**Highlights from the CCET Affiliate Meeting December 6, 2013**

**CCET’s Strengths**

* Broad spectrum of stakeholders in the ERCOT market; depth of experience in the members; established track record for getting outside funding and respect at PUC, ERCOT and nationally, especially at DOE
* Attitudes of Intel/McAfee and NI. They have the opportunity to join collaborative groups around the world. CCET is unique. There is no other entity out there where in one organization members can have contact with all the major stakeholders in the market, and where there is depth of knowledge about the market

**Synchrophasor (SP)**

* SP gives the operators more time and information to prevent grid collapse
* SP are used for model validation (not fully commercial)
* SP are also being used for event identification
* Some development of SP data needs to be done to make it easy for operators to use for event identification
* Higher penetration of wind may be affecting Frequency control
* SP could also be a back-up system for operator monitoring and control
* Project Ideas: Test bed, pulling together diverse parties to get solutions that might not otherwise be done. For any project, need SMEs (TDUs and ERCOT), test bed (TDU), and solution providers – CCET can always knit this group together. SP may help us understand how new technology wind farms, for example, will behave on the grid as compared to existing ones. We should also expect the NERC standard for model validation by generators will be coming. Ancillary Services can be better evaluated and analyzed with SP technology.

**Demand Response (DR)**

* Adding an elastic demand structure may be a benefit. DR could be a key contributor
* Enabling loads to participate in the market is an opportunity
* DR has a lot of promise, but timing is the challenge. Loads participating in SCED is primarily a process challenge. Once hurdles removed, economics will determine if it is successful
* Residential DR is at least 3 years away. There is a technology gap, but also a significant economic incentive gap
* ERCOT’s ORDC may give 2 hour notice, which is an improvement, but day ahead would be the best.
* Project Ideas: CCET can lead in information sharing and building consensus. Another possibility is to develop a vision (consensus) for DR road map in Texas. CCET could build a test bed to test technology that enables DR, in coordination with other groups like PSI. Cooperative effort would be beneficial.

**Big Data and Data Analytics**

* AMS was the first big data challenge. The next step is to apply analytics to all that data
* The process is to define, validate and deliver analytics – test a hypothesis to solve a problem
* Right now the focus is on low hanging fruit so we can provide something quickly
* Situational Awareness and Predictive Analytics are the current focus
* Need outage prediction, restoration prediction, to a detailed level
* Project Ideas: Weather forecasts need to be designed specifically for the challenges utilities face (i.e. predicted lightning strikes) versus rain, temperature drop, etc. of typical forecast. Resource prediction for an incoming storm to a detail level has not been completed. Several attempts have been made. It takes a lot of work to build the model, so maybe multiple participants (like CCET) it might get further along. Fault wave identification has been done, but only at a superficial level. Need a computer based solution. If ERCOT wants/needs it (respond quickly and turn off meters), CCET may be able to help determine how to do that cost effectively. Smart switching needs to be enabled and data needs to be identified that helps make that a practical reality. Advanced analytics are needed. This encompasses automated switching around faults to minimize consumer disruptions, better fault characterizations, and better feedback to crews on which lines are hot and not.

**Micro-grids (MG)**

* Military is heavily investing in micro-grids. Renewables integration is also an interest
* Fort Bliss is grid-tied microgrid and always-on, and El Paso Electric can interact with them
* Smart grid, energy storage and other new technologies are enabling MG’s
* Utility concerns: Control, reliability, security, standards, revenue protection
* Project Ideas: To some extent, micro-grids are coming, utilities need to understand them, understand where they are going and the implications to the ERCOT market. CCEET could possibly help with that. A challenge is the varied definitions of a micro-grid. More research into where are the benefits/downsides to micro-grids might be valuable to CCET members.

**Storage**

* One big driver for storage in Texas is the large amounts of wind, currently and in the future. A Key driver is also natural gas price
* Battery storage prices, if they come down enough as gas prices rise, will change the strategies of ERCOT stakeholders
* Fast acting versus long duration is the challenge. FRRS is driven in large part by higher wind penetration
* Market protocols are required to enable storage options. PV systems will also drive the need for storage
* Project Ideas: There are many projects throughout the country, but what’s needed is storage that serves multiple uses. We should look for areas that are not being covered, but would benefit Texas, from an operational or cost benefit perspective. Perhaps look for new applications of existing installations. Renewable targets exist, so how can we help make them more cost effective (multiple uses for installations).

**DOE, EPRI and EEI Priorities**

* Much in common concerning priorities
* Rising concerns include major outages as from storms (Sandy), Zero carbon initiative, wind, solar, and other intermittent generation, resource adequacy, electric vehicles, rate regulation (decoupling), skilled labor shortage, and big data and data analytics