

Minutes of Meeting

| Date held: November 5, 2008 | Time held: 8:30 am to 12:00 pm | Location held: Monte Carlo Inn - Airport Suites, Mississauga |
|---|---------------------------------------|--|
| Invited/Attended | Company Name | Attendance Status (A)ttended; (R)egrets; (S)ubstitute |
| Adams, Tom | | A |
| Bester, Larry | Acciona Wind Energy | A |
| Cary, Rob | Robert Cary & Associates | A |
| Cheng, Clarence | Ministry of Energy and Infrastructure | A |
| Cookson, Michael | Kruger Energy | A |
| Dejulio, Gia | Ontario Power Authority | A |
| Deluzio, Jim | Brookfield Renewable Power | A |
| Edmonstone, Bill | Acciona Wind Energy | A |
| Garner, Tracy | Algal and Associates | A |
| Goldberger, Dan | New Paradigm Capital Corp | A |
| Haggerty, Dennis | Erie Shores Wind Farm | A |
| Hayden, Dan | EPCOR | A |
| Jenkins, Allan | Ministry of Energy and Infrastructure | A |
| Leung, Alan | Ontario Power Authority | A |
| Manougian, Harout | Elektron Consulting | A |
| Pennie, J.C. | Windrush Energy | A |
| Pundsack, Gary | CanWEA | A |
| Rangooni, Justin W | CanWEA | A |
| Tremblay, Martin | Garrad Hassan | A |
| Tuenter, Hans | Ontario Power Generation | A |
| Wickham, Chuck | EPCOR | A |
| IESO | | |
| Burns, Stephen | | A (only for presentation) |
| Chase, Maia | | A |
| Facca, Mauro | | A |
| Falvo, Mike | | A |
| Khan, Adeel | | A |
| Khan, Khaqan (Chair) | | A |
| Lodyga, Martin | | A |
| Malik, Rayhan | | A |
| Robitaille, Dave | | A |
| Scribe: Adeel Khan, IESO. Please report any corrections, additions or deletions to the following e-mail address: stakeholder.engagement@ieso.ca | | |

All meeting material is available on the IESO web site at:
http://www.ieso.ca/imoweb/consult/consult_windpower-sc.asp

Item 1 Welcome and Introductions

Khaqan Khan welcomed the committee members. He reiterated that the underlying purpose of WPSC is to jointly identify issues and any potential barriers to successful integration of wind power in Ontario. WPSC will continue to provide stakeholders with an opportunity to raise and discuss wind related issues and concerns. Chair appreciated large attendance of the participants in the meeting. This demonstrates increasing interest of participants in wind matters.

Committee members were invited to introduce themselves.

a) Review of Agenda

Agenda was accepted with no changes.

b) Review of Action Items

Khaqan Khan reviewed progress on the following action items:

| # | Date | Action Items | Status | Comments |
|----|-------------------|---|--------|---|
| 24 | November 16, 2007 | Working group members to collect information about other ISO's forecasting accuracy levels and methodology and incentive programs for near-term forecasting, by mid July 2008. | Closed | A few of North American wind forums such as UWIG have presentations indicating similar information and proposing acceptable and target accuracy levels. The link will be circulated to members. |
| 31 | November 16, 2007 | Members are to review the issues list from the website and let the IESO know the priority they would like to see these issues addressed going forward. | Closed | It has been addressed through WPSC participant feedback survey results (re: item #6). |
| 32 | February 20, 2008 | Dave Hurd, Michael Cookson and David Timm to provide European ISO contacts to gather information from them on forecasting accuracy levels, methodology and incentive programs. | Closed | A few of North American wind forums such as UWIG have presentations indicating similar information and proposing acceptable and target accuracy levels. The link will be circulated to members. |
| 33 | February 20, 2008 | The IESO to include comments made by the members at the meeting on Mid-Term Forecasting Requirements, when the recommendations are taken to IESO Senior Management. The IESO will communicate the IESO decision back to stakeholders. | Closed | IESO communicated its decision to implement wind capacity contribution method during November 5, 2008 meeting. |

| # | Date | Action Items | Status | Comments |
|----|--------------|---|--------|---|
| 34 | May 14, 2008 | Tom Adams to make a presentation on wind diversity issues: quantifiable benefits and characteristics at the next standing committee meeting | Open | Tom Adam has reported that the analysis is still underway and presentation is expected to be made in next WPSC meeting. |
| 35 | May 14, 2008 | IESO to inform members of the IESO decision and timeline for future developments on Wind Capacity Contribution, via e-mail. | Closed | Item # 35 is redundant. Same as item 33 above. |
| 36 | May 14, 2008 | IESO to provide a breakdown of wind generator submitted forecasts, focusing on large hour-ahead to real-time deviations, by month and by hour. | Closed | The breakdown was provided to members on November 3, 2008. |
| 37 | May 14, 2008 | IESO to find out if is the existing Market Rules and technical processes would allow for persistence forecast to be inputted into the pre-dispatch run as an automated process. | Closed | E-mail with response sent to members on November 3, 2008. |

