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**From:** Pelland, Sophie  
**Sent:** June 26, 2009 4:08 PM  
**To:** IESO Stakeholder Engagement  
**Subject:** Comments on SE57 discussion on centralized forecasting -- Photovoltaic forecasting project

Hello,

I attended the June 16 (and February 10) SE57 stakeholder meetings via teleconference. I am currently managing a project on solar photovoltaic (PV) forecasting, which I presented briefly to Robert Kapteyn and Rhonda Wright-Hillbig in the Fall of 2008. The SE57 meetings are quite valuable to us, since they provide feedback about what the IESO is looking for in terms of forecasting, and help orient our work. Meanwhile, I believe the forecasts we are developing will be of interest to the IESO, and wanted to mention briefly the project I am involved in, and how we could collaborate with the IESO.

The project is a Natural Resources Canada/Environment Canada collaboration whose goal is to develop forecasts for PV systems in Canada (with a strong focus on Ontario), to test their accuracy and to explore applications of the forecasts that will help facilitate the integration of PV systems on the grid. This project is also enriched by our participation in the IEA SHC Task 36, which includes leading researchers from Germany, Spain, the US, Switzerland, etc, working on solar forecasting. For instance, German colleagues have developed hourly PV forecasts for up to 3 days ahead and tested their accuracy, finding RMSEs of the order of 11% of rated power for individual systems, and of the order of 5% for an ensemble of systems spread over a large region (see Lorenz et al, "Qualified forecast of ensemble power production by spatially dispersed grid-connected PV systems", proceedings of the 23<sup>rd</sup> European Photovoltaic Solar Energy Conference, September 2008, Valencia).

For Canada, we have up to now tested hourly solar forecasts for the next 48 hours generated by the Canadian Meteorological Centre (Environment Canada) against ground station data. The next step will be to generate and test PV forecasts from these. So far, our results suggest we should be able to reach accuracies of the order quoted above for Germany. The forecasts we used are available (on a 3 hourly basis) online, and could be used to generate day-ahead forecasts for the IESO [http://www.weatheroffice.gc.ca/grib/High-resolution\\_GRIB\\_e.html](http://www.weatheroffice.gc.ca/grib/High-resolution_GRIB_e.html)

We agree with the IESO that centralized forecasting for solar and wind will lead to more accurate forecasts and reduced costs, and that these forecasts should be implemented early in a "test mode" before large-scale grid penetration makes them a necessity. Once we have developed and tested day-ahead PV forecasts for a few systems, we would be interested in sharing our results with the IESO, and discussing how we could collaborate. For instance, the methodology we have developed could be made available to the IESO for running in a "test mode". Meanwhile, our work would be enriched by feedback from a system operator.

Best regards,

**Sophie Pelland Ph.D.**

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