Minutes of Meeting
EDAC - Operations Design Working Group

Date held: April 16, 2009	**Time held:** 8:00 pm to 3:00 pm	**Location:** Hilton Garden Inn - Oakville
Invited/Attended	**Company Name**	**Attendance Status** (A)ttended; (R)egrets; (S)ubstitute
McLeod, Ron	Abitibi Bowater	A
Cormier, Pascal	Brookfield Power	R
Laurin, Marc-Andre	Brookfield Power	A
Somerville, Stephen	Competitive Power Ventures Inc	R
Oberholster, Henry	Greater Toronto Airports Authority	R
Baldwin, Ted	Greenfield Energy Centre	A
Windsor, John	Greenfield Energy Centre	A
Abdelnour, Francois	Ivaco Rolling Mills	R
Samant, Sushil	Northland Power Incorporated	A
Covelli, Lucille	Ontario Power Generation	A
Fok, Danny (IT)	Ontario Power Generation	A
Kelly, Martin	Ontario Power Generation	A
Peterson, David	Ontario Power Generation	A
Shah, Sushil	Ontario Power Generation	A
Yee, Wah - IT Alternate	Ontario Power Generation	R
Kerr, Paul	Shell Energy	A
Cary, Rob	Sithe Global	A (Part Time)
Harwood, Shane	Sithe Global	A
Kraayenbrink, Ron	St. Clair Energy	R
Goldstein, Michael	St. Clair Energy	Teleconference
Heaton, Randy	TransCanada Energy	A
Kuntz, Margaret	TransCanada Energy	A
Berry, Scott	IESO	A
Briggs, Jeannette	IESO	A
Doran, Pat	IESO	A
Drake, Gordon	IESO	A
Fung, Lemann	IESO	A
McIntosh, Grant	IESO	A
Miller, Al	IESO	A
Springgay, Guy	IESO	A (Part Time)

All finalized meeting material will be posted on the IESO web site at:
http://www.ieso.ca/imoweb/consult/consult_se73.asp

Summary of Meeting Discussion

Item 1 Welcome and Agenda

Al Miller welcomed the participants to the first EDAC Detailed Design Operations Working Group meeting. He introduced the IESO Business Analysts that were present at the meeting and pointed out that Market Rules staff will typically be present to capture any Market Rules issues.

Members were advised to notify Guy Springgay of their attendance at upcoming meetings and he will advise IESO security. Seating for meetings held at Clarkson may be limited so members were advised to limit attendance to only those that are required to attend.

Al reviewed the agenda with the group and described the meeting structure and facilities. No changes were made to the draft agenda.

Item 2 Design Working Group Terms of Reference

Al reviewed the Design Working Group Terms of Reference with the group.

Scope - The working group scope is to provide advice on the development of the EDAC detailed design. Changes to the Market design will be considered out of scope unless a fatal flaw is identified. Business requirements will be developed during first phase of the design without pre-determining a solution and Market rules will be developed in parallel. Procedure development will be started following the completion of the detailed design stage. Real Time issues may be addressed as part of the project, but only where the issue is a direct result of implementing EDAC.

A Generator noted that while solution specifications may be done later, definitions of terms necessary for market rules will have to be finalized earlier.

Methodology – Stakeholdering is directional in nature and will focus on EDAC issues only. Any Real Time or unrelated issues will be identified to the appropriate IESO staff for follow-up.

Procedures - No voting or requirement to achieve consensus. Material will be posted no later than 2 business days in advance. Members may be requested to provide written submissions.

Material and correspondence will be exchanged through the portal. Draft minutes will be available within 2 business days following the meeting & members will be given 2 business days to review and comment on the draft.

Meeting Dates and Agendas – dates are posted on the portal with agenda outlines as included in the slide deck. Two sessions (one in July and one in August) are tentatively scheduled to address issues and feedback.

Portal – The IESO provided a refresher on how to navigate the portal for DWG material. A Generator raised a concern with how the portal subscribe feature works.

Action: The IESO will check to see if the Portal User Guide covers subscribing and if not will revise it appropriately. A link to the portal user guide will be provided to the DWG.
Editorial Note: The Portal User Guide does not fully cover the subscribe feature. The User Guide will be updated to include this information and will be made available on the portal.

Item 3 Issue Log

The IESO showed the group a sample of the issue log. Each item will have an ID and items prefaced with the letter O relate to the Operations Working Group. Items will be updated as changes occur and the log will be available on the portal.

