

# Centralized Wind Forecasting

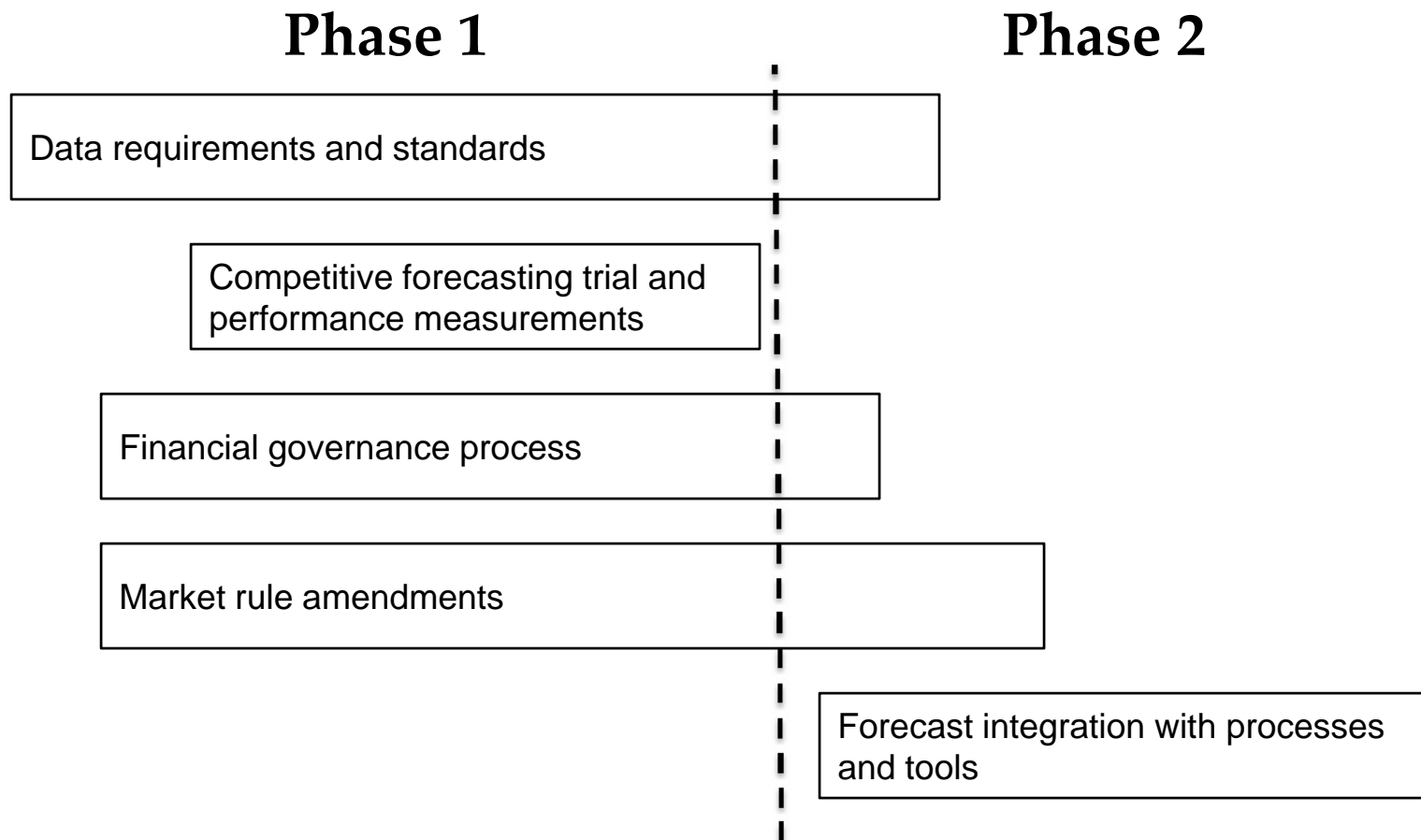
Presentation to SE-57  
March 10, 2010



- Purpose of presentation
- Project plan overview
- Data requirements
- Competitive forecasting trial
- Funding model revisited
- Issues to stakeholder
- Next steps

The purpose of this presentation is to provide an overview of the centralized wind forecasting project plan and to allow stakeholders the opportunity to provide feedback on specific aspects of the plan.

