**IBRWG Meeting Minutes**

**August 2024**

**Chair: Julia Matevosyan, Vice-Chair: Miguel Cova Acosta**

**IBRWG met on August 9th (Webex, Open Meeting).**

The agenda and the presentation slides are available [here](https://www.ercot.com/calendar/07122024-IBRWG-Meeting-_-Webex)

**IBRWG Main Meeting**

**GFM Requirements Update**

Fred Huang (ERCOT)

* + ERCOT in collaboration with Electranix (consultant) are developing testing framework and functional specifications for advanced grid support from ESR, i.e. grid forming (GFM) capability
  + At the July IBRWG meeting two presentations: one on GFM Specification and Testing Framework, by Electranx; the second presentation was on assessment of impact of GFM batteries on ERCOT grid and GTCs and adoption framework going forward.
  + One of the comments last month was to share the revision request draft with IBRWG before it’s formally submitted. ERCOT is working on it right now and planning to post a week before September IBRWG meeting and we’ll review and discuss at the meeting after which it will be formally submitted.

**SPWG/IBRWG Coordination, Auto-reclosing close to IBR plants**

Mark McChesney (Oncor, SPWG chair)

* + The action item was assigned to SPWG and IBRWG at the March ROS meeting to develop guidance and recommendation for adjusting transmission auto reclosure and sectionalizing schemes that would significantly improve the IBR ride through probability and be reasonable to accomplish.
  + This was discussed at SPWG
  + Mark provided 2 examples (slides are posted) on how auto reclosing is done today. One is when the fault is on the IBR tie line but the second, more interesting one, is when fault is on the line close to IBR.
  + On the last slide showing typical reclose settings and these settings can potentially be adjusted if need to improve reliability and IBR ride through performance.
  + Looking for feedback on if there any particular concerns with such auto reclose schemes or scenarios that pose challenges for IBRs.
  + Julia: Question to Stephen. In the light of NOGRR245 and even existing ride through requirements, do these auto reclosing settings pose any conflict? Is there a value to consider any changes in auto reclosing settings to improve IBR ride-through performance?
  + Stephen: There is value to consider these auto reclosing schemes around IBRs. In asking TSPs about ranges of schemes and settings are being used. If TSPs could look at IEEE 2800 requirements and try not to auto reclose within these parameters, that’s ensures better alignment. And avoid tripping off even IEEE 2800 conformant IBRs. IBRs should monitor these parameters and make sure they coordinate with TSPs to understand reclose schemes in their vicinity.
  + Mark: We do 2 attempts at 138 kV, 345 kV only one attempt.
  + John Schmall asking what does “open interval” on the slides with examples mean if that’s the time before the reclose happens? Mark: Yes.
  + Julia: I am trying to establish what the ask here is. So, we are trying to ensure that auto-reclose schemes do not trip off IBRs? And for that we would like to coordinate between the two. But if it recloses only twice, doesn’t it affect how many times IBRs are expected to ride through for consecutive faults. Is in then also just limited to 2 time?
  + Stephen: In IEEE 2800 if you look at the table for consecutive ride through. Basically, coordination needs to happen and if IBR has additional capability with regard to consecutive ride through that you can employ a particular auto reclose scheme but if it’s limited and TSP can accommodate a reclose scheme that works within those limits then that should be explored because it prevents normal operation from unnecessary trips.
  + Mark: So, the action on SPWG is to review IEEE 2800 and to make sure that auto reclose schemes do not create conflict with multiple excursions requirements. So no need for any kind of language drafting to address that since IEEE 2800 already exist?
  + Julia: I wonder if we still need to capture the need for this coordination between IBRs and TSPs somehow, to make people aware that it needs to happen.
  + Stephen: I think it needs more discussion and may need a rule change in the Operating Guide potentially after these discussions. But we need to remember that there is a difference between different IBR types. For wind turbines, there may be mechanical issues with auto reclose schemes and the question then needs to be – do I need to have a reclose scheme next to a WGR? So, there could be different considerations.
  + Stephen: If TSPs could capture the range of IBR reclose schemes that can get deployed, this way we understand the system as it is today then we need the OEMs to look at different technologies and tell us if they can handle this. If we can check if the way auto reclosing is done today will not result in IBR trips, then we are in a good place. Going through NOGRR245 process there was a lot of uncertainty between wind OEMs around multiple excursions, because they don’t actively monitor for it.
  + Julia: Will it be possible to summarize this range of TSP auto reclose schemes form SPWG?
  + Mark: Yes, can work on that, summarize and publish that information.
  + Julia and Mark will coordinate on timing of that.

