May 21, 2015 OWG MOD-025 Discussion

1. Lagging Reactive Test at Maximum Real Power (slide #6)
   * Make the distinction clear that for IRRs, they don’t have to be 95-100% of HSL, just that they operate at max output capable at the time of the test, provided that they have >90% of inverters/wind turbines on-line.  
       
     *Recommendation(s):  
      - All in the wording of Protocol/Guide revision language*
2. Leading Reactive Test at Maximum Real Power(slide #7)
   * The recommendation that testing occur during light system loading is somewhat problematic for larger gas units. There is no testing waiver in the standard for units that would not normally run during light load conditions as there is in the Protocols. This means that almost certainly, these units will be running out of the money. If these larger gas units were to be tested NOT during light load conditions, then grid voltage comes into play as a barrier in meeting the 90% of CURL threshold.

*Recommendation(s):  
 - Eliminate the 90% testing acceptance criteria(see last comment under General Testing)  
 - Need to evaluate the opposing factors of operating a large unit at maximum real power output well out of the money during light load conditions, and the grid need to perform leading testing at times when voltage is expected to be high, i.e. those same light load conditions.*

1. Lagging Reactive Test at Minimum Real Power (slide #8)
   * None  
       
     *Recommendation(s): None*
2. Leading Reactive Test at Minimum Real Power (slide #9)
   * There is no need for additional language to allow for this test, as it is currently the normal test process for leading reactive verification.
   * Unless ERCOT is OK with the relaxation of the current requirements, this testing would differ from MOD-025 in:
     1. 90% acceptance threshold
     2. No waiver for Wind, PV, or Nuclear
     3. Unit loading requirements for Wind and Nuclear would remain as is currently
3. General Testing Comments
   * The entire concept of meeting a “CURL” needs evaluation. Grid voltage, and ambient temperature (for air-cooled gas turbines), have a significant impact on a units reactive capability. For example, for a 750 MW gas unit, the difference in reactive capability between 138kV and 145kV is over **300** MVARS. The RARF only allows for a single set of MW/MVAR pairs, and it is not referenced to any specific interconnection voltage.
     1. You *may* create a CURL to match the grid voltage at the time of testing, but this is a lengthy process, and requires that a RARF revision be submitted (up to a 4 month lag before hitting the ERCOT model).
     2. Even if you do create a new CURL, and revise the RARF, the machine capability is only valid for as long as grid voltage remains at the same value as tested.
     3. This situation plays into the 0.95 pf requirement, that that is a discussion for a different time.
   * The NDCRC currently will “Return” a test that passes the 90% criteria, if the test indicates that the 0.95pf requirement is not met. This needs to be de-bundled from the Pass/Fail criteria for the test itself.
   * MOD-025 has provisions for test data collected based on operational observations. There does not seem to be any discussion of making that provision in the Guides/Protocols so far.
   * MOD-025 is not intended to ensure that these units are tested to any particular threshold value; instead, they attempt to uncover potential issues at the facility such as improper GSU tap settings, AVR operation, etc. The 50% threshold has been improperly used in this discussion, as it was designed to merely be the basis for ensuring that operational data submitted in lieu of a staged test truly represents a good data set ”operational data demonstrates at least 90 percent of a previously staged test that demonstrated at least 50 percent of the Reactive capability shown on the associated thermal capability curve”. Testing to either the current ERCOT-defined 90% level or the 50% level proposed in this presentation, is of questionable value.