Activities are allocated to one of two project phases



Meteorological and operational data from wind facilities play an important role in determining the forecast performance that can be achieved for a specific facility.

Under a centralized forecasting regime, variable generators will no longer be required to submit energy schedules, instead they will be responsible for collecting and submitting site specific data to IESO.

## 1. Meteorological Data

Wind facilities will be expected to record data on a 10 minute average basis, and submit this data to the IESO on an hourly basis (at a minimum). Data is required by the IESO on a 24 hours a day, 365 days a year basis.

Table 1: Required Data		
Measurement	Units	Precision
Wind Speed	m/s	TBD
Wind direction	Degrees from true north	
Barometric Pressure	hPa	
Ambient Temperature	°C	

## 2. Turbine Availability/Outages

In order to calculate forecasts as accurately as possible, it is critical wind facilities provide the IESO with timely updates on available capacity and turbine outages in advance or as soon after as practical of any reduction in actual plant output capacity.

The aggregate available capacity will include:

- Planned outages
- Forced outages
- Deratings

See Market Rules Chapter 5, Section 6 and Market Manual 7.3: Outage Management for existing obligations.

### **3. Data Collection Locations**

The minimum requirement for existing wind facilities will be to collect data from at least one point (depending on geographic size) located within the farm that is representative of the climate and winds at hub height.

For the purposes of the trial, the IESO would encourage the submission of data from all data collection points. Outcomes of the trial may show that more than one point is most effective and this would then become the requirement if appropriate.

## **4. Energy Production Data**

Wind farm facilities will have a telemetry requirement to supply real-time MW output to IESO.

## **5. Historical Data**

To initialize and calibrate forecasting models, historical data will be required, where available. Two years of historical data is preferred.

## 6. Static Plant Data

The wind forecasting service provider requires data describing the physical layout of the facility and details of the turbines being used.

1. Location (latitude and longitude), and elevation of each turbine hub.
2. Location (latitude and longitude), and elevation of met tower collection points.
3. Type of turbine.
4. Manufacturer's power curve.
5. Cut in and cut out speeds.

The IESO intends to run a centralized forecasting trial.

## **Purpose of competitive trial**

1. Evaluate vendor performance under real Ontario conditions.
2. Simulate real-time operations.
3. Allow the IESO to test and learn from the process and make any alterations to processes/standards prior to selecting a vendor.

IESO would like to proceed with the capacity based funding model instead of the production based model proposed before.

- Based on nameplate capacity, no outages considered.
- A less complex solution, much easier to implement.
- Lower costs on implementation and ongoing administration.