**ERCOT RFI to Support Single Model ESR**

Joel Koepke (ERCOT)

* + Made this presentation at RAWG
  + Already issued an RFI on August 6th to the REs or commissioned or near commissioned ESR, i.e. resources that are currently modeled with a combo model (load + gen) and for which ERCOT hasn’t had a chance to ask for additional information needed for a single model representation. New resources will provide this same data via standard RIOO used interface.
  + ERCOT issued this RFI to collect information to support RIOO’s transition to single model representation of ESRs. This is to avoid validation issues when you go back to RIOO and submit a different change.
  + ERCOT is moving from a combo model representation of ESR to a single model representation as a part of RTC+B initiative (Real time optimization + battery). The systems that will be affected by this transition are registration, operations model and downstream systems, i.e. EMS/MMS – all these systems currently have combo model representation but by Q4, 2025 will move to single model representation in all of ERCOT systems. This project is to move to a single model representation in RIOO ahead of time. The project should conclude in September 2024.
  + Step 1 is that all new applications will use a single model registration going forward – implementation date for this 7/25/2024
  + Step 2 is that ERCOT will convert all commissioned ESRs from combo model to single model programmatically – target date 9/26/2024. Prior to this conversion ERCOT needs additional information. Largely driven by RRGRR23
  + Slide 6 showed what the process looks like now and slide 9 how it’s going to look for the single model registration only. Until RTC+B implementation ERCOT will be splitting a single model to combo model for all other downstream systems operations model, EMS and MMS. But at the same time will also use a single ESR model and it’s key information to support RTC+B testing.
  + In parallel will be checking ESR telemetry prior to RTC+B Go-Live. To support this QSE will need the ESR name and that was sent out to QSEs with this RFI
  + The process of the DocuSign in this RFI, Joel went through at RAWG meeting and will go again through it at RAWG meeting on August 21
  + The excel file ESR RFI Additional Information (posted on this meeting page) shows what additional information is requested withing this RFI.
  + Market notice was sent out that contains the details of this. <https://www.ercot.com/services/comm/mkt_notices/M-A071024-02>
  + Craig Wolf: If in the process of the application, is it better to continue and submit as combo model or restart the application and submit as a single model.
  + Joel: If you are in the application process but haven’t yet submitted, there is a question if ERCOT will still automatically convert that for you. If it is submitted, we will.
  + Key takeaway: this is about getting prepared to the RTC Go-Live this is application changes for RIOO and not yet other downstream systems.

**NERC Standards Update: PRC-029, PRC-028, PRC-30**

Julia Matevosyan (ESIG)

