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Good afternoon and thank you for asking me to participate in this panel and to make comments on the ongoing smart grid interoperability standards coordination process being conducted by the Smart Grid Interoperability Panel (SGIP) and NIST. I believe my research activities in interoperability software frameworks and standards for nearly 15 years, and my deep involvement in both IBM's and the utility industry's smart grid activities over the past decade will allow me to provide an informed perspective in this area:

- My technical background and research at IBM and elsewhere have involved a combination of embedded real-time systems and enterprise-scale distributed computing systems, and how to bring those two worlds together – interoperability - so I have extensive practical experience on this topic.
- Since the late 1990's I've been the working party lead and editor of an ISO/IEC Joint Technical Committee 1 standard series on interoperability for premises automation systems, so I'm intimately familiar with the challenges of standards development, coordination and harmonization.
- As a member of the GridWise® Architecture Council (GWAC) since its formation in 2004, and Chairman over the past two years, I was part of the small community who first identified, and then worked to raise the industry's level of awareness about the critical need for interoperability *in all dimensions* if we are to achieve an effective and sustainable transformation of our electricity system.
- I've been working directly with the NIST team starting in January 2008 when they were assigned this role, and I am the Chairman of the SGIP Architecture Committee and have an ex-officio seat on the Governing Board, so I am directly involved in the current process and how it is evolving.

The involvement of a broad community of stake-holders is essential

I was asked by DoE to attend the spring 2009 meeting between FERC, DoE and NIST that was held to determine the best way to accelerate the progress on interoperability standards coordination. At that meeting, I advised that it was critical to have strong industry and other stakeholder participation in the governance of any process that would be defined, to facilitate both participation in the process and acceptance of the results. NIST took that idea, and the observation of how healthcare had used a similar

approach, and eventually defined 22 stakeholder categories and a Governing Board of representatives from those categories.

Such stakeholder participation and governance continues to be an important part of the process in the SGIP, and there is also recognition that there may need to be new stakeholder categories added in the future as the ecosystem of smart grids mature.

I do note one concern in the current by-laws that allows Governing Board seats to be held by individuals whose organization does not belong to the stakeholder category of that of the seat. This can result in stakeholders being represented on the Board by individuals who are not part of their stakeholder community. In my original recommendation I had envisioned a more direct representation.

The need for a transparent and inclusive process

In a process that brings together such a variety of perspectives, objectives, concerns and agendas, there must be as much transparency as possible. Transparency helps to mitigate the tension that might develop between stakeholder communities with differing goals and requirements. Closely related to transparency is the need for inclusiveness (or at least the opportunity for participation) in activities that have an impact on a stakeholder community.

I believe there is a proactive effort to make the general SGIP process accessible to all interested participants, through web technologies and remote meeting access. It's not perfect, but it's workable and has improved as the SGIP community and the SGIP leadership and administrator have become more experienced in conducting such meetings.

I encourage the Governing Board and the various committees and working groups (including the Architecture Committee that I Chair) to proactively strive for as much transparency and inclusiveness as are practical, balanced with the need for timeliness and efficiency in making progress.

This requirement for transparency and inclusion must extend all the way through to the end-result of NIST preparing recommendations to FERC. One idea that has been put forward, and which I support, is to assure that NIST select only standards that have been added to the Catalog of Standards (CoS), thereby assuring they have completed the SGIP life-cycle and they have documented stakeholder support.

The need for a living process that continues to improve

My experience to date has been very positive with respect to the evolution of the SGIP internal processes and their ongoing improvement through feedback from the participants. For example, the Priority Action Plan (PAP) life-cycle has matured and improved greatly, and my observation is that the SGIP leadership and the administrator have operated in with a spirit of continuous improvement in mind. As an example, a change was quickly made to the close-out portion of the life-cycle when I pointed out that the Architecture Committee and the Cybersecurity Working Group both needed to be part of the review process for documents being published by a PAP at its completion, to assure there are no unresolved architectural issues or cybersecurity concerns.

There are also additional process changes and improvements in progress related to the handling of standards that don't require the formation of a PAP to address technical or harmonization issues. This parallel path will still involve similar reviews as described above, and will provide a path for standards to become part of the Catalog of Standards (CoS).

Stay focused on key interoperability interface points

The effort to coordinate the development of interoperability standards should not expand to include all standards related to smart grids at all points in the system. Interoperability is about standardizing key interface points within the smart grid system of systems. At the first major workshop that NIST hosted in late spring of 2009, I was immediately concerned as I visited several of the sessions – it seemed that everything was being put on the table for discussion, far beyond the scope of interoperability interfaces.

I spoke to a number of my GridWise Architecture Council and NIST colleagues to assure there was consensus with my observation, and I then met with George Arnold and Dean Prochaska over lunch to explain the concern and recommend that we quickly develop a Conceptual Model of the smart grid that could be used to structure the subsequent workshops and activities, and get the community focused on what needed to be accomplished. This resulted in the formation of an ad hoc team to create the first version of the Conceptual Model in time for its use at the second workshop.

This concern of staying focused on standards for key interoperability interface points remains. It's easy for an activity of the scale and complexity of the SGIP to drift beyond that core charter, and I believe we all need to be attentive to this issue. If not, we may fall into the situation of over-standardizing portions of the system that should be left more loosely constrained, to encourage innovation and open-market technology competition and evolution. It should always be remembered that interoperability is as much about enabling innovation to continue with minimal impact on the system as it is about getting the system running in the first place.

Closing

I continue to support the activities of NIST and the value of the SGIP. While there are always challenges with any undertaking of this scale, I strongly believe that we are in a better position with the SGIP in place than if we had not established it. The importance of bringing all the stakeholders to the table, and facilitating a process to encourage collaboration can't be over-stated.

In our governance of this process, we need to continuously self-examine ourselves to assure that we stay focused on the correct issues, and strive for an open environment that achieves outcomes that can be supported by all the stakeholder communities affected. We also have to fully consider the implications of any actions resulting from this process, which can go far beyond the technical realm, and proceed with careful consideration of all factors.