A Generator raised a concern that while issues relating to real time may not be dealt with in the DWG forum, there needs to be a process to log and track these issues. The IESO was also asked how long it will take to determine if an issue is in scope of EDAC or not.

Action: The IESO will determine the process to handle Real Time issues identified and the process for tracking and assigning these issues. The process will be discussed at the next DWG meeting.

Item 4 Daily Changes to MLP & MGBRT in EDAC

The IESO presented the discussion paper that was prepared on the use of economic minimum loading point and minimum generation block run time. The discussion paper was developed in response to questions from the Technical Support Group regarding the extent to which MLP & MGBRT could be changed for use in EDAC. The paper was posted on the portal for participant review in February.

A Generator asked if EDAC submitted data would be reflected in real-time. The IESO explained that the EDAC submitted data would not be used in real-time and that the existing mechanism for MPs to inform the CR of changing equipment requirements and conditions will remain in place.

A Generator asked whether MPs would have the ability to provide standing submissions of data. The IESO noted that this has been identified as a requirement for the data submission solution. The IESO later clarified that registration data will be used as the default or standing data until it is updated through the submission of Daily Generator Data. The Generator suggested that it would be more useful to have the last submitted value as the default value rather than reverting to the registration value. The IESO explained that if there is a long term requirement to update the value on a daily basis then the registration value should be changed. The Generator explained that there may be instances where the value changes frequently but would not warrant a change to the registered value and in these instances it would be better to default to the last submitted value.

Action: The IESO will determine if the requirement for Daily Generator Data to default to the last submitted value has a significant impact on the EDAC project (cost or schedule).

The paper explains that MLP and MGBRT in neighbouring markets are submitted using dispatch data with daily changes allowed. However, there are limitations placed upon these submissions through benchmarking or compliance investigation. These limitations are evaluated after-the-fact, not on submission.

Participants asked whether both registered and daily changes must be based on technical characteristics of a generator. The IESO confirmed that all values of MLP and MGBRT must be based on technical requirements and not economics. Participants noted that without a day-ahead market, there will not be a price impact due to higher MLPs since EDAC doesn't have a price output. While it is true that EDAC is not a day-ahead market, the IESO countered that the guarantees that EDAC provides do in fact impact costs in the market.

Item 5 Facility Registration Data for EDAC

The IESO presented the data required to be provided through the registration process in support of EDAC. This data includes:

- Minimum Loading Point
- Minimum Loading Point Limit
- Minimum Generation Block Run Time

- Minimum Generation Block Run Time Limit
- Minimum Down Time
- Maximum Number of Starts per Day
- Dispatch Elapsed Time
- Pseudo Units Data

The 4th parameter for PCG eligibility is:

- have a need to initiate start up sequences greater than 1 hour in advance of the hour in which they first receive a schedule, in order to respond to a dispatch associated with their constrained schedules

The IESO explained that resources in a combined cycle facility will be PCG eligible if their dispatch elapsed time is greater than 60 minutes when in 1 on 1 configuration. The 4th criteria of PCG eligibility was clarified as first fire (initiation of start-up sequence) to minimum loading point.

Further a Generator asked if not so quick start generators are eligible for a PCG. The IESO explained that these facilities by virtue of their technical capability do not have any costs that need to be sunk in advance of the hour (i.e. greater than 60 minutes) that they are scheduled to respond to dispatch instructions (i.e. instructions above MLP) . In addition these generators are able to respond to changing pre-dispatch schedules. As a result these generators should not receive a PCG or a constraint for their EDAC schedule.

A Generator noted that, if the start-up costs for not so quick start generators will not be covered by a PCG then the real time cost guarantee must be robust enough to cover these costs. Another Generator pointed out that there are provisions in real-time to respect MLP & MGBRT if a not so quick start generator has these technical requirements.

The DWG noted that they understood this treatment for not so quick start generators however a Generator reiterated that DA PCG criteria #4 must not preclude those resources that should be eligible for a guarantee from getting one.

With this understanding, the IESO noted that if there is issues around the language in bullet #4 DWG members can suggest alternate wording to the IESO provided it does not change the intent.

The IESO reviewed the technical parameters that are required to be registered for dispatchable generators. MLP; MGBRT; MDT; Max starts; DET; PSU data.

A Generator asked how Dispatch Elapsed Time (DET) will be used in EDAC. The IESO explained that DET is a registered value used to determine if generation resources are quick start facilities and to determine DA PCG eligibility and is not used by the calculation engine.

A Generator asked how DET would be applied to combined cycle plants. The IESO explained that DET should be considered on an individual resource basis. For a combined cycle plant each resource should be considered to be in the 1 on 1 configuration when determining the technical parameters.