* + Julia presented an update of Milestone 2 of NERC’s Work Plan in response to FERC Order 901, three standards are currently in their **final** ballot phase:
    - [PRC-028](https://www.nerc.com/pa/Stand/Pages/Project-2021-04-Modifications-to-PRC-002-2.aspx) Disturbance Monitoring and Reporting Requirements for Inverter-Based Resources, Draft 4
    - [PRC-029](https://www.nerc.com/pa/Stand/Pages/Project_2020-02_Transmission-connected_Resources.aspx) Frequency and Voltage Ride-through Requirements for Inverter-based Resources, Draft 3
    - [PRC-030](https://www.nerc.com/pa/Stand/Pages/Project-2023-02-Performance-of-IBRs.aspx) Unexpected Inverter-Based Resource Event Mitigation. Draft 3
    - The ballots and non-binding poll is open **through 8 p.m. Eastern, Monday, August 12, 2024**.
  + This will be the last opportunity for NERC to ballot these projects through traditional mechanisms.
  + NERC Board may take requisite action during the August 2024 Board of Trustees meeting to ensure directives are met, i.e.. the requirements are completed and filed with FERC **by November 4, 2024**
  + Julia pointed out low approval rates in the past ballots for these standard drafts and the fact that there are some discrepancies with IEEE 2800-2022, including frequency ride through requirements. The latter is specifically concerning as there is no exemption process for frequency ride-through prescribed per FERC Order 901.
  + Andrew Nigro: A question about tying of PRC-028 and PRC-029, my understanding is that existing facilities are not required to install IBR-specific monitoring equipment, and substation DDRs are sufficient.
  + Julia: What I said is in terms of implementation plan of PRC-029. That the conformity with performance/operation portion of PRC-029 requirements can only be verified once appropriate measuring equipment, as required by PRC-028, has been installed, as per PRC-028 implementation plan, which is much more nuanced (compared to PRC-029 Implementation Plan).
  + Andew Nigro: Have the OEMs have actively been participating in the development of PRC-029 and do they have any concerns about frequency ride-through applying to legacy equipment
  + Shawn Wang (PRC-029 chair): Yes, we have multiple OEMs on our drafting team, ISOs, pretty much cover every sector.
  + Julia: Questions to Shawn. When looking at PRC-029 Rationale, it does call out Type 3 wind turbines as potentially having difficulty to meet more stringent frequency ride through requirements (compared to IEEE 2800), but offers no exemption. Why is that?
  + Shawn Wang: If industry has concern with that, they should voice it in their comments
  + Mark Henry: Three comments. The first one has to do with when PRC-029 becomes effective in ERCOT. It’s a common misconception but for NERC Standards, ERCOT is FERC jurisdictional. So the effective date that applies is 12 month after FERC approval (as per PRC-029 implementation plan), which gives us more time to comply. Secondly, I hope you find the standards now palatable and vote! Thirdly, there is also another NERC Project developing IBR definition that is also under ballot right now, and other standards rely on the use of this definition as well. Word of appreciation to the Standard Drafting Teams! – [Julia corrected her slides to reflect and added the project on [IBR definition](https://www.nerc.com/pa/Stand/Pages/Project-2020_06-Verifications-of-Models-and-Data-for-Generators.aspx) to her slides and reposted]
  + David Marshall: Question for Shawn. We are hearing form our wind OEMs that there is a significant challenge to meet wider than IEEE 2800 frequency ride through requirements retroactively.
  + Shawn Wang: In FERC Order 901 there is no exemption for frequency ride through, only voltage ride through. Per latest discussions with NERC staff, they’ll collect some information to see how much effort need to be done to develop exemptions for frequency ride through. Regarding wider range, if stakeholders see issues with that please comment. Possibly a similar exemption process can then be developed for the frequency ride through (wider range).
  + David Marshall: We solicited some comments from OEMs.
  + Julia: The question about wider frequency range came up at 7/30 DOE i2x FIRST meeting where OEMs were sharing on their readiness for IEEE 2800 Clause 7 (ride through requirements). They mentioned wider frequency range (as per PRC-029) may also pose an issue with V/Hz capability, in case there is a simultaneous voltage event happening. Specifically, this can be problematic for sub-station transformers. IEEE 2800 does not specify V/Hz capability requirement but rather states that ride through requirements should be met within equipment’s V/Hz capability. PRC-029 specifies what that V/Hz capability should be. How were these specifications developed?
  + Shawn Wang: The way it is specified is as an exemption for PRC-029 requirement R1. It says if certain V/Hz for transformer is exceeded for certain time duration then the plant may trip. This number might not have come from IEEE 2800 but was discussed with the industry. If this seems unreasonable, please provide comment.

