

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-2, SUB 1159
DOCKET NO. E-7, SUB 1156

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

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In the Matter of)	
Joint Petition of Duke Energy Carolinas, LLC,)	REPORT OF THE INDEPENDENT
and Duke Energy Progress, LLC, for Approval)	ADMINISTRATOR – TRANCHE II
of Competitive Procurement of Renewable)	STAKEHOLDER PROCESS
Energy Program		

I. EXECUTIVE SUMMARY

Accion Group, LLC, the Competitive Procurement Renewable Energy (“CPRE”) Independent Administrator (“IA”) conducted two meetings with Stakeholders. The meetings were held to continue discussions on lessons learned in the Tranche I CPRE RFP Solicitation and soliciting feedback on the RFP documents that relate to the Tranche II CPRE RFP Solicitation. The Stakeholders addressed issues identified by the NCUC and the Public Staff of the NCUC (“Public Staff”) and topics identified as important for consideration as part of determining the scope and terms of Tranche II. Participants included representatives of the Public Staff, Duke Energy, Market Participants (“MPs”) and the IA. Collectively, these are referred to as “Stakeholders”.

A goal of the meetings was to provide the Commission with a succinct statement of the issues the Stakeholders believe should be addressed by the NCUC before Tranche II is released, and to identify where the Stakeholders agree on an appropriate design for Tranche II. Further, a goal was to identify issues the Stakeholders would like the Commission to address, but for which the Stakeholders have not reached consensus. It is hoped that a uniform statement of issues will assist the Commission by identifying matters of concern to participants in the CPRE program.

The IA believes the discussions were productive and the Stakeholders participated in good faith to achieve the common goal of releasing Tranche II in a timely manner with modifications to the Tranche I design that would enhance the ability of MPs to participate by submitting attractive proposals at or below Avoided Cost. Below the IA identifies the issues discussed and distinguishes between where the IA believes the Stakeholders reached consensus of how issues should be managed and where there remains a difference of opinion on how to resolve certain issues before Tranche II is released.



The IA respectfully requests the Commission give full weight to the views of the Stakeholders and the IA when fashioning the requirements and scope for CPRE Tranche II.

II. SUMMARY OF ISSUES

A. ISSUES WHERE CONSENSUS EXISTS ¹

In order to have Tranche II proceed in the timeframe called for in North Carolina G.S. 62-110.8, the Stakeholders identified issues that, collectively, they believed needed to be addressed before Tranche II is released. The IA believes consensus was reached on some issues, and not for others. It should be noted that as used in this report, the IA means that on individual issues Stakeholders might have differing viewpoints, but in the interest of moving forward with Tranche II Stakeholders were agreeable to accepting the approach the IA characterizes as consensus. In Section III there is more detailed explanation of the positions of the Stakeholders.

1. Duke should continue to be able to recover the grid upgrade costs assigned to winning proposals in rates. ²

2. MPs should continue to include interconnection costs (i.e., at the point of interconnection) in their proposals, but should not be required to include grid upgrade costs in proposals.

3. If grid upgrade costs are borne directly by the MP, MPs should be permitted to refresh their proposals after receiving grid upgrade costs from Duke.

4. Duke should provide updated grid location guidance including maps and details on constrained lines and substations after the conclusion of Tranche I. Tranche II should not restrict proposals to areas outside of those identified as having constraints.

5. The inclusion of energy storage in the CPRE program should continue as in Tranche I, but the statutory requirements of the CPRE program present practical limitations on the approach to expanding storage in CPRE.

6. Tranche II should proceed so proposals are submitted in 2019.

7. It is preferable to have more pricing periods in Tranche II than in Tranche I (Tranche I had three).

¹ Except where specifically noted, the Public Staff took no position on the issues identified herein.

² The Stakeholders recognized that regulatory approval in both Carolinas would be necessary.

