4 March 2013 **Comments Received on IEC Council Document C/1774/DV – Proposal for a New Technical Committee on Grid Integration of Large-capacity Renewable Energy (RE) Generation

INITIAL COMMENTS BY SAM SCIACCA, SCS CONSULTING
(IEEE REPRESENTATIVE USNC COUNCIL**

1.         We agree to the subject proposed being dealt with by IEC (With reasons)

Yes. The proposal correctly asserts that large-scale renewable energy (RE) integration involves unique and significant aspects which are not within the scope, nor being dealt with in the existing TCs noted (TC8, TC82 and TC88) or elsewhere in IEC.. Further, there is a subset of countries active in renewable energy of which the integration of large scale RE facilities (over 200 MW) will have a major impact on both the commercial and technical abilities to increase penetration of RE into overall grid operations. The US is one of these countries, and work in this area will be immediately beneficial to US-stated objectives of increasing RE as a percentage of overall generation.

2.         We agree to the scope proposed

No…see below.

3.         We suggest the scope be modified as follows: (With suggestions)

A minor change is recommended. We should ask that the scope be modified to specify what is “large-scale” so as to differentiate with more clarity this effort from others. My suggestion would be to add (200MW and greater) after the words “large scale” The proposers may have other values in mind, which is fine. I am more concerned that a number/number range be given rather than what that number/number range may actually be.

4.         We do not agree to the subject proposed being dealt with by IEC (With reasons)

5.         We are willing to undertake the secretariat if new TC is established

Yes. IEEE would be a good candidate to assume the secretariat as there is significant work in renewable integration taking place within IEEE as noted in the proposal.

IEEE has also contacted the DOE’s National Renewable Energy Laboratory (NREL) - the primary renewable energy research facility (wind, solar, etc.) in the US, and they are interested in and would be an excellent candidate to administer the US TAG.

6.         We wish to participate actively in the work (P-Member)

Absolutely.

7.         We wish to be kept informed of the progress of work (O-Member)

8.         We do not wish to be either P- or O- member

**FINAL COMMENTS BY SAM SCIACCA, SCS CONSULTING
(IEEE REPRESENTATIVE USNC COUNCIL**

After reviewing the comments from US TAG of TC 88, I remain supportive of the proposal to create a new TC addressing Large Scale Renewable Grid Integration.  My thoughts on the matter are as follows:

A.       The integration of large-scale renewable energy (notably at transmission voltage levels) involves issues related to planning, forecasting, contingency response.  There has been a growing recognition that the transmission and generation planning and operation of networks will need new algorithms, terminology and protection/control techniques to accommodate a mix of renewables and traditional generation sources.  Further, these terms, algorithms and techniques will need validation for a number of renewable technologies (wind, PV, solar/thermal, hydraulic).  From the TC proposal scope……(emphasis added)

“Terms and definitions, renewable resource evaluation and generation prediction, general

requirements of grid connection, planning and design, grid compliance test and evaluation,

operation and maintenance, system-wide control and protection, analysis and assessment.”

It is both unfair and unrealistic to expect the necessary transmission system concepts to arise from the individual renewable technology TCs with the degree of uniformity required by a transmission grid operator.

B.      I agree with the TC 88 TAG’s assessment that differences in distribution systems around the world present a challenge.  *“……collector networks deal with distribution class equipment and distribution system design practices……,*.  The proposal is specifically addressing large scale integration, which will take place on transmission systems, where international standardization is much more prevalent…..at least where there are interconnected transmission grids.  I do recommend that we suggest a change in Scope to define “Large Scale” (e.g. ≥ 200 MW) which will focus the new TC on transmission class issues and not delve into distribution class matters which can and will arise from the appropriate TCs.

C.      The nature of predicting generation with any degree of statistical confidence from various renewable technologies will be a function of many different elements (climate, terrain, weather forecasts,  annual cycles, diurnal cycles) and will further vary as a function of the renewable technology.  Against this backdrop, the need for accuracy and evaluation in forecasts and projections will be heavily dependent on transmission system specifics, such as load profiles, dynamic thermal line ratings, spinning reserves, and contingency analyses.  These are the things I surmise the proposed TC intends to address.  If language is recommended by the TC88 TAG to reinforce this, I would be happy two work with them to draft such language.