**NOGRR245 Update**

Stephen Solis (ERCOT)

* + The meeting page from 8/8 on NOGRR245 – Review of Current Status <https://www.ercot.com/calendar/08082024-NOGRR245-_-Review-of> the presentation posted there contains information on current status and next steps for NOGRR245 (at the bottom of the meeting page)
  + The key takeaways from that presentation are:
    - Additional work has been done between ERCOT and Joint Commenters.
    - The comments will be posted on Monday 8/12 and then it will go to Reliability and Markets Committee and then to the BOD.
  + Andrew Nigro had a question related to modeling and was asked to wait until DWG Procedure Manual item.

**RoCoF and Phase Jump Measurement Discussion:**

Stephen Solis (ERCOT)

* + Additional discussion on RoCoF and phase-jump discussion and measurement window associated with it.
  + This is continuation from previous IBRWG discussions that we had in conjunction with NOGRR245
  + This is to get clarity on how to get conformity assessment with IEEE 2800 will be done and post event analysis. This is not a policy discussion at this point but rather to get start this conversation and get some feedback. And develop rule changes that are clear and everyone is comfortable with.
  + Slide 3 show RoCoF requirements from IEEE 2800. IBR plant has to ride through the events where RoCoF is less than or equal 5 Hz/s. **RoCof shall be average rate of change of frequency over averaging window of at least 0.1 s.** The standard doesn’t define the higher end. Is 0.1 s sufficient for ERCOT?
  + The standard doesn’t require for the RoCoF protection to be enabled but if it is enabled, it shall not be set so as to meet RoCoF ride-through requirement. RoCoF (as measured by protection) should be based on a change of frequency averaged over sufficient time to reject spurious frequency measurements caused by distortion and transients.
  + Latest guidance from IEEE P2800.2 standard drafting team on slide 4. Note this is just the draft.
  + The drafting team recommends that TSP and RE agree on the method to measure frequency and calculate RoCoF. The drafting team reiterated that this and phase jump requirements are applied during switching events (line switching, generator or load trips and are not fault related. For the latter voltage ride through requirements apply. RoCoF and phase jump cannot be reliably measured during fault and fault and fault clearance. Even if frequency, RoCoF and phase jump protection exists it’s often disabled during severe voltage dips and fault clearance.
  + Additional considerations with regard to RoCoF, df/dt protection is not required. 5 Hz/s is if you enable this protection, but ideally if you don’t need to enable it, then please don’t enable it.
  + If such protections do exist, ensure proper amount of filtering to prevent erroneous measurements and/or have sufficient time delays (not respond on instantaneous measurements). If these protections are enabled these should be set based on equipment capability, not on the requirement setting.
  + If we use the Odessa 2022 event as an example and look at RoCoF calculated over 0.1 seconds window you can see that 5 Hz/s RoCoF requirement may not be sufficient. It is important to look past these spikes and get a true frequency change. Assuming clearing time of 0.2-0.33 seconds and giving a small amount of time to recover, may be something around 0.5 s RoCoF average window time makes more sense.
  + It is also important to verify the ability of IBRs to ride through large load rejection, i.e. loss of large loads or when UFLS or UVLS results in large amounts of load tripping and consequent RoCoF event that may trigger IBRs.
  + Stephen: Julia what are your thoughts about this 0.5 s window.
  + Julia: 0.5 s window is a common practice in some other regions like National Grid in GB, in AEMO and, I think, also ENTSO-E.
  + Miguel (Vestas): I am not sure if we are talking about same 0.5s because in ENTSO-E it’s a sliding moving average window to calculate RoCoF. It seems that Stephen refers to 0.5 second to consider the phenomenon, not to process the signal.
  + Stephen: If we use 0.1s in the Odessa events we’ll get very high RoCoF, higher than 5 Hz/s, if we used 0.5 s we get something like 4 Hz/s
  + Stephen: it would be better if OEMs provided us with information what kind of averaging window they use when they measure RoCoF or design ride through capability for certain RoCoF.
  + Li Yu (HECO) comments in the chat: How IBR measure frequency also impact how RoCoF is calculated
  + Julia: there are two sides of this issue 1) is how RoCoF is calculated by protective devices if there is RoCoF protection, but there is also another aspect of post commissioning monitoring (discussed in 2800.2 SG5). That is if a RoCoF event happened such that an IBR plant (without specific RoCoF protection) tripped (e.g. loss of synch), how does the system operator and IBR plant owner reconcile what RoCoF happened and if the plant was allowed to trip or not?
  + Stephen: It seems like drafting team means that the method needs to be flexible based on the region but also agreed between involved parties.
  + We can have a productive discussion first, or ERCOT can draft some language as a starting point and people can then discuss.
  + Julia: No other comments, so may be drafting language from ERCOT side
  + Stephen: It would be good for OEMs to come and talk about how they calculate frequency and RoCoF. May be Schweizer again or GE and talk about how protection does it.
  + Julia: Maybe it makes sense to invite OEMs to have this discussion in September.
  + Stephen moving on to phase jump. Slide 8 discusses IEEE 2800 requirements for phase angle changes **within sub-cycle-to-cycle time frame** that IBR plant is required to ride through. More info on the slide.
  + The intent of this requirement as well as RoCoF is **for non-fault events only**!
  + Seems like from the time window perspective it’s different from RoCoF in IEEE 2800 and it’s bound from sub-cycle-to-cycle time frame.
  + Julia: Even here there should be a way to reconcile how
  + Slide 11 show phase jump at one of the IBR plants during the Odessa 2022 event. The example shows a 10 cycle (0.167 s) interval measurement. It also shows that extending the measurement to a larger interval would not have resulted in significantly different phase jump value (unlike was the case with RoCoF). Key Question: If faults and recovery normally occur withing 0.2-0.33 seconds is phase jump protection relevant after 0.5 seconds.
  + Julia: The idea behind the requirement was to ensure that capability is there in the equipment from synchronization perspective, not to specifically measure and verify it during performance.
  + Stephen: So now if they don’t have active protection how to evaluate performance, this still remains a question and we need to select a measurement window for that.
  + Julia: We will continue this discussion in September hopefully with some