Members Questions, Comments and Discussion

- Regarding Action Item 24 & 32, Khaqan Khan noted that a few of North American wind forums such as Utility Wind Integration Group (UWIG) have presentations indicating acceptable and target accuracy levels. The link will be circulated to members. Action items 24 & 32 were closed.

Action Item: Khaqan Khan will send a link regarding information on forecasting accuracy levels to all stakeholders.

- Regarding Action Item 33, Khaqan Khan noted that that the IESO will implement the proposed Wind Capacity Contribution (WCC) method in the Q4, 2008 18-Month Outlook. An additional scenario to account for uncertainty associated with wind under extreme weather conditions will not be implemented. The IESO decision is posted on WPSC web. Action item # 33 was closed.
- A committee member inquired whether Market Participants would still be required to fill out Form 1230's for the 18-Month Outlook upon the implementation of WCC. In response, it was clarified that the implementation of WCC method did not affect any of existing information submission requirements per the Market Rules and participants will continue to submit their information as required under the market rules.
- It was noted that information pertaining to action items # 36 and 37 has been provided to members on November 3, 2008. Items 36 and 37 were closed.

c) Meeting Dates for 2009

Maia Chase presented proposed meeting dates for 2009.

A committee member suggested that meeting dates be shifted from August and October to September and November, respectively, due to the potential for poor attendance at the proposed date due to summer vacations. The meeting dates will be revised and sent out to the members for review before posting on the web site.

Item 2 Load following and variability analysis pertaining to wind (Part 1)

Martin Lodyga gave the first of a series of presentation regarding load following and wind variability analysis (part 1).

Members Questions, Comments and Discussion

- A clarification was sought as to whether the methodology used to calculate load following was based on inter-hour or intra-hour changes. In response, it was communicated that inter-hour changes were used in the calculations. It was also clarified that the calculations were based on aggregate installed wind capacity.
- A committee member inquired whether the maximum negative decrease of 28% mentioned in the slide relates to the total installed capacity. Martin replied in the affirmative. In addition, it was noted that the sample period used for the data was from October 2007 to September 2008 and took into account the aggregate wind and hence the geographical diversity of wind farms.
- A request was made by a member to analyze wind power variability in relation to changes in demand.

Action Item: IESO to investigate wind power variability in relation to changes in demand.

- A committee member informed the group that New Brunswick has a potential of 3000 MW of wind capacity and may have plans to export wind with its surrounding jurisdictions, such as New England.
- A discussion took place after the presentation concerning the IESO's ability to curtail wind generation. Dave Robitaille stated that wind power can be curtailed for reliability reasons.

Item 3 Facilitating Wind Generators

Stephen Burns gave a presentation on facilitating wind generation connection in Ontario. Stephen also noted in his presentation that the IESO is planning to simplify the market rules on generator performance requirements.

Members Questions, Comments and Discussion

- A member mentioned that there are new technologies being developed that effectively result in wind generation becoming more like synchronous generation. In response, Stephen stated that he is unaware of any present wind technology that has full synchronous generation capabilities.
- A member asked an approximate timeline as to when performance requirements in market rules would be revised. Mike Falvo stated that a draft set has been prepared and stakeholder sessions are to take place.
- The IESO suggested the development of a document that outlines existing requirements as well as proposed changes in performance requirements for generators. This will facilitate the participants by having all information in a central package, as market rules are being finalized in parallel. This paper will be posted on the IESO website before the next WPSC meeting. Committee members appreciated this IESO initiative. Members are encouraged to provide feedback.

Action Item: The IESO will develop a document highlighting existing and proposed performance requirements for generation and post it on the IESO web before January 2009 WPSC meeting.

- It is worth mentioning that the presentation given by Stephen Burns, in relation to wind generator facilitation, was well received by participants. Members want the continuation of such presentations in the future meetings.

Item 4 Wind Participants Feedback Survey

- Maia Chase presented a summary and findings of “wind participant survey feedback” conducted in June 2008. The survey feedback findings indicated an overall appreciation by participating members on the WPSC initiatives. The findings of survey and related presentation are posted on WPSC web page.
- Committee members recommended that a different venue should be selected for future WPSC meetings due to unsatisfactory facilities/conditions at the present hotel.

