA-GCG program in October, 2011) is used to schedule resources for the following day, or on a "day-ahead" basis. Like its predecessor, the DACP is a reliability program intended to ensure the availability of adequate and dependable supply resources to meet the anticipated electricity demand the following day. The generation committed under the DACP may then be supplemented by the "real-time" process discussed earlier in this report, to add resources as they are needed.

Unlike the DA-GCG program, the DACP commits eligible units based on the economic merit of their "three part offers". These three-part offers consist of the following generator-submitted components: (i) start-up costs, (ii) speed-no-load costs, and (iii) incremental energy production costs. Just as in the real-time market, incremental energy offers into the DACP specify a megawatt quantity and a price at which the market participant is willing to generate those megawatts, limited to a maximum offer price of $1,999/MWh. Speed-no-load costs are submitted on an hourly basis with a $99,999 maximum hourly submission. Start-up costs are submitted on a per start basis with a maximum allowable cost submission of $999,999.

The maximum allowable cost submission in each cost of the start-up and speed-no-load categories simply represents the maximum number that can be inputted into the fields of the IESO's offer input tool. It is not indicative of an expectation that any DACP-eligible facility has actual costs approaching anything near the maximum allowable inputs in each category.

Using a demand forecast, the DACP engine seeks to minimize the total cost of meeting demand for the entirety of the following day, by reference to all components of the submitted three-part offers. Generators deemed economic by the DACP receive schedules (or "commitments") setting

the quantities of electricity they are to produce and the time period for which they are to produce it.

When generators actually produce this energy the following day, they are compensated on the basis of the then-prevailing MCP. In some circumstances, the result can mean that a generator would operate at a loss relative to its costs of production. Therefore, to encourage participation day-ahead, the DACP program provides a financial guarantee that a market participant will, at a minimum, recover its costs as defined by its scheduled three-part offer.

In other words, participants whose real-time market revenues are less than the costs defined in its scheduled three-part offer will receive a "top-up payment" for the difference. For example, a generator with combined start-up and minimum generation as-offered costs of $30,000 that only received $20,000 in market revenues during their guaranteed run, would receive a $10,000 top-up payment. These top-up payments are ultimately recovered from Ontario consumers through uplift charges on their electricity bill.

5.2 *The DACP Engine and Anomalous "Hour 1" Payments*

The DACP engine seeks to schedule the next day's electricity generation in a way that minimizes the sum of market-wide start-up, speed no-load and incremental energy costs, while meeting forecasted demand. Each day, it establishes a schedule running from midnight (referred to as Hour Ending 1, or HE 1) until the following midnight (Hour Ending 24, or HE 24).

As the engine calculates how best to minimize costs, it takes account of which generators are expected to be online when the day begins in HE 1 based on the information known when the calculation is run. A generator that is expected to already be online during HE 24 on a given day is seen by the engine as being able to simply remain online as it schedules HE 1 for the following day. Such a unit does not need its start-up costs guaranteed for HE 1 because that unit is expected to already be online and does not need to start up.[44] As a result, it is often less costly for the DACP engine to schedule a unit expected to still be online as HE 24 turns to HE 1 rather

[44] A unit expected to be online in HE 24 of day *t* through HE 1 of day *t+1* would have their start-up costs guaranteed as part of their day *t* day-ahead commitment, provided they were economic for the relevant DACP run. A unit running from HE 24 of day *t* through HE 1 of day *t+1* that has not been committed day-ahead through the DACP would not be eligible for a guarantee.

than scheduling a unit that is offline, even if the offline unit has lower speed no-load and energy costs.

The DACP must schedule production in a physically feasible way, meaning it must respect real-world constraints. Among other things, this includes factoring in:

- Each facility's "**Minimum Loading Point**" ("MLP") – a unit can never be scheduled to produce less energy than is produced at its lowest stable operating level.
- Each facility's **ramp rates**, as submitted to the IESO. As described in the previous section, the ramp rate is the speed at which a unit can increase or decrease its generation level.