**DWG and IBRWG Collaboration**

**DWG Procedure Manual – ERCOT’s Response to Stakeholder Comments**

Sun Wook Kang (ERCOT)

* + Detailed account of all comments and ERCOT’s responses on the slides
  + Next Steps on slide 13. Please review updated DWG Procedure Manual and submit your comments by August 16. Approval will be sought at September ROS. Effective date will be upon NOGRR245 approval
  + Andrew Nigro: Still have a question, the date of implementation in NOGRR245 is April 1, 2025. The part of this is the models. How to align timelines for MQT and NOGRR245 requirements for legacy units.
  + Sun Wook: This is based on your schedules and where your units are in the interconnection
  + Andrew Nigro: The question is more about existing models and demonstrating their capability.
  + Sun Wook: When to submit MQT is clearly defined in the Planning Guide Section 5 and 6, even for existing units. MQT guide also provide additional guidance on how and when to updated it for existing units. Then also MOD26 and MOD27 have to be submitted to ERCOT and TSPs and also MQT needs to be submitted as well. If you haven’t made any change you don’t need to submit anything
  + Andrew Nigro:
  + Katie Rich: Thanks for addressing our questions. I think there is still one outstanding. I know you tried to address the fact that that LVRT and HVRT legacy curves are quite different, why do you need to do preferred test. It comes at a decent cost.
  + Sun Wook: Jonathan in his presentation will show how these curves are different. And why it is useful to have voltage dip test. In addition to legacy curve that is voltage recovery rump and is used to see if there is appropriate reactive power injection.
  + Katie: This question was also not answered on the slides, if ERCOT is asking for preferred and legacy at the time of QSA submission or MQT submission?
  + Sun Wook: Depends on where your project is in the process? If, by the time NOGRR 245 becomes affective, you haven’t submitted anything yet, then at MQT but if you are already past QSA then then next time you submit MQT is as per PGRR109, before commissioning. Some folks are already testing those.
  + Carol: Say DWG Procedure Manual gets approved and it’s not effective until NOGRR245 is approved, in this period you have new generation coming in as the TSPs should be encourage them to start doing new tests already (I know they are not required).
  + Sun Wook: I believe it’s good practice, though not yet required.
  + Kristin (Southern Power): I don’t see any language in the Procedure Manual itself saying that tests on preferred curves are only required once NOGRR245 becomes effective so is it.
  + Sun Wook: The intention is that it’s effective once NOGRR245 is effective, we’ll check how we can make this language clear there. Gray box.
  + Kristin; Appreciate ERCOT’s work and responses. Our primary concerns are about ongoing modeling work and how it will be treated upon this change. E.g. needing to update the model not because there is a change on the plant but rather model version update and such, there should be understanding that some grace period is needed and, in such cases, redoing MQT may be not required? Or this can be addressed on case by case basis.
  + Kristin: One item is a little bit out of scope of the Procedure Manual – in the situations where OEM is no longer in business, it’s hard for GOs to obtain model updates through third party consultants. Others may be in the same situation. Want to bring this to ERCOT’s awareness so that in the future there are solutions that we can jointly work on.