A Generator raised a concern with the use of the DET definition instead of just asking participants to declare whether they are quick start facilities. The IESO explained that the defined term allows for two criteria to be assessed with one data element. There may also be future uses for this information.

A Generator asked if the definition of DA PCG eligibility could be restated to say a resource is not DA PCG eligible if it can respond to a dispatch instruction with its breaker open. The IESO responded that the IESO still needs to register DET to determine which resources are quick start.

The IESO discussed how registration data is received and that existing forms will be utilized where possible. New forms will be provided in electronic format where possible. A Generator asked if existing forms will be converted to electronic format. The IESO responded that this will only occur where the requirement to convert the form is a direct result of EDAC.

The IESO provided the MLP definition and added that it is the minimum load at which a generation unit is able to respond to dispatch instructions. A Generator pointed out that MLP can be updated in real time through a manual process. He suggested that this be included in the EDAC market manual. The IESO clarified that the DA PCG is based on the MLP used in EDAC and not changes that occur after EDAC.

A Generator asked if when saying that resources are required to submit a MLP it includes pseudo units. The IESO clarified that in EDAC a pseudo unit is considered to be a resource and that the MLP for pseudo units is considered to be the MLP for a 1 on 1 configuration.

A Generator raised a concern that the current rules preclude physical aggregation for some combined cycle plants. The IESO pointed out that the PSU construct allows EDAC to provide realistic schedules based on sharing information provided. The Generator is concerned that

even if a pseudo unit receives a schedule it is still difficult to get the resource scheduled in real time. The IESO acknowledged that this is not within the scope of EDAC.

Real Time Issue The concern that even if a pseudo unit receives a schedule it is still difficult to get the resource scheduled in real time will be logged as an issue.

The IESO described how the MLP Limit will be utilized. A Generator stated that there may be a time when the MLP may be equal to the maximum to accommodate a test for example. The IESO pointed out that a test should be scheduled through an outage request and the associated resources offers changed accordingly. Adjusting MLP should be not be the method used to achieve the required dispatch for testing.

A Generator asked if the MLP could be increased to the duct burner level in order to offer operating reserve. The IESO responded that this is not a technical minimum and that MLP should not be increased to allow this. The IESO reiterated that if MLP is increased to above the MLP Limit it may be flagged to compliance.

A Generator asked if there is a defined relationship between MLP and MLP Limit that will be applied during registration. The IESO responded that there is no defined relationship and that these values are to be provided by the registrant and are to be based on the technical characteristics of the generator.

Action: IESO will provide clarification on how changes to MLP are handled in real time (for non EDAC scheduled hours) and how this relates to the new rules on self induced CMSC. (What happens in the example where the MLP post EDAC > registered MLP)

A Generator asked if there is ever a requirement to change MDT within a day as a generation unit cools off. The DWG members determined that this is not likely to occur.

A Generator suggested that the MDT be renamed as the Minimum Generation Block Down Time. The group did not object to the new name for the defined term.

A Generator asked how MDT is determined when a generator shuts down and passes through minimum. The IESO clarified that from an EDAC perspective it is irrelevant. For real-time it is calculated from the time that generator passes through MLP when shutting down.

A Generator asked what happens if the IESO constrains a resource on for hours in excess of the EDAC schedule and it results in a resource not meeting its minimum down time. The IESO

responded that in this example the generator should notify the IESO and the IESO will either remove the constraint that causes the resource to not meet its MDT or constrain the resource on until the next scheduled period. The IESO agreed that this needs to be covered in procedures.

A Generator asked if the Maximum Number of Starts per Day can be based on contract and not physical limitations. The IESO responded that the Maximum Number of Starts per Day is a technical parameter and should not represent contractual needs.

A Generator asked if the IESO can calculate the maximum number of starts per day from MDT and MGBRT. The IESO responded that while this can typically be done, there may be conditions where the max starts are less than the calculated value. IESO would like the MP to declare this value for audit purposes and to allow flexibility for changing conditions.

A Generator pointed out that the DET validation rule (0 <= (Minimum Run Time –MGBRT) <= DET) should be reviewed to determine if it works for minimum MRT situations.

Action: IESO will review the DET validation rule (0 <= (Minimum Run Time –MGBRT) <= DET) to determine if it works for the shortest MRT situations.
Editors Note: After further review the IESO agrees that this validation rule may not always work and it will be removed.