The DACP engine generates a schedule that respects both these limitations, while also seeking to minimize the overall cost of generation. The engine reacts to this combination of objectives in the following way at the time it calculates the day-ahead schedule:

- If a unit is projected to still be online at the end of HE 24, but its three-part offer would be uneconomic relative to others, the engine attempts to schedule that unit to shut down in HE 1 (in other words, to reduce generation to 0 MW).
- The DACP assumes that in one hour a unit is capable of ramping down a quantity equal to its MLP plus the amount it is capable of ramping in 30 minutes. Therefore, in order to achieve a scheduled output of zero in HE 1, the unit must be able to ramp down quickly enough from its projected output during HE 24 to reach its MLP by the middle of HE 1.
- If the unit's projected HE 24 schedule is such that it cannot ramp down to its MLP by the middle of HE 1, the DACP will schedule the unit to operate in HE 1 even though it is uneconomic, and will instead schedule the unit to ramp down to zero output during HE 2.

The result is that, in the circumstances described above – and unique to HE 1 of each day[45] – the DACP will schedule production by a generator for HE 1 regardless of the economics of its three-part offer. This commitment then results in the IESO being obliged to fulfill its cost guarantee to that generator for that hour, including any resulting "top-up payments". In this case, those top-

[45] For scheduling in other hours, the DACP considers the cost of shutting down when committing units. For example, if a market participant submitted low cost offers for HE 10 through HE 16, but increased its offer price considerably for HE 17, the DACP would ramp the unit off in HE 16 if it determined the cost of shutting down in HE 17 outweighed the benefit of keeping the unit on for HE 16.

up payments guarantee the total of the unit's offered energy price and speed-no-load cost – even if it is at the maximum level of $1,999/MWh and $99,999 per hour, respectively, allowed to be input into the IESO's tool.[46]

Thus, unlike every other hour of the day when competitive forces guide generators who wish to participate towards offer prices that reflect their actual costs, the DACP engine can give rise to an anomalous payment in some circumstances in scheduling HE 1. Such anomalous payments are largely within the control of the generator. A generator's physical parameters, including its submitted MLP and ramp rates, are at the sole discretion of the participant, and ultimately determine whether an uneconomic HE 1 commitment occurs. A generator with a low MLP relative to its full output capacity and slow ramp rates[47] is more likely to receive an HE 1 commitment. If combined with strategic offer behaviour, a participant can control not only when an anomalous payment occurs, but also the size of that payment.

The DACP therefore contains a design flaw that allows for situations in which generators need not compete against one another on offer price, yet still receive a guarantee for their as-offered costs. Such payments are inconsistent with the purpose of the DACP and have been identified by the IESO as an unintended consequence of those provisions of the Market Rules that comprise the DACP framework.

5.3 *Anomalous Top-up Payments to Goreway*

The DACP was implemented in October, 2011. By November, the Panel began to observe generators receiving abnormally large top-up payments under the DACP.[48] These payments were isolated to HE 1 and were substantially inconsistent with the compensation levels observed in the remaining 23 hours of each day. Goreway received its first such payment on January 14, 2012, after the Panel had already commenced its CMSC investigation. Between then and April 2, 2012, Goreway received a total of 29 such anomalous HE 1 commitments, resulting in top-up payments totalling approximately $5.6 million. On June 5, 2012, the Panel launched a separate gaming investigation in relation to those payments as a result.

[46] Submitted start-up costs are not guaranteed because the generator is deemed to be online prior to HE 1.
[47] Which means that there is more "distance to travel" when ramping down.
[48] See Panel's January, 2013 Monitoring Report, p. 139, available online at:
https://www.oeb.ca/oeb/_Documents/MSP/MSP_Report_Nov2011-Apr2012_20130114.pdf

From the outset of the DACP, Goreway consistently submitted three-part offers that were plainly intended to avoid participation in the day-ahead commitment program. This pattern of attempting to avoid day-ahead commitments appears to be the perverse result of how lucrative Goreway found the cost-recovery guarantees offered by the ongoing RT-GCG program, as described above.[49] All of its offers were set at the maximum level permitted by the entry field: $999,999 as a start-up cost, $99,999 per hour as speed-no-load costs, and $1,999 per MWh as the energy production cost. Such figures far exceed the plausible costs of any Ontario generator, and bear no relation to Goreway's actual cost of production.

