

Minutes of Meeting

Date held: March 10, 2010	Time held: 9:00 AM	Location held: Holiday Inn (Oakville)
Invited/Attended	Company Name	Attendance Status (A)ttended; (R)egrets; (S)ubstitute
Adams, Tom	Tom Adams Energy	A
Apold, Robert	GDF Suez Renewable Energy North America	A
Banakar, Hadi	SNC Lavalin	A
Bell, Brian	Ontario Power Generation	Via Teleconferencing
Besner, Serge	Environment Canada	Via Teleconferencing
Boland, Joseph	Kruger Energy Port Alma	A
Brason, Tracy	Brookfield Renewable Power	A
Burkom, Jack	Brookfield Renewable Power	A
Dan Hayden	Capital Power Corporation for Kingsbridge Wind Farm	A
Dennis Haggerty	Erie Shores Wind Farm	A
Di Cesare, Walter	Brookfield Renewable Power	A
Dick, Kevin	Ontario Power Authority	A
Elahi, Raubia	Ontario Power Authority	A
Estill, Glen	Sky Generation	Via Teleconferencing
Farahbakhsh, Payam	Hydro One Networks Incorporated	A
Gafur, Ansar	International Power Canada, Incorporated	A
Gavrilidis, Anna	Sherwood Electromotion	A
Goldstein, Michael	Invenergy LLC rep Raleigh Wind Energy Centre	Via Teleconferencing
Hassan, Fred	Elenchus Research Associates for Power Workers Union	A
Heaton, Randy	TransCanada Energy	A
Helbronner, Valerie	Torys LLP	A
Hickey, Maurice	AIM SOP Phase I LP	A
Jehn, Laura	TransAlta Corporation	A
Kaegebein, Dave	Invenergy LLC	Via Teleconferencing
Lamont, Michelle	Enbridge Ontario Wind Power	Via Teleconferencing
MacKenzie, John	Ontario Power Authority	A

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Major, Paula	Mainstream Renewable Power	Via Teleconferencing
Malinowski, Martin	Rodan Energy & Metering Solutions Incorporated	A
Maljukan, Sasa	Hydro One Networks Incorporated	A
Peterson, David	Ontario Power Generation	A
Romaniuk, Oliver	NextEra Energy Resources	A
Russell, Stewart	Capital Power Corporation	A
Sharma, Pankaj	Hydro One Networks Incorporated	A
Simpson, Bob	Enbridge Ontario Wind Power	Via Teleconferencing
Sorensen, Kevin	Gilead Power	A
Srivastava, Raja	Renewable Energy Systems Americas Incorporated	A
Tang, Chi	Genivar	A
Taylor, Kristopher	Essex Power Group	A
Tuenter, Hans	Ontario Power Generation	A
Urukov, Vlad	Ontario Power Generation	A
Vallejo, Patricia	NextEra Energy Resources	A
Whitehead, Tricia	TransCanada Energy Limited	A
Yang, Bunli	E4	A
Chung, Jo	IESO	A
Drake, Gordon	IESO	A
Dmytrow, Dustin	IESO	Via Teleconferencing
Finkbeiner, Darren	IESO	A
Freire, Joseph	IESO	A
Harrison, Cynthia	IESO	A
Huber, Devon	IESO	A
Khan, Khaqan	IESO	A
Martinello, Anthony	IESO	A
Misner, Brad	IESO	A
Rodrigo, Dilhan	IESO	A
Romeo, Rick	IESO	A
Tang, Jessica	IESO	A
Scribe: Devon Huber Please report any corrections, additions or deletions to devon.huber@ieso.ca .		

All meeting material is available on the IESO web site at: [SE-57 Embedded and Renewable Generation \(including periods of surplus baseload generation\)](#)

Agenda Item#1 Administration

Darren Finkbeiner welcomed the group and summarized the presentation material planned for the session.

The agenda was approved with no changes.

Agenda Item #2 Centralized Wind Forecasting

Devon Huber of the IESO presented an overview of the centralized wind forecasting project plan. The presentation provided additional detail on three aspects of the plan, including: Data Requirements, Competitive Forecasting Trial and Funding Model. Devon requested feedback from stakeholders on a number of issues to assist in the planning and implementation of the project.

Member Questions, Comments and Discussion

The following questions were asked regarding the presentation, with the IESO's response in italics below:

- A member noted that not all wind farms have met towers and any requirement for a met tower would be burdensome for smaller wind farms. As an example, the member noted they currently operate 4 wind farms, all of 10MW or less, none of which have met towers.
The IESO responded that it will investigate less stringent data requirements for different thresholds of installed capacity. Different MW thresholds could be used to establish what facilities require a met tower versus those that require turbine mounted sensors.
- A member inquired whether the centralized forecasting program would apply to facilities with RESOP contracts and who are currently not IESO market participants?
The IESO responded that the Market Entry requirements are currently under review and the inclusion of facilities with RESOP contracts within the program has yet to be determined.
- How many forecasting entities will participate in the competitive forecasting trial?
There is no planned limit. The number will be determined through the procurement process.
- A member disagreed with a capacity based funding model based on installed capacity and asked if the IESO would consider a per turbine funding model? The member also stated that some large wind facilities do have met towers, but the requirement to provide data, pay for a third party forecasting vendor, and have staff to maintain systems and equipment is unlikely to cost generators less than the current decentralized system.