8. The Tranche II avoided cost and the number of pricing periods should be based on those approved by the NCUC in the avoided cost docket (Docket No. E-100, Sub 158), (“Avoided Cost Order”), if the final decisions are rendered on a schedule that permits Tranche II bidding in 2019.

9. If the Avoided Cost Order is not available before October 2019, the Avoided Cost methodology approved in Docket No. E-100 Sub 148 should be used in Tranche II. At the same time, the Stakeholders agreed that having more pricing periods than in Tranche I would be appropriate.

10. There should continue to be a Required Commercial Operation Date (“RCOD”) established for projects proposed in CPRE.

11. If MPs are compensated for expected output that is not delivered as a result of curtailment (other than system reliability curtailment), then Duke should recover the cost through rates in all jurisdictions.³

12. If the IA again has a “reserve list” in addition to establishing the Competitive Tier during Step 1, then the IA should provide more than a seven (7) day notice of when a proposal would have to provide Proposal Security.

13. The Tranche II Renewable Purchase Power Agreement (“RPPA”) should clarify the process for determining when the MPs are to provide the requisite Performance Security.

14. Late Stage Projects should not receive the same treatment as in Tranche I.

15. The Stakeholders agreed the CPRE program should proceed with the release of Tranche II while transmission queue reform continues at the same time.

16. More transparency regarding the evaluation methodology and ranking of proposals should be shared by the IA prior to the release of Tranche II.

B. ISSUES WHERE CONSENSUS DOES NOT EXIST

The Stakeholders agreed that the following matters should be addressed by the NCUC before Tranche II is released but did not reach consensus on a recommended course of action.

1. Whether the contracts used by the DEC/DEP Proposal Team for projects submitted for Asset Acquisition should be non-negotiable and reviewed by the IA and approved by the NCUC prior to bidding.

³ The Stakeholders recognized that regulatory approval in both of the Carolinas would be necessary.

2. Whether MPs should be compensated for all or part of any delivery that is curtailed, other than for system reliability curtailment.

3. Transmission queue treatment: Setting the Tranche II and Tranche III queue position for CPRE proposals at an early date (i.e. prior to the RFP issuance or proposal due dates for these Tranches) would be appropriate for future Tranches.

4. Whether there should be an extension of the RCOD (and default date) due to unforeseeable project delays or Duke grid upgrade delays.

5. Whether the IA should publish post-Step 1 ranking.

6. The “cluster study” process to be used in Tranche II should be identified and should be released before the start of Tranche II.

7. The amount of and timing for providing the Pre-COD Performance Assurance under the RPPA should be revised.

III. DISCUSSION OF ISSUES

A. ISSUES WHERE CONSENSUS EXISTS

The IA provides the following discussions of individual issues in the interest of assisting the NCUC in appreciating the reasoning behind each issue for which there is consensus among the Stakeholders.

1. Duke should continue to be able to recover the grid upgrade costs assigned to winning proposals in base rates.

The NCUC requested that Stakeholders address these two related questions:

- a. Whether to change the CPRE program plan to remove the ability of Duke to recover grid upgrade costs in base rates.
- b. Whether to change the CPRE program plan to require the initial proposal to contain all of the Interconnection Customer’s costs.

The Stakeholders agreed that it would be impractical for the MPs to include the cost of grid upgrades in proposal pricing because those costs would generally not be known at the time proposals are submitted. Further, attempting to adjust the proposal pricing after the fact would introduce unnecessary complexity into the process and could invite “gaming” by MPs who chose to include artificially low pricing in initial proposals.

The Stakeholders agreed that Duke would be unable to provide a system upgrade cost for any project until it is known which projects are proposed in Tranche II. Also, the Stakeholders agreed that Duke would be unable to provide a firm estimate for grid upgrade costs unless Duke included a significant amount for unknown expenses. Similarly, the Stakeholders agreed that it would be highly unlikely any MP would accept full responsibility for grid upgrade costs without also including an amount for unknown contingencies. Accordingly, the Stakeholders agreed that the proposals presented would, by necessity, have overstated costs included. The result would be reduced participation by MPs and less cost-effective proposals for Duke customers.