If such work wase indeed projected to take place in TC88, there is still some concern on my part that other TCs may not be ready to do so.  At the SMB Ad Hoc in Frankfurt regarding renewables, there seemed to be a distinct flavor in the presentations by the TCs that system integration was not a foremost priority.

I hope this sheds some light on my position.

**INITIAL COMMENTS BY WILLIAM E HOLLEY, GE POWER AND WATER, TECHNICAL ADVISOR, USNC TAG IEC/TC 88 – WIND TURBINES**

The US TAG for IEC TC88 thanks the General Secretary for the opportunity to comment on the proposed new TC.  In particular, for the questions posed, we would like to offer the following:

1.        We agree to the subject proposed being dealt with by the IEC: We only agree for IEC standardization efforts for some limited subjects in the proposal.  For example, resource assessment is highly specific to the particular renewable technology (e.g. wind, solar PV, etc.) and would be better handled within the existing IEC TCs (e.g. TC 88 for wind and TC 82 for solar PV).  In particular, IEC TC 88 will be discussing a possible new work item on this subject at its next meeting in April, 2013. Trying to take up such a subject at the overall renewables level would likely be counterproductive.

 2.         We agree to the scope proposed:  No, we do not agree.

3.         We suggest the scope be modified as follows: We suggest that the most important subjects in the scope would be better handled within the existing TC structure.  The items amenable to standardization should be proposed as new work items within the appropriate existing TCs.  There would be a much better chance of success than within some new general renewables grid integration TC. Whatever progress that would be made on the likely topics in such a new renewables TC would be broken down by specific technology anyway.

4.         We do not agree to the subject proposed being dealt with by IEC :  Some of the subjects are not amenable to IEC standardization. For example, collector networks deal with distribution class equipment and distribution system design practices, which vary greatly all over the world.  While global standardization might be beneficial, it is a general problem of electrical equipment and network design and not at all specific to renewable energy systems.  Progress in this area would need to apply generally to all such electrical equipment and thus would be outside the scope of any renewables specific TC.  Resource forecasting is another area that is not yet amenable to IEC standardization.  Forecasting of variable generation is currently an active research topic and the technologies are rapidly evolving.  Any forecasting technology will also likely be specific to the technologies involved (e.g. wind, solar PV, etc.). As such forecasting technologies mature, they could, and more appropriately should, be handled within the existing technology specific TCs.

5.         We are willing to undertake the secretariat if new TC is established: The existing IEC TCs already have many US experts in renewable energy technologies that can provide support if a new TC is established.  It is doubtful, however, that the US would be in a position to serve as the secretariat of such a new TC.

6.         We wish to participate actively in the work (P-Member): As stated before, there are many US experts who would be prepared to support new work on those subjects that may soon be ready to begin standardization within the IEC.  The topics listed in the scope for this proposed TC are important to the wind energy industry, in particular, and, if a new TC were formed, the US would certainly want to be involved as a P-Member.  We feel, however, that it would be far better to leverage the expertise and structure already existing in the current IEC TCs.

7.         We wish to be kept informed of the progress of work (O-Member): We would want to be a P-Member if a new TC is formed and would participate accordingly.

8.         We do not wish to be either P- or O- member:  The US renewables industry would be highly unlikely to ignore or even only passively watch progress in standardization on the proposed subjects. They are too important for growth in our energy economy.

The response from the stakeholders polled and the members of the USTAG for IEC TC 88 were unanimous in their recommendation for a no vote on the scope for the new TC as proposed.  Some of the topics may now, or in the near future, be ready for progress in international standardization, but would be better handled within the existing TC structure or perhaps with joint working arrangements among affected existing TCs.  If it is agreed at the executive level in the IEC that an overarching renewables TC should be created for grid integration, then it is highly recommended that a joint committee be created among the affected TCs to iron out appropriate division of scope with the existing TCs and the new TC so as to avoid duplication and potentially conflicting efforts.