The IESO indicated that its expectation is that facilities already have data collection and communication links for their own forecasting purposes, and therefore this should not be an additional cost. The IESO's expectation is that with a de-centralized approach, farms would be required to meet the standards they are currently not meeting. To meet these (and perhaps new) standards, farms are likely to require additional services, support, models and costs.

- Under the current standard offer program there is no forecast requirement, will these resources be included in the centralized wind forecasting program?

No decision has been made regarding the inclusion or exclusion of existing embedded facilities. Accurate forecasts have added importance for all facilities with FIT contracts because of the Additional Contract Payment for following dispatch instructions. If FIT facilities require met towers we will have to work with the OPA to manage this, however, the IESO will investigate different standards for minor and major facilities.

- Has the IESO considered the use of persistence forecasting?

Persistence forecasting is used for forecasting wind output within the hour, where it has been proven most accurate. For time horizons between the one hour ahead and day ahead pre-dispatch, forecasting is superior to persistence.

- A member asked if the met data collected by the IESO would be made publically available. The same member also asked how long the trial would be, noting forecasts for summer months differ from forecasts for winter months.

In previous SE-57 meetings, the IESO has stated its intent to publish wind forecasts, but will not publish the collected met data. The trial length has yet to be determined, and the IESO will consider the seasonal variability of wind production versus the need to have centralized forecasting in place in the near term.

- A member asked what forecasting accuracy was expected in the day-ahead timeframe with centralized forecasting and whether a compliance dead band would apply.

In a previous presentation to SE-57 the IESO indicated significant improvement could be made; comparing Ontario decentralized forecasting with NYISO centralized forecasting. The competitive trial will identify the expected results, comparing forecast vendors with decentralized results. Additionally, compliance dead bands are applicable to dispatches and not forecasts. Forecasts should be as accurate as possible but a tolerance for less than perfect is accepted because of the uncertainty of the fuel source.

- Members asked why real-time site specific data is required if persistence forecasting is used within the hour.

The IESO informed the group that real-time data is useful for updating forecasts hour-ahead to day-ahead. Forecasters also make use of additional regional weather information. A member added that forecasters make use of computer models that simulate atmospheric conditions and the more data available the more refined these models are. Real-time data may also be used to calculate forgone output for FIT resources.

- A member stated that collecting wind speeds every 10 minutes may accommodate forecasting needs but not operational needs.
The IESO recognizes that some data can serve the dual purpose of directing control room actions and formulating forecasts. Where data serves multiple purposes, the more restrictive requirement that services both purposes will be adopted.

Agenda Item #3 FIT Dispatch and Operability

Gordon Drake of the IESO presented on changes to the treatment of FIT resources within the marketplace. Gordon noted that the focus of his body of work is on the integration of resources under FIT contracts and not those resources under RES contracts.

Member Questions, Comments and Discussion

The following questions were asked regarding the presentation, with the IESO's response in italics below:

- A member discussed the different command and control options for wind facilities and asked whether dispatchability was a requirement for all wind facilities?
Every wind facility, regardless of OPA contract, has an obligation to respond to dispatch instructions or directions (except for legal, safety and equipment damage reasons). FIT contracts are designed such that if a wind resource operates during negative price situations, their revenue is reduced. To earn the Additional Contract Payment is a choice for each facility, expressed through the prices submitted by the facility. Resources should implement dispatch capabilities as they see fit.
- In the event of SBG conditions, which wind facility will be dispatched?
All dispatches are based on economic merit. The DSO considers offer prices as well as system losses to determine dispatch instructions.
- If a wind facility is asked to dispatch, who determines what the farm would have produced?
The methodology to calculate foregone revenue is in development. Multiple formulas exist, including the application of real-time wind to a power curve, the use of persistence forecasting for short periods or the use of forecasts for longer periods. The current expectation is the IESO would provide the calculation to the OPA.
- How long will curtailments last?
The IESO noted that wind resources are not being curtailed, which is a reliability action, but are integrated into the dispatch based on economic merit. Work is underway in determining the appropriate timing/period for dispatch. With a larger penetration of wind more granular dispatch has more value.
- Is it correct that resources under FIT contracts are not compensated for dispatches related to transmission or local constraints?