2. MPs should continue to include interconnection costs (i.e., at the point of interconnection), but should not be required to include grid upgrade costs in proposals.

There was agreement that MPs should be responsible for the actual cost of interconnecting to the Duke system, and that those costs should be included in initial proposal pricing.

3. MPs should be permitted to refresh proposals, if grid upgrade costs are borne directly by the MP. However, Stakeholders did not reach consensus on whether there exists a practical way to effectuate a refresh process.

The NCUC requested interested parties address the following issue:

Whether to revise the CPRE process to allow competitive MPs to refresh their proposals based upon the assessment of grid upgrades identified in Step Two of the CPRE RFP proposal evaluation process.

As noted above, the Stakeholders strongly believe that grid upgrade costs assigned to winning proposals should be recovered from Duke customers through base rates. The process used in Tranche I of imputing the cost of grid upgrade costs to projects during the Step 2 iterative process was accepted as an appropriate way to assess the full cost of a project to the Duke system. However, if MPs are required to bear the cost of assigned grid upgrade costs, the Stakeholders agreed that a system permitting proposal price refresh would be appropriate.

The Stakeholders recognized that there are a number of ways refreshing could be employed, including:

- a. Permitting a refresh of proposal pricing during Step 2 when grid upgrade costs are identified;
- b. Permitting refreshing of all proposals' pricing – regardless of whether they are in the competitive tier and whether the associated grid upgrade costs are known – during Step 2;

- c. Permitting MPs to refresh proposal pricing for changes in market conditions and equipment supply costs; and,
- d. Permitting sequential refreshing as grid upgrade costs are determined and the iterative process of Step 2 re-ranks proposals.

While some Stakeholders advocated each of these approaches, each has challenges. If there is to be an opportunity for refreshing proposal pricing, the IA believes the most appropriate approach would be a one-time refresh only for proposals for which the associated grid upgrade cost is calculated. At the same time, the IA notes that this would be within the Step 2 iterative process, as the assigned costs change as projects are eliminated and others added as part of the “cluster study” process. To avoid the refresh process being an endless loop, the IA believes a one-time refresh would be necessary, and that it should be available at the time the initial grid upgrade costs are assigned to a project.

4. Duke should provide updated grid location guidance including maps and details on constrained lines and substations after the conclusion of Tranche I. Tranche II should not restrict proposals to areas outside of those identified as having constraints.

The NCUC directed interested parties:

To explore options for Duke to more specifically direct generators to locations on the system that will not involve major network upgrades.

The Stakeholders agreed that once Tranche I is completed, the grid location guidance should be updated to reflect the change in available transmission capacity. The Stakeholders also agreed that MPs should not be restricted to submitting proposals to only specific points of interconnection or areas not identified as having constraints because that could increase the cost of land and leases on land, as well as deny MPs who are willing to bear some or all of grid upgrade costs. MPs also expressed concern that limiting projects to specific areas could result in some municipalities and counties imposing moratoria on new projects while studying the impact of concentration of renewable projects.

5. The inclusion of energy storage in the CPRE program should continue as in Tranche I, but the statutory requirements of the CPRE program present practical limitations on the approach to expanding storage in CPRE.

In the Stakeholder session on February 22, 2019, IA presented a list of ways energy storage is being deployed in other jurisdictions (Attachment A). The Stakeholders agreed the list was comprehensive. Further, the Stakeholders agreed that energy storage should be included in CPRE, but that under the CPRE design, the only option for compensating storage was for energy

and capacity that was recharged 100% from the renewable project for the full 20-year term of an RPPA, the same as allowed in Tranche I.

The parties did not reach consensus on other areas of importance related to storage such as whether the Buyer or Seller controls the storage asset, how storage should be priced, and how the storage protocols in the RPPA are defined. In light of the range of views on how energy storage should be included in Tranche II, the IA anticipates MPs and Duke will share those views in separate filings.

