

Centralized Forecasting: Update and Publishing Requirements

SE-91 Renewable Integration Initiative
May 3, 2012



- Design Principles
- Update on Centralized Forecasting
- Energy Forecasts and Publishing Requirements
 - Generator Output and Capability Report
 - System Status Reports (SSRs)
 - Ramp Forecast
 - Aggregate Forecast Report
 - Private Reports
- Next Steps

Principle 1:

- The IESO will implement a centralized forecast for all wind and solar resources with an installed capacity of 5MW or greater and all wind and solar resources directly connected to the IESO-controlled grid.

Principle 6:

- All forecasts of facility output for resources subject to centralized forecasting will be publicly available.

- Market Rules established in November 2011;
- Issued request for proposals for Centralized Forecasting service provider;
- Almost completed onboarding of IESO-controlled grid connected wind generation facilities:
 - IESO has received static data (physical characteristics) from all in-service wind generation facilities.
 - IESO has received dynamic data (real-time output and meteorological information) from all in-service wind generation facilities.

- The new Centralized Forecasting service provider for Ontario is  **AWS Truepower™**
Where science delivers performance.
- AWS Truepower's forecast portfolio includes over 18,500 MW of wind capacity in North America (California, Texas, New York, and New Brunswick), over 1000 MW of wind capacity in Spain, and solar forecasting in California.
- AWS Truepower is currently providing IESO with forecasts for all IESO-controlled grid connected wind generation facilities.
- After AWS Truepower receives dynamic data from the IESO, forecast accuracy should improve considerably within the first few months.

- The Centralized Forecast service for wind generation facilities is expected to be operational in the Fall of 2012. At that time, AWS Truepower will provide the forecast quantity and by Q1 2013 the IESO will integrate that quantity into the existing Day-Ahead Commitment Process and Pre-Dispatch.
- The AWS Truepower forecast will be integrated into 5-minute dispatch processes in the Q3 2013, pending completion of design details and stakeholder consultations.
- As an interim measure, AWS Truepower forecast reports will be made available to the wind generation facilities (not publicly available).

Principle 6:

- All forecasts of facility output for resources subject to centralized forecasting will be publicly available.

AWS Truepower will provide the IESO:

- A 48 Hour Energy Forecast:
 - A 48-hour energy forecast for all individual grid-connected variable generators and embedded variable generators ≥ 5 MW
 - The forecast will contain hourly average forecast values for the next 48 hours
- A Ramp Forecast:
 - A ramp event forecast to identify large changes in variable generation output that are not obvious from the hourly average forecast

IESO proposes to make publicly available:

- An Aggregate Forecast Report
 - A 48-hour energy forecast will be produced for each wind and solar generator and will be aggregated before being published
- An Updated System Status Report:
 - Centralized wind and solar generator forecast information will be used to provide a more accurate forecast of future system conditions
 - Ramp Events will be communicated
- An updated Generator Output and Capability Report:
 - Published hourly, no earlier than one hour following the dispatch hour

- Published hourly, no earlier than one hour following the dispatch hour
- Shows the actual generation capability (MW) and energy production (MWh) for each generation facility with an installed capacity of 20 MW or greater
- For wind and solar generators, the “actual generation capability” will be updated to reflect the most recent forecasted quantity for the facility in each hour
- Variable generation facilities smaller than 20 MW may be aggregated on the report
- Current report can be found at <http://www.ieso.ca/imoweb/marketdata/genEnergy.asp>

Hours		1	2	3	4	5	6	7	8
WIND Total	Capability	1706	1709	1704	1714	1717	1717	1716	1717
	Output	1169	1173	1208	1263	1284	1328	1372	1387
AMARANTH	Capability	200	200	200	200	200	200	200	200
	Output	139	136	150	159	166	170	181	182
COMBER	Capability	157	158	157	159	161	161	161	161
	Output	157	158	157	159	161	161	161	161
DILLON	Capability	68	70	67	74	75	75	74	75
	Output	68	70	67	74	75	75	74	75
GOSFIELDWGS	Capability	50	50	50	50	50	50	50	50
	Output	47	45	47	49	50	49	49	48
GREENWICH	Capability	99	99	99	99	99	99	99	99
	Output	12	12	20	25	27	20	16	10
KINGSBRIDGE	Capability	40	40	40	40	40	40	40	40
	Output	22	25	27	30	31	33	36	36
PAROCHES	Capability	47	47	46	47	47	47	47	47
	Output	47	47	46	47	47	47	47	47
PORT BURWELL	Capability	99	99	99	99	99	99	99	99
	Output	21	33	45	43	42	59	67	76

- System Status Reports provide a forecast of future system conditions, aimed to aid market participants with their offers and bids submissions to meet the system requirements
- Published at 05:30 and 9:00 EST day-ahead, and then as needed to reflect changes in system conditions
- Where intermittent generator forecasts are used today, centralized variable generator forecast information will be used to provide a more accurate forecast of future system conditions
- Current System Status Report can be found at:
<http://www.ieso.ca/imoweb/marketdata/ssrsaa.asp>

- Ramp event forecasts provide the IESO with information about significant changes in variable generation output such as:
 - Magnitude
 - Duration
 - Expected start time
- Ramp forecasts cover a 6-hour time horizon
- The IESO is proposing that when we take out-of-market control actions or require additional bids/offers to manage a ramp event, a System Status Reports will be published to notify the marketplace

- Updated hourly, published in advance of the dispatch hour
- Will contain hourly average values of forecasted wind and solar generation over a 48-hour time horizon
- Forecast information will allow other market participants to plan the operations of their facilities by taking the wind and solar generation forecast into account
- The IESO will make use of existing reporting solutions and formats to produce the report

- **Question 1:** Is a regional forecast required for wind and solar generation?
- **Question 2:** If so, at what level of granularity should the regions be defined? Examples include:
 - “East”/ “West” zone;
 - 10 existing electrical zone definitions;
 - Etc.
- **Question 3:** For regions with a very small number of wind and solar generators, how should market participant confidentiality be protected?

48 Hour Forecast:

- Market participants who operate wind and solar facilities will have access to the forecast information for each of their wind and solar generators before the start of the first hour in the 48-hour forecast horizon
 - If the forecast is late in arriving from the centralized forecaster, the report will be published once it is available
- The forecast will contain hourly average forecast values for the next 48 hours
- 48 Hour forecasts will be confidential to the market participant

- Feedback is requested on the material presented today no later than **May 17, 2012**
- High level overview of the market rule changes will be introduced at the May 15th meeting of the Technical Panel
- Red-line versions of the market rules changes for forecast publication and integration into DACP and pre-dispatch will be presented to Technical Panel as early as June 13th
- The IESO expects to begin publishing the aggregate forecast in Q1 2013