As a result, it came as a surprise to Goreway to learn that it had received several HE 1 commitments from the DACP when it received its preliminary settlement statement from the IESO on January 27, 2012. Although the day-ahead schedule was published each day by the IESO, Goreway had not even been checking to see if it was scheduled, and it was simply coincidental that it had been operating during HE 1 on the few occasions where it received a DACP commitment. One of Goreway's former Energy Management staff [redacted] reported to the rest of the group by email as follows:

> Guess what…
>
> We've been getting [DACP] commitments on G15 for 55MW in HE1 since January 14th. If we get a commitment, we must run in that hour. This has not been a problem lately because we have been running to HE1 before shutting down.
>
> Because of this, it is important that we check every day for commitments. The day ahead commitments report can be found here: https://reports.ieso.ca/private/GOREWAY/DACommit/
>
> Here are some answers to your questions, but ask if you have more.
>
> **Really, you can get a one hour commitment?**

[49] As earlier noted, the DACP replaced the former DA-GCG program in 2011, at which point Goreway's efforts to avoid DACP commitments commenced.

> Yes, if the IESO determines that you are already online in HE24 of the previous day. It can decide to extend your current run if it thinks it will be cheaper than paying startup costs to another unit.
>
> **But aren't we offering $1999?**
>
> Yes, and the IESO has still decided that we are cheaper.
>
> […]

This employee directed the Energy Management group to ensure they checked daily for DACP commitments. In her interview, she explained that her initial reaction to seeing the commitments was to contact the IESO to understand why they were occurring. Her then-supervisor [redacted] then directed her not to do so, and in a subsequent message to the Energy Management group, told staff "we aren't discussing this outside our group!" – even within Goreway.

Internal correspondence makes clear that her supervisor and the Energy Management team then set to work to try to understand and to reverse engineer the conditions that led to the lucrative anomalous HE 1 commitments. By March 2, 2012, Goreway's former Project Manager [redacted] was informed by a former Goreway executive [redacted] of eight further commitments received under the DACP program since February 15, all during HE 1. He was advised that Energy Management staff had developed a "low/high demand" strategy that was thought to increase the chances of an anomalous commitment. Goreway's former Project Manager praised these efforts, promising that staff on the Energy Management team would receive "a decent amount of bonus" if the trend continued. "I am amazed how many rabbits you have hidden in your hat! I am very glad to have such a great team for Goreway", he wrote.

A variety of exchanges in February and March make it clear that Goreway continued to try to identify just how it could trigger these commitments through variations to their three-part offer in response to different market conditions. Goreway's efforts included:

- dropping its speed-no-load cost from $99,999 to $0;

- discounting energy offers during HE 24 to encourage other units to shut down, and ensure that Goreway was projected to be online and able to continue generating during HE 1; and
- in some cases, after the DACP engine was run at 10:00 a.m. and the day-ahead schedule confirmed, revising its HE 24 offers upwards.

None of these strategies were effective in and of themselves. Finally, on April 3, 2012, one former employee [redacted] realized that the anomalous HE 1 commitments were not caused by either market conditions or by the economics of Goreway's offers, but rather a flaw in the DACP's market design. Though they may not have fully understood the relationship between ramp rates and the anomalous commitments, by April 3, Goreway's Energy Management staff had become alive to ramp rates as a key factor. In response, a former Goreway executive [redacted] expressed concern that "the IESO may frown on this… [w]e need to make sure our behaviour is consistent", and directed that these efforts stop until he could "go back thru some old notes…. just being safe".