Item 5 IESO involvement in North American Wind Forums

- Khaqan Khan gave a presentation on “IESO involvement in North American Wind Forums including North American Reliability Corporation (NERC) Integration of Variable Generation Task force (IVGTF).
- It was noted that presentation is being given to WPSC based on a request made by a participant in participant survey feedback.

- The IESO highlighted its involvement in different North American wind forums in joint and coordinated studies and efforts to reliably integrate large scale developments of wind into the system. The salient activities and next steps were also presented.

Item 6 Energy Plan to Strengthen Green Ontario

Allan Jenkins from the Ministry of Energy and Infrastructure (MEI) gave a presentation on Energy plan to Green Ontario. The presentation highlighted key items of MEI's September 18, 2008 directive. The directive requires the OPA to review a "modest portion" of its proposed Integrated Power System Plan (IPSP), focusing on renewable energy and conservation.

Members Questions, Comments and Discussion

- A committee member inquired about the proposed new "MW target" for renewables based on directive. Allan stated that the Ontario Power Authority will determine this amount.
- A committee member asked whether the revision of the IPSP will take into account transmission constraints. In response, it was stated that the revised IPSP will include transmission limitations.
- A committee member asked whether pump storage would be advantageous to supplying load. Allan stated that there may be a few potential sites and pits in Ontario that can be utilized for pump storage purposes.

Item 7 Future Potential Agenda and General Discussion

Following suggestions were made regarding future potential agenda items:

- Several members were interested in receiving information in regards to any transmission upgrade plans in Ontario to accommodate large penetrations of wind especially in Northern Ontario.
- Members expressed their interest in hearing about wind related practices of other North American jurisdictions.
- A member requested that external presentations should capture studies on any environmental impacts of wind and any changes required in regulations.
- Few members wanted a presentation on a high-level overview of happenings in European countries in regards to wind power.

IESO noted that these suggested topics will be considered in the respective agendas of 2009 meetings.

- In regards to identifying areas where transmission upgrades may be required, a member requested the OPA to provide a list of proposals for wind projects participating in the RES III procurement process. As a follow up to this request, the link to the OPA website below provides a list of the 38 projects that were registered as potential projects that could be submitted to the RES III RFP. This is not a list of those projects which were actually submitted to the RFP, due October 28, 2008. Link is as follows: [OPA - Generation Procurement: RES III Registered Proponents](#)
- This information indicates wind development interest by area. It was noted that a list of wind projects participating in the IESO Connection Assessments and Approvals (CAA) process is also available on the IESO web site. The OPA agreed to consider giving an update and presentation to WPSC on proposed wind projects in Ontario including progress on enabler lines to accommodate more wind. Such presentation will be given based on public information available at the time of next WPSC meeting.

Action Item: OPA to determine whether it will be able to give a presentation to WPSC at the next meeting scheduled for January 28, 2009 on proposed wind projects in Ontario including progress on enabler lines to accommodate more wind.

Wrap up

Khaqan Khan reviewed and summarized the key items of the meeting. The Chair emphasized the need of continuous and active engagement and participation of members in this stakeholder process.

The salient items were summarized as follows:

- IESO provided updates and information on wind activities and received feed back where applicable.
- All except one action item have been completed and closed.
- The survey feedback findings indicated an overall appreciation by participating members on the WPSC initiatives.
- Committee members have appreciated the presentation by Steve on facilitating wind generation connections as well as IESO initiative to develop a document outlining proposed changes in performance requirements for generators in near future.
- The IESO will implement the proposed Wind Capacity Contribution (WCC) method in the Q4, 2008 18-Month Outlook. An additional scenario to account for uncertainty associated with wind under extreme weather conditions will not be implemented.
- The IESO is actively involved with North American wind forums.

The members were encouraged to identify and submit any additional wind related issues that are of significant concern to them. Chair appreciated large attendance of the participants and their active involvement during the meeting.

The next meeting is January 28, 2009.

| Action Item Summary | | | | |
|---------------------|------------------|---|--------|---|
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| 38 | November 5, 2008 | IESO to send a link regarding information on forecasting accuracy levels to all stakeholders. | Open | |
| 39 | November 5, 2008 | IESO to investigate wind power variability in relation to changes in demand. | Open | |
| 40 | November 5, 2008 | The IESO will develop a document highlighting existing and proposed performance requirements for generation and post it on the IESO web before January 2009 WPSC meeting. | Open | |
| 41 | November 5, 2008 | OPA to determine whether it will be able to give a presentation to WPSC at the next meeting scheduled for January 28, 2009 on proposed wind projects in Ontario including progress on enabler lines to accommodate more wind. | Open | |