**Updates to DWG Procedure Manual Based on IBRWG Stakeholder Comments**

Jonathan Rose (ERCOT)

* + Julia: Before your start and coming back to Katie’s comment I remember in the last IBRWG meeting you mentioned that these new tests are already built in DMVIEW, PMVIEW tools?
  + Jonathan: I believe it does, but will check.
  + Julia: But anyway it’s the goal, correct
  + Jonathan: The use of the tool is optional but yes.
  + Jonathan going again over some details of the DWG manual changes, these have been shown before
  + Slide 2 shows legacy and preferred LVRT curves. The preferred curves on this slide doesn’t have the latest updates but the next slides do. The question is why is ERCOT asking people to run legacy curve and not just preferred curve? The answer is that it provides valuable information to ERCOT and it’s something ERCOT is very familiar with and will be using as baseline comparison for all models new and old. The legacy curve is within the new curve. The ramp of the legacy curve is what provides valuable information that we will not see with step-wise curves, allows us to see control response.
  + There is a counter question as to why are we asking legacy units to not only run the legacy curves but also preferred curves as per NOGRR245, the reason is that NOGRR245 has some more specific requirements also requiring legacy units for active current injection and it becomes difficult or impossible to determine what is happening with active power injection when running the ramp curve.
  + The new preferred curve is more stringent requirement and when ran on legacy units they may trip and it is allowed since these are required to ride through legacy curves
  + Slide 3 explains a slight modification since July 12 meeting. To avoid confusion no longer calling the preferred curve the preferred curve in the tests but rather “voltage dip testing”. Starting the test with the dip well withing the legacy curve. The reason this dip got added to make this curve more applicable to legacy units. Because all existing unit may trip when you run earlier proposed dips because those are based on the preferred ride-through dip. This helps to evaluate NOGRR245 requirement for which even legacy plants need to inject active current as well as reactive current to mitigate against recent events that happened in Odessa, where a lot of plants reduced their active current to 0 (even in places that experience relatively minor voltage), and took a long time to recover, leading to a frequency event. This behavior is posing risk to system operation.
  + Slide 4 summarizes recent updates that Sun Wook also showed in his presentation, with the proposed DWG manual language on the right hand side.
  + The last slide summarizes other minor changes made since the last meeting, highlighted in yellow. Minor clarification, leading and lagging MQT tests only apply to voltage ride through tests and therefore do not apply to synchronous gen.
  + The last change is based on helpful feedback from IBRWG. NOGRR245 is asking to maximize plant’s capability. ERCOT removed reference to maximized capability from the tests in MQT since it doesn’t align with those tests. Instead, just asking to tabulate Resource’s maximum capability in a document.
  + Carol: If the plant has exemptions and doing this test is it like you checking parts of the curves and then recognizing that they are allowed to fail the rest?
  + Jonathan: To address this, we are going to update dynamic model template to have SGIA date there and it will have a section where you can document your exemptions.
  + Stephn: If an exemption is granted, any exemption will be just for the portion that doesn’t meet the requirement. So, you can be substantially comply with the portion based on maximizing your capabilities, but there’ll be the portion that you could not meet, and for that you are ok to fail the test
  + Miguel: Having voltage profiles consecutively as you proposed in the procedure manual might carry over two thing thermal stress and mechanical stress so if those are properly included in the model, the model may have issues with this test.
  + Jonathan: This is not the intention of the test to text multiple fault. Doesn’t specify time duration between the dips, so you can make that long to allow full recovery if needed. You can also split up the curve in several simulations. We tested several models with 10 second spacing which is default in our tool
  + Miguel: it may not be an issue in a SMIB with the strong grid but in reality, in week grid conditions it may be an issue with 5 consecutive deeps (might significantly affect thermal stress). There should be an option to extend the duration between the deeps. Or make it in different simulations.
  + Jonathan: There is a language in the Procedure Manual to allow for this flexibility. This test was not intended for consecutive faults, but to test each voltage dip.
  + Miguel: I wonder if you can make time between the faults as an adjustable parameter in DMVIEW and PMVIEW? Wind turbines with the chopper and their models will have issues, especially if this test is also evaluating reactive power injection requirements.
  + Jonathan: If the time constant is in the order of minutes, it may make sense to run these tests separately. Also try running it and see what happens.
  + Jonathan: We added these changes based on feedback, if you are doing these newest tests and seeing issues please provide feedback.