Correct. The Additional Contract Payment applies only to those dispatches sent under the situations specified in the FIT contract. Wind may be dispatched for operational needs which are not covered under FIT contracts. For example, a wind facility may be dispatched down in advance of a significant period of demand ramp to allow a gas facility to begin operations and be online for dispatch. Such a scenario does not meet the conditions of the Additional Contract Payment, but the dispatch would be done for operational needs and based on economic merit.

- A member indicated the potential for disputes regarding contract payments and asked what the dispute resolution process is.

The OPA will determine whether a dispatch is valid for an Additional Contract Payment. The IESO will define the conditions under which a resource is dispatched, but it would be up to the OPA to determine whether the dispatch qualifies for an additional payment. The IESO will provide the OPA with scenarios and examples for guidance.

A member of the OPA indicated Additional Contract Payments apply to conditions that affect substantially all of IESO grid and do not apply to local conditions. Further definition of what system wide oversupply conditions look like will be needed.

- Will resources register as dispatchable or intermittent? Additionally, will these resources be able to offer ancillary services, such as operating reserve?

The IESO has not yet determined the registration class for resources with FIT contracts. Also, we have not identified any additional services that these resources may be eligible to offer but we are prepared to investigate the mechanics of including these resources in the operating reserve market as an example.

- Has any consideration been given to the use of energy storage technologies instead of wind dispatch?

Storage has received a great deal of discussion in Ontario and may present an opportunity to manage SBG and the operational characteristics of variable generations. The IESO, however, does not invest in or pick technologies.

- Has the IESO, like other jurisdictions, reviewed their needs for spinning and non-spinning reserves?

Yes, the IESO is reviewing its standards. Where possible the IESO would prefer to follow industry standards rather than develop uniquely Ontario standards. A NERC Integration of Variable Generation Task Force (IVGTF) subcommittee is investigating OR requirements and storage needs. The report will also consider cost implications and is due to be published by the end of this year.

- A member asked what the ultimate consumer cost is for all FIT contract clauses and whether this cost is tracked and reported.

The IESO noted that all payments made to contracted resources are included in the Global Adjustment. The IESO does not track or forecast these costs.

*A member of the OPA indicated that they employ cost-to-customer modelling when **assessing** contract **costs** but do not report on such numbers on an ongoing basis.*

- A member asked if the Wind Power Standing Committee (WPSC) had received a response from GE regarding an inquiry into a conclusion made within the Wind Integration Study.
A memo has been sent to GE requesting feedback and when a response is received it will be posted to the WPSC website.

Agenda Item #4 IESO Actions During SBG

Jessica Tang presented on IESO action to address SBG events. Jessica's presentation defined the conditions for SBG and outlined IESO control actions for these SBG events.

Member Questions, Comments and Discussion

- A member noted that the definition of SBG, as currently written, does not identify the shutdown of a nuclear unit as an SBG event, which is contrary to the member's understanding of SBG.
The IESO agreed with the member's comment and will revisit the definition.
- Will the IESO share the formal protocol regarding NUG shutdowns during SBG?
If SBG is forecast for the weekend, the IESO may call the OEFC on or before the Wednesday prior to the weekend and identify the number of MWs of NUG shutdowns required and the duration of the shutdown. By Thursday the OEFC will inform the IESO of available NUG curtailment MWs for the identified time period. NUG facilities are not as flexible as dispatchable resources and thus must be coordinated in advance based on forecast conditions.
- Will the volume of NUG reductions be made public?
The specific MW reduction in NUG reduction won't be explicitly made public but the MW will be reflected in the SBG forecast (when updated).
- How confident is the IESO that it will see the specific MW reduction from NUG facilities?
The MW reduction capability that the OEFC reports to us is what will be provided. The OEFC has been very accurate with their value.
- Has the IESO performed the economic assessment to determine when it is economically appropriate to reduce NUG output?
Yes, the IESO has completed an economic analysis on when it is appropriate to shut down NUGs. The IESO has identified when it is efficient to request a reduction from NUGs. The analysis will not be made public as it may negatively impact how the OEFC negotiates the shut down costs.
- A member noted their appreciation for the IESO's efforts to inform the market of SBG conditions through the SSR. It was also noted that the SSR approach may be useful to exporters who may be able to respond to market conditions and mitigate SBG events.

- A member asked if the SBG condition could be reported through message exchange.
The IESO stated that they had not considered this as an option but noted that message exchange is done in real-time and may be too late for market participants to respond to SBG conditions. The IESO further noted that the tool may not be robust enough for this purpose. However, the IESO will investigate further the potential for message exchange.
- Has the IESO considered public appeals during SBG periods to encourage load consumption?
The IESO has not considered adding a public appeal to the control actions for SBG, but we can consider the possibility and investigate its value with industrial loads.

Action Item Summary				
#	Date	Action	Status	Comments
1				
2				
3				