A Generator asked if the DET definition to determine Quick Start generators (DET<= 5 minutes) is consistent with the existing definition of a Quick Start generation facility. The Generator cautioned that the IESO be conscious of how changes to registration data will affect real time. The Generator pointed out that the IESO previously stated that a resource would not be eligible for 30 min reserve unless it can synchronize in 15 minutes.

Action: The IESO will follow-up on where and why it was previously stated that a resource would not be eligible for 30 min reserve unless it can synchronize in 15 minutes.

Item 6 EDAC Data Submission Requirements

The IESO presented the data quantities submitted by market participants that will be considered in the EDAC calculation engine.

- Daily Generation Data
- Dispatch Data
- Expedited Operational Data
- Data Submission Time line

Daily Generator data consists of four parameters that can be submitted day-ahead for consideration in the EDAC Calculation Engine: MLP, MGBRT, MDT, and Max Starts per Day. Day-ahead changes from registered values must be based on technical parameters.

Participants asked if 24 hourly MLP quantities were required. It was noted that multiple daily MLPs could be used to model different CCU configurations (3-on-1, 2-on-1, 1-on-1, etc) when pseudo units are not utilized or where different ambient conditions occur throughout the day.

Participants asked if these 24 hourly quantities were reflected in real-time. These MLP values are reflected through constraints applied in pre-dispatch but only in the hours in which an EDAC schedule is received. The DSO will reflect the registered MLP quantity in hours for which no EDAC schedule was received (i.e. no constraints are applied in pre-dispatch).

Participants asked whether the MLP limit could be used to model different operating configurations. The IESO responded that since the MLP limit is used to reflect normally anticipated technical operating conditions, this would be acceptable.

Real-time issue: A Generator pointed out that for hours that a generation unit has not received an EDAC schedule, a single registered MLP value does not provide the flexibility to manage different operating configurations for combined cycle plants.

Participants asked whether there would be one single MGBRT value for the day or whether there would be a different value for each hour. The IESO responded that there will be one value of MGBRT and it will be applied to all hours of the day.

Participants asked if hot/cold/warm starts can be accommodated through changes to Minimum Down Time. The IESO responded that start-up cost is the best vehicle for communicating the cost of a hot/cold/warm start and not Minimum Down Time, since MDT assumes a hot start.

Real Time Issue: Participants expressed the concern that they have to structure their offers in order to achieve their MLP as scheduled by EDAC. Doing this may result in suppressed prices during the ramp-up period. For SGOL starts in real time, MIO will look 5 critical intervals out and begin to take the unit to its minimum loading point; however the generator must structure their offers to get the appropriate pre-dispatch schedule

Participants asked if the ramping MW considered in the EDAC calculation engine will be passed to pre-dispatch. The IESO responded that these MW will only be considered in the calculation engine to form the final EDAC schedule and will not be passed to pre-dispatch.

Action: The IESO will post the presentation on ramping for the ODWG which describes the rationale behind the 30% ramping MW assumption.

Participants asked how to determine their speed-no-load cost. The IESO responded that this is a theoretical value which is based on the cost required to maintain the generator synchronized to the grid with 0 MW injected.

Action: The IESO will update the startup cost slide to change the number format to $/start and not $/hr.

The IESO noted that the EDAC calculation engine design cannot consider existing time-dependent, loading-dependent ramp rates in the optimization. In order to accommodate the calculation engine, EDAC will use the ramp rates submitted for the first hour of the day. Operating Reserve will respect only one ramp rate. The EDAC calculation engine does not consider ramp rates when ramping up to MLP. Ramp rates will be used by the calculation engine for break points above MLP.

Action: While No DWG members objected to the proposal, some requested the IESO to provide further detail regarding how ramp rates will be utilized in the EDAC calculation engine in writing. At that time, participants will be requested to identify any issues with this approach.

Editors Note: Currently for the real-time market, as part of dispatch data, a generator may submit a set of ramp rates for up to five segments of the generator's operating range. In addition, for each hour, a different set of ramp rates could be submitted. For EDAC, a generator could still submit ramp rates for up to five segments of its operating range. However, we are proposing to have only one set of ramp rates for the entire day. The set of ramp rates used by EDAC would be from the first hour the generator has offers. There would be no change to how ramp rates are submitted and respected in the real-time market.

If there is a requirement from generators to be able to submit different sets of ramp rates for different hours of the day, an EDAC calculation engine could be built to do this. However, this feature would require additional time and costs to build. More importantly, this feature of different sets of ramp rates for different hours of the day would make the calculation engine optimization more complex and it would not be guaranteed that the calculation engine would produce day-ahead results that are optimal.