**Other Industry Update**

Julia Matevosyan (ESIG)

* + Reminder about ongoing DOE-funded i2X FIRST forum focusing on changing landscape of IBR connection and performance standards, focusing on IEEE 2800-2022 adoption as well as changing NERC Standards following up on FERC Order 901 directives.
  + The meetings are monthly, the schedule is on slide 4.
  + **Sign up** for all future i2X FIRST Meetings here: [https://www.zoomgov.com/meeting/register/vJItceuorTsiErIC-HInpPbWuTUtrYQAuoM#/registration](https://www.zoomgov.com/meeting/register/vJItceuorTsiErIC-HInpPbWuTUtrYQAuoM)
  + **Follow** DOE i2X FIRST website: <https://www.energy.gov/eere/i2x/i2x-forum-implementation-reliability-standards-transmission-first> for meeting materials & recordings and for future meeting details & agendas
  + On October 24th we’ll hold one-day i2x FIRST meeting in person/hybrid after the [ESIG Fall Technical Workshop](https://www.esig.energy/event/2024-fall-technical-workshop/) in Providence, RI. The meeting will be focusing on IBR plant conformity assessment with applicable interconnection requirements during IBR plant interconnection and commissioning stages, learning from IEEE 2800.2 draft.
  + There was a very relevant panel during IEEE PES GM 2024 on Status of IBR Standards Development and Integration Efforts. ESIG is writing a summary of the panel and will post on their webpage.
  + Related to Grid Forming, on July 30th, SMA presented at the ESIG webinar: Emerging US Market Requirements for GFM BESS, and a Practical Exercise for a Potential Plant Design Approach.
    - [Download Presentation](https://www.esig.energy/download/emerging-us-market-requirements-for-grid-forming-bess-and-a-practical-exercise-for-a-potential-plant-design-approach-frank-berring-meubrink/?wpdmdl=11875&refresh=66a97d9e81f6a1722383774)
    - [View Webinar Recording](https://youtu.be/8C5iUwdSUY4)
    - [Download Q&A Responses](https://www.esig.energy/wp-content/uploads/2024/08/QA-July.pdf)