

## Scope: Integration of Variable Generation Task Force

### Purpose and Deliverables

As part of its inception, the Task Force prepared 1) a concepts document that includes the philosophical and technical considerations for integrating variable resources into the Interconnection, and 2) specific recommendations for practices and requirements, including reliability standards, that cover the planning, operations planning, and real-time operating timeframes.

Based on the work plan generated in this first phase of activity, the Task Force must focus on identified follow-on activities during 2009–2011.

### Approach and Milestones

The Task Force will investigate:

1. Power system planners must account for the impacts of variable generation on power system planning and design and develop the necessary practices and methods to maintain long-term bulk power system reliability (NERC's Planning Committee)

#### 2009

- 1.1. Standard, valid, generic, non-confidential, and public power flow and stability models (variable generation) must be developed are needed enabling planners to maintain bulk power system reliability. *(Report in 2010)*
- 1.2. Interconnection procedures and standards should be enhanced to address voltage and frequency ride-through, reactive and real power control, frequency and inertial response and must be applied in a consistent manner to all generation technologies. *(Report in 2009, follow through on any Standards recommendations)*
- 1.4. Resource adequacy and transmission planning approaches must consider needed system flexibility to accommodate the characteristics of variable resources as part of bulk power system design. *(Report in 2010, incorporate in reference manual 2010)*
- 1.5. Integration of large amounts of plug-in hybrid electric vehicles, storage and demand response programs may provide additional resource flexibility and influence bulk power system reliability and should be considered in planning studies. *(Report in 2010)*
- 1.6. Probabilistic planning techniques and approaches are needed to ensure that system designs maintain bulk power system reliability. *(Report in 2010, incorporate in reference manual 2010)*
- 1.7. Existing bulk system voltage ride-through performance requirements and distribution system anti-islanding voltage drop-out requirements of IEEE Standard 1547 must be reconciled. *(Liaison with IEEE-PES, Standard Development in 2011)*

## 2010

1.3. Variable distributed resources can have a significant impact on system operation and must be considered and included in power system planning studies. (Report in 2011)

2. Operators will require new tools and practices, including enhanced NERC Standards to maintain bulk power system reliability (NERC's Operating Committee)

## 2009

2.1. Forecasting techniques must be incorporated into day-to-day operational planning and real-time operations routines/practices including unit commitment and dispatch. (Report in 2011, follow-through on Standard recommendations)

2.2. Balancing Areas must have sufficient communications for monitoring and sending dispatch instructions to variable resources. (Report in 2011, follow-through on Standard recommendations)

2.3. Impact of securing ancillary services through larger balancing areas or participation in wider-area balancing management on bulk power system reliability must be investigated. (Report in 2011)

## 2010

2.4. Operating practices, procedures and tools will need to be enhanced and modified. (Report in 2011)

3. Planners and operators would benefit from a reference manual which describes the changes required to plan and operate the bulk power and distribution systems to accommodate large amounts of variable generation.

## 2009

3.1. Planners and operators would benefit from a reference manual which describes the changes required to plan and operate the bulk power and distribution systems to accommodate large amounts of variable generation. (First Version in 2009)

The Task Force will coordinate with the Planning Committee's Resources Issues and Transmission Issues Subcommittees, and the Operating Committee's Resources Subcommittee. The TF will provide updates at the Planning and Operating Committees at their 2009 and 2010 meetings.

## Background

The amount of variable renewable generation is expected to grow considerably as policy and regulations on greenhouse gas emissions are being developed and implemented by individual states and provinces throughout the North America. This proposed level of commitment to renewable variable generation offers many benefits such as new energy resources, fuel diversification, and greenhouse gas and particulates reductions.

As this major shift in resource implementation is underway, it is imperative that power system planners and operators understand the potential reliability impacts associated with large scale integration of variable generation. They also need to develop the planning and operational practices, methods and resources needed to reliably integrate variable generation resources into the bulk power system.

## **Membership**

NERC will request the current IVGTF membership which includes industry's subject experts to continue their efforts and add additional members as needed, with final selection agreed to by the officers of the Planning Committee and Operating Committee. Members must be willing to commit their time to participate in the task force discussions and contribute to writing the final report.