The US stakeholders and members of the USTAG for TC 88 that provided comments included: the National Renewable Energy Laboratory, the Electric Power Research Institute, the Utility Variable-Generation Interest Group, Siemens USA, General Electric, Underwriters Laboratories, and DNV-KEMA-GL among several other US organizations and individual consultants.

Thanks for your consideration,

**FINAL COMMENTS BY WILLIAM E HOLLEY, GE POWER AND WATER, TECHNICAL ADVISOR, USNC TAG IEC/TC 88 – WIND TURBINES**

Charlie – After our brief review of the original comment from Sam Sciacca that we received Saturday and also the further explanation received yesterday from Sam Sciacca and copied below, we still do not find a strong reason to change our position that the USNC should vote no on this proposal for a new TC.  While we fully agree with Sam Sciacca that the topics are important for integration of renewables, we do not agree that they are suitable for global standardization in any near time frame. We also do not feel that a new TC is required or even desired. The scope for TC 8 already includes these transmission level aspects from the new TC proposal. Namely,

“To prepare and coordinate, in co-operation with other TC/SCs, the development of international standards and other deliverables with emphasis on overall system aspects of electricity supply systems and acceptable balance between cost and quality for the users of electrical energy. Electricity supply system encompasses transmission and distribution networks and connected user installations (generators and loads) with their network interfaces.”

It goes on to include a substantial list of specific example topics that significantly overlap with the items mentioned in the proposed scope for the new TC.  We would suggest that these topics would more properly belong as a new work item for TC 8 when they are truly sufficiently developed for international standardization.  Toward this end, J. Charles Smith in his response below suggests that work is already underway in the IEA and other research institutions that will develop the technical underpinnings required to deal with such variable generation technologies and grid integration.

We also fully agree that IEC TC 88 is not the right place to deal with transmission level grid integration and planning issues.  However, we remain concerned with an arbitrary definition of transmission level integration that is tied to any specific MW rating.  It is very difficult to determine exactly where to draw the line between transmission and distribution level integration and planning for renewable technologies.  Renewable systems typically come on line in small increments compared to large scale conventional power plants and there are various actual operating strategies, whether they are distributed or more centrally controlled.  Control and protection offer similar standardization challenges for the variable aspect of renewable generation technologies.  Simply because these are challenges does not mean they are now amenable to international standardization.  The first step here is clearly to develop guidelines that might be used by utilities in their planning and operations efforts to include renewable and other variable technologies.  With its focus on standardization, per se, the IEC may not be the best place to coordinate such activity until it reaches a sufficient level of maturity. Therefore we strongly endorse the efforts in the IEA and do not think a new IEC TC is warranted.

I hope this note helps clarify our position and I would welcome further specific discussions around our points of disagreement. – Bill

**COMMENTS BY KENNETH E GETTMAN, NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)**

1.         We agree to the subject proposed being dealt with by IEC (With reasons)

            - There was general agreement that the subject of Grid Integration is worthy of
 focused effort within IEC but it was broadly felt the scope of TC8 covered
 material and thus a new TC was not needed.  It was also noted that some of the
 product/systems committees believe that they would take on the effort
 themselves but do not have the “bandwidth” for additional work.

2.         We agree to the scope proposed

            -  the following considerations need to be added to the scope:  Short-circuit
 current calculation of RE generation; a minimum MW capacity and
 transmission level

3.         We suggest the scope be modified as follows: (With suggestions)

            -  see above

4.         We do not agree to the subject proposed being dealt with by IEC (With reasons)
 – no input

5.         We are willing to undertake the secretariat if new TC is established

            -  there was no indication of any willingness to take on the Secretariat

6.         We wish to participate actively in the work (P-Member)

            - A number of individuals who indicated willingness to participate in the
 activity

7.         We wish to be kept informed of the progress of work (O-Member)

            -  P-membership would be better

8.         We do not wish to be either P- or O- member

            - no