From that point forward, there is no evidence that Goreway reactivated its efforts to trigger the anomalous HE 1 commitments; however, Goreway took no steps to inform the IESO about these anomalous commitments.

On April 27, 2012, the IESO contacted Goreway seeking to set up a meeting regarding the anomalous HE 1 commitments. When informed of the meeting, a former Goreway executive [redacted] responded that the IESO had "found their hole". On May 1, 2012, IESO staff met with Goreway to discuss the relationship between ramp rates and the anomalous HE 1 commitments, and advise Goreway on how to avoid them. On June 15, 2012, the IESO launched a broader stakeholder engagement process to address the issue of anomalous HE 1 commitments and permanently resolve this issue.

5.4 *The Panel's Conclusion on Goreway and the DACP*

It is clear that – once it began to understand the mechanism by which the anomalous HE 1 commitments were being generated – Goreway pulled back from its efforts to replicate these payments. The Panel therefore acknowledges that Goreway neither had, nor exploited, the requisite knowledge to reproduce them deliberately and thereby game this aspect of the DACP

program. The approximately $5.6 million received by Goreway in anomalous top-up payments were nevertheless unwarranted.

Chapter 6: Conclusions

This report focuses on the conduct of one market participant, Goreway. The Panel's investigation sheds considerable light on the revenue that Goreway was able to generate over a period of years from flaws or oversight weaknesses in three aspects of the IESO-administered markets. It also illuminates the extent of inappropriate behaviour by profit-seeking participants, who are incented to exploit those flaws and weaknesses to the greatest degree possible. The Panel has concluded that over the roughly three-year Investigation Period, Goreway generated upwards of $89 million in inappropriate GCG revenues, and millions more from questionable CMSC payments. The real figures, over the life of Goreway's operations, are likely much higher, although the IESO's recovery of a substantial amount in GCG repayments [redacted] as a result of its audit process must be taken into consideration as well.

The Panel has commented repeatedly in its other reports about the flaws that Goreway exploited, and questioned the efficacy of some of the solutions that have been or are proposed to be adopted by the IESO. This investigation adds weight to the Panel's concerns by offering a stark illustration of how one market participant understood and exploited them to the disadvantage of Ontario consumers. In the Panel's view, the effectiveness of any improvements to Ontario's market design will be measured by whether they eliminate, or simply re-create, the same opportunities for gaming or other inappropriate behaviour in the future.

Appendix "A": Letter from Goreway's Legal Counsel, August 1, 2017

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August 1, 2017

Mr. Brendan Van Niejenhuis
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Dear Mr. Van Niejenhuis:

Re: Goreway Station Partnership
Investigation by Ontario's Market Surveillance Panel

Goreway Station Partnership ("Goreway") is in receipt of the Market Surveillance Panel's ("MSP") draft report dated June 23, 2017 (the "Draft Report") and appreciates the opportunity to provide a written response. Although Goreway does not agree with many of the Draft Report's findings and conclusions, including any suggestion that Goreway engaged in gaming or that it deliberately misled the IESO, Goreway takes the MSP's position on these issues seriously.

Following the completion of the Independent Electricity System Operator's audit referred to in the Draft Report, Goreway has implemented initiatives designed to ensure that compliance is a central operating principle at Goreway, and that a culture of compliance is supported throughout the organization. These initiatives included establishing the position of a Chief Compliance Officer who reports directly to the Board of Directors and Sponsors and oversees the design and management of Goreway's Internal Compliance Plan ("ICP") which governs the company's interactions with the IESO-Administered Markets. The controls and activities set out in Goreway's ICP, supported by the Board of Directors and Sponsors, have been designed to prevent and detect instances of non-compliance at the company. The Board of Directors and Sponsors consider these controls and activities to be important for Goreway's current and future participation in the IESO-administered market and its contributions to Ontario's power system.

Sincerely,

George Vegh

MT DOCS 16928002