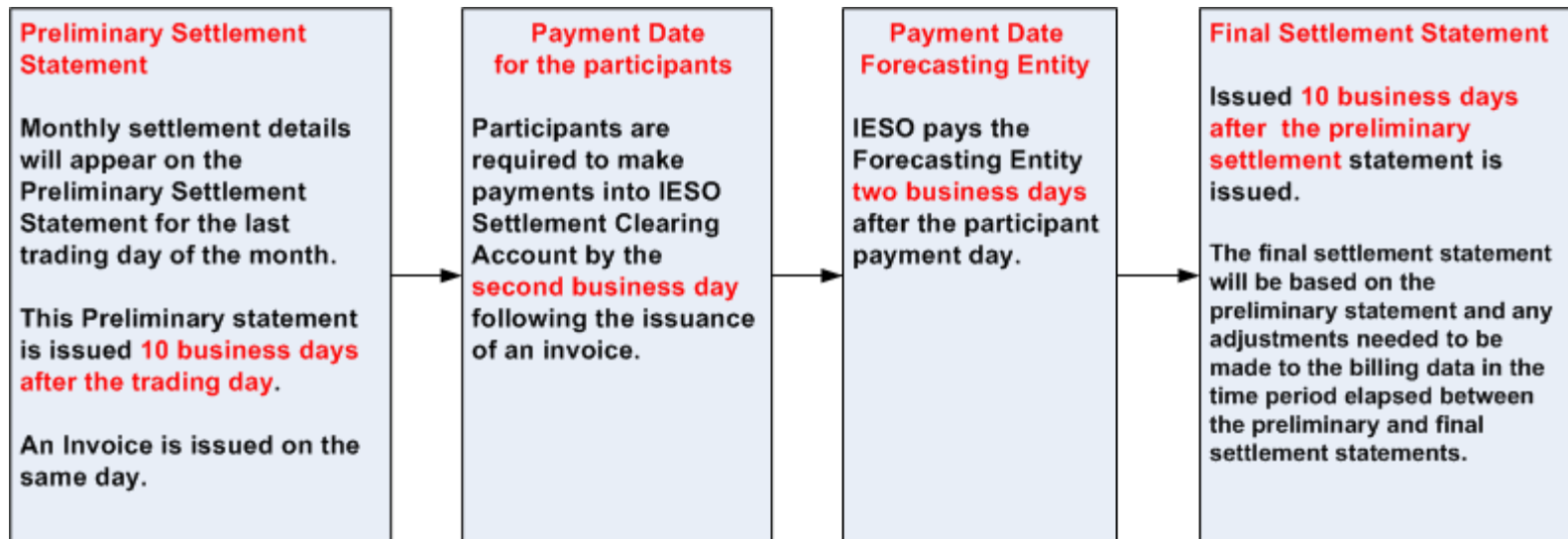
All participants under the Centralized Wind Forecasting Program will have to register with the IESO for billing and other purposes.

Program participants will include all directly connected wind facilities and all embedded wind facilities with an installed capacity of 5MW or greater.

- Wind generators directly connected to the IESO grid will register as Market Participants in the IESO-administered markets.
- The registration requirements for the embedded wind generators are yet to be determined.

## Settlement/Invoice Cycle

All wind generators will be billed based on the standard Physical Market Settlement Cycle



## Payment/Prudential

- Current market rules require all participants to post prudential (collateral), unless if you are a consistent net payee. The IESO manages the credit risk, but does not assume any of the credit risk.
- Given the nature of the centralized forecasting initiative, the IESO will examine different approaches for embedded wind generators (i.e. consistent net payor to the IESO). For example, embedded wind generators with immaterial exposures will likely have the choice to provide an appropriate amount of prepayments / deposits versus posting letters of credit, or T-Bills (current rules).
- The proposed framework includes : if any wind generator fails to pay their obligation, the outstanding amount will be allocated to all wind generators in a timely manner. Therefore, any posted prudential or prepayments/deposits will be utilized first before any allocation of amounts.

The IESO is seeking written feedback from wind facilities on specific topics. Feedback is requested by March 24<sup>th</sup>, 2010.

## **Competitive Forecasting Trial**

- One wind facility has already expressed interest in participating in the trial, are others also interested?
- Do wind facility operators have historical met data and turbine outages archived?
- Annual operating costs of meeting current wind schedule submission obligations?

## Data Requirements

- For their own forecasting purposes, do wind operators capture additional information beyond that listed in Table 1, and if so, at what frequency?

## Funding Model

- If participants would like the IESO to manage the credit risk of non payment is the proposed framework acceptable?
- Alternatively, if participants do not want the IESO to manage the credit risk, or the proposed framework is too costly, would they rather a non payment be distributed amongst program participants?

The IESO is in the process of finalizing the project plan which will include a timeline for implementation.

As decisions develop, they will be stakeholdered through the SE-57 working group for feedback from stakeholders.