6. Tranche II should proceed so proposals are submitted in 2019.

The Stakeholders were in agreement that Tranche II should be released without delay. The reasons for this view was the concern that federal tax incentives are scheduled to decrease, and may not be available in the future, and that delays in implementation could result in less cost-effective proposals for Duke customers.

7. It is preferable to have more pricing periods than in Tranche I (Tranche I had three).

Participants, including the Public Staff, indicated that pricing periods with additional granularity, such as those proposed in the E-100 Sub 158 avoided cost docket, are preferable and can serve to enhance the value of potential proposals with energy storage. There was no discussion about the specific definitions of these pricing periods and therefore no consensus on that matter.

8. Avoided cost and the number of pricing periods should be those approved by the NCUC in Docket No. E-100 Sub 158, if the final Avoided Cost Order is issued in time for Tranche II bidding in 2019.

As noted immediately above, the Stakeholders agreed that having more granularity of pricing periods is desired. The IA will model the evaluation and the proposal form to comport to the design approved by the NCUC.

The Stakeholders would prefer to have the most recent Avoided Cost methodology and pricing periods applied to the Tranche II solicitation. At the same time, the Stakeholders prefer to have Tranche II document review process, et al, begin without delay, but concern was expressed that opening the Tranche II process would necessitate using the presently approved Avoided Cost methodology and pricing periods, and not permit deployment of any improvements that are the result of the Avoided Cost Order. The Stakeholders agreed that clarification of the CPRE program rules to permit completion of the Tranche II procedural requirements, with submission of proposals held until the NCUC approves the revised Avoided Cost methodology would be preferred. As noted below, the Stakeholders expressed the desire to get started with

Tranche II without delay, and that there should be a finite date by which the determination of whether to proceed with the existing Avoided Cost methodology.

9. If the Avoided Cost Order is not available before October 2019, the Avoided Cost methodology approved in Docket No. E-100 Sub 148 should be used in Tranche II. At the same time, the Stakeholders agreed that having more pricing periods than in Tranche I would be appropriate.

The Stakeholders acknowledged that protracted proceedings could result in the NCUC rendering decisions on the Avoided Cost methodology and pricing periods until late in 2019, or even later. To avoid an extended delay in submitting proposals in Tranche II, the Stakeholders agreed there should be a date at which the existing approved Avoided Cost methodology will be employed, absent a final decision of the NCUC. The Stakeholders agreed that submission of proposals in 2019 would be preferred.⁴

10. There should continue to be a Required Commercial Operation Date (“RCOD”) established for projects proposed in CPRE.

The Stakeholders unanimously agreed it is important to have a firm in-service date in order for qualified projects to move forward. Indeed, the firm RCOD was acknowledged as necessary for meaningful comparison of projects, and to prevent “phantom” projects from retaining queue presence when they are unable to commit to being in-service.

11. If MPs are compensated for expected output that is not delivered as a result of curtailment (other than system reliability curtailment) Duke should recover the cost through rates.

The risk of curtailment, other than when necessary for system reliability, results in MPs including some risk premium to the proposal price. At the same time, presently Duke is permitted to curtail based on a next least cost generation calculation up to specific limits included in the Pro Forma PPA, and therefore does not incur cost for the curtailment up to the specified limits and is not required to compensate MPs for the non-delivered output up to the specified limits. The Stakeholders agreed that if the risk of curtailment without compensation were eliminated, MPs should be able to offer lower cost proposals.

The Stakeholders recognized that without cost recovery, Duke is unwilling to compensate MPs for curtailment. Therefore, the Stakeholders would support a curtailment policy that permits Duke to recover all of the cost of paying MPs for curtailed output, provided Duke is permitted to recover the cost from customers.⁵ The Public Staff expressed concerns that

⁴ The Tranche I proposals were submitted on October 9, 2018.

⁵ The Public Staff did not take a position on this approach.

if curtailment was compensated and there were no limits on curtailment (other for system