Problem Statement

Develop Unit Model

History

In 2005, PJM developed functionality to model combined cycle units in eMKT. This functionality was never used by participants. Combined cycle plants using this model would have the ability to be modeled as single composite unit or as multiple individual units if the module still works. Individual units within the combined cycle group can have individual physical components modeled and have individual unit constraints. Therefore, each combustion turbine (CTs) and each steam turbine (steam unit) within the combined cycle group can have its own start-up cost, minimum run time, minimum down time, offer curves, etc. Individual unit availability can also be assigned to each component in the combined cycle group that must be factored into the commitment process. Additionally, that model does not address units with duct burners or other power augmentation methods.

In 2012, the PJM Operating Committee approved a problem statement and issue charge related to the modelling of combined cycle plants. https://www.pjm.com/-/media/committees-groups/subcommittees/cds/20120109/20120109-item-06b-combined-cycle-modeling-problem-statement.ashx

Several months of work followed and progress was reported through meeting minutes through the October 2013 meeting. https://www.pjm.com/committees-and-groups/issue-tracking/issue-tracking-details.aspx?Issue={B9868A1F-2346-4DA4-A496-1823AC60DE42} Reference to the combined cycle problem statement appears in OC work plans through 4/6/2014 however there is no documentation on additional progress. There was a reasonable amount of work completed including the development of a matrix of options. The key focus of this effort was to improve the ability to offer combined cycle plants into the energy market in a manner that more closely reflects the operation of the plants.

In 2016, several PJM members formed the Combined Cycle Owners User Group to work in partnership with interested and similarly situated stakeholders to discuss the design and operation of combined cycle units and their integration into the market and real-time operations of PJM. Over the course of several meetings the user group evaluated the models different RTOs/ISOs are using to model combined cycle

units. At the conclusion of the education phase of the user group's work, the group came to the conclusion that a more detailed model for combined cycle units might be equally applicable to other steam units.

Opportunity

The focus of this effort is to expand the model that is used in PJM's systems to improve the ability to represent the various components of all generation.

Proposed Stakeholder Group Assignment

This work should be assigned to a task force reporting to the MRC.

Key Work Activities

1) Review the work of prior groups addressing the model of combined cycle units.
2) Promote understanding of generating plants and their need for a more flexible model.
3) Identify market rules/mechanisms to integrate generation resources into PJM's markets such that their operating characteristics are understood, are properly modeled and adequately compensated.
4) Identify necessary changes to OA, Tariff, and manuals needed to implement any new model.

Expected Deliverables

Manual changes and potential Tariff/RAA changes that establish key work activities.

Expected Overall Duration of Work

The goal is to complete work and make recommendations to the MRC by the June 2017 MRC meeting.