Action: DWG members are requested to identify any issues with this approach before the next DWG Meeting.

Action: IESO will update slide #14 of the EDAC data submission slide deck to reflect that both approved and accepted offers will be used by both EDAC and pre-dispatch.

Participants asked if the IESO had considered time-specific daily energy limits to achieve scheduling of MWh during specific timeframes. The IESO explained that this can be achieved using offers however EDAC will optimize the energy using the daily energy limit submitted.

Participants expressed the concern that the optimization of energy-limited fossil units may be undone if the MP creates a profile of operation through their offers to reflect the desire to be scheduled in specific hours. Participants noted that there need to be rules developed to define which resources are "cascading hydroelectric resources" for the purpose of being eligible to resubmit ELR offers.

Action: The definition of "eligible ELR resource" will be developed and provided to the group.

Participants asked why the IESO could not produce a price out of the EDAC engine. The IESO responded that since the EDAC engine is a constrained model, a second algorithm would have to be run in order to produce an unconstrained price. This would be cost prohibitive and would not provide the pricing information that the participant is expecting.

Item 7 Review Next Meeting Agenda

The next meeting will be on May 7th at Clarkson in the Viewing Gallery.

Updates to the slide decks will be provided with the draft meeting minutes.

Action Item Summary				
#	Date	Action	Status	Comments
1	April 16, 2009	The IESO will check to see if the Portal User Guide covers subscribing and if not will revise it appropriately. A link to the portal user guide will be provided to the	Closed	Guide to be updated and reposted

Action Item Summary				
#	Date	Action	Status	Comments
		DWG.		
2	April 16, 2009	The IESO will determine the process to handle identified Real Time issues and identify the process for tracking and assigning these issues. The process will be discussed at the next DWG meeting. Al Miller will identify how long it will take to determine if an issue is in scope of EDAC or not as part of this process.	Open	
3	April 16, 2009	The IESO will determine if the requirement for Daily Generator Data to default to the last submitted value has a significant impact on the EDAC project (cost or schedule).	Open	
4	April 16, 2009	IESO will provide clarification on how changes to MLP are handled in real time (for non EDAC scheduled hours) and how this relates to the new rules on self induced CMSC. (What happens in the example where the MLP post EDAC > registered MLP)	Open	
5	April 16, 2009	IESO will review the DET validation rule (0 <= (Minimum Run Time –MGBRT) <= DET) to determine if it works for minimum MRT situations.	Closed	This validation rule will be removed. Revised slide deck posted on portal on April 20, 2009.

Action Item Summary				
#	Date	Action	Status	Comments
6		The IESO will post the presentation on ramping consideration for the ODWG which describes the rationale behind the 30% ramping MW assumption.	Closed	Slide deck from November 26, 2008 TSG meeting posted on portal on April 20, 2009.
7	April 16, 2009	The IESO will update the startup cost slide to change the number format to $/start and not $/hr.	Closed	Revised slide deck posted on portal April 20, 2009.
8	April 16, 2009	The IESO will provide further detail regarding how ramp rates will be utilized in the EDAC calculation engine to participants in writing. At that time, participants will be requested to identify any issues with this approach.	Closed	Additional detail provided as an editorial note in the meeting minutes.
9	April 16, 2009	DWG members to identify any issues with using the first hour ramp rates for all hours of EDAC before the next DWG Meeting.	Open	
10	April 16, 2009	IESO will update slide #14 of the EDAC data submission slide deck to reflect that "accepted" offers will be used by both EDAC and pre-dispatch.	Closed	Revised slide deck posted on April 20, 2009.
11	April 16, 2009	The definition of "eligible ELR resource" will be developed and provided to the group.	Open	

Real Time Issue Summary			
#	Date	Issue	Comments
1	April 16, 2009	Even if a pseudo unit receives a schedule it is still difficult to get the resource scheduled as separate resources in real time.	
2	April 16, 2009	The IESO will follow-up on where and why it was previously stated that a resource would not be eligible for 30 min reserve unless it can synchronize in 15 minutes.	
3	April 16, 2009	For hours that a generation unit has not received an EDAC schedule, a single registered MLP value does not provide the flexibility to manage different operating configurations for combined cycle plants.	
4	April 16, 2009	Participants have to structure their offers in order to achieve their MLP as scheduled by EDAC. Doing this may result in suppressed prices during the ramp-up period. For SGOL starts in real time, MIO will look 5 critical intervals out and begin to take the unit to its minimum loading point; however the generator must structure their offers to get the appropriate pre-dispatch schedule.	