



PCMS update to RAC Meeting

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Chair

Overview

- Status update for the WECC sponsored PCM and GridView enhancements
- Overview of Hitachi ABB proposed GridView enhancements that the PCMS considers to recommend to the ADS PCM 2032
- Review the PCMS's three-year plan

WECC sponsored generator model enhancements

Objectives of enhancing generator model in PCM

- Improve consistency and efficiency of data management for generator data, especially thermal generator data
- Improve productivity of ADS PCM development
- Add important generator parameters that were previously not included in the model
- Support 2032 ADS PCM development and studies if the enhancements can be implemented in time

Group	Task	Status
1	Thermal Generator Data Management Improvement	Hitachi ABB finished the development work by October 1. PCMS started validate, and expected to finish by the end of 2021
	IO Curve Automatic Calculation	
	Manage Thermal Generator Derate in Monthly Variable Table	
	Model Type for Generators	
	General Generator Table Clean Up	
	Economic PMin and PMax for Generator	
2	Invert Loading Ratio for Generators	Hitachi ABB finished the development work by October 1. PCMS started validate, and expected to finish by the end of 2021
3	Non-Thermal Generator Forced Outage	Hitachi ABB will finish the development work by the end of October. PCMS scheduled to finish validating by the end of 2021 (or January 2022)
4	VAR Margin Ratio for Round-Trip	Hitachi ABB will finish the development work by the end of October. PCMS scheduled to finish validating by the end of 2021 (or January 2022)

Hitachi ABB Proposed GridView new features

Pumped Storage and Battery model

- Standalone battery model
 - In the past, battery borrowed pumped storage model in GridView
 - Now it has its standalone model that is much easier to manage
- Two variables for a storage resource in GridView simulation: charging and discharging
 - No change in dispatch, but more flexible in constraint definition and reporting

Improve transmission loss estimation in simulation

- GridView uses DC power flow, which does not directly calculate transmission losses
- Loss estimation is correct as the DC solution is near the AC operation point, but it may have large error if the DC solution far from this AC operation point
 - Particularly, if the line resistance is relatively high compared with the reactance in an areas, the loss estimation based on the DC solution may be as high as 9% of load, compared with the actual 3% loss based on the AC solution
- Add a parameter in “SimulationControl” table to limit loss delivery factor, which can help to limit the error of loss estimate

Other modeling and software enhancements identified in the PCMS long-term plan

Two-layers model helping to capture the WECC wide system and market evolution

- Currently GridView and the ADS PCM use one-layer model
 - The physical transmission system and the market elements such as wheeling and transmission right are modeled in one layer
- A two-layers model was proposed and discussed between PCMS and the software vendors in order to capture the evolving complexity of grid and market operation
 - Transmission layer and market layer
 - Hitachi ABB is investigating options of implementation

Modeling and software enhancements to be considered in 2021 and beyond

- Hybrid resource model that combines renewable generator and battery storage
- Hydro dynamic optimization
 - A supplementary approach to the current HTC based hydro dispatch
- PCM case management
 - Case split and merge
 - Automatic data validation and error report
 - Hourly profile management
 - Simulation result management
- Dispatchable load model, such as demand response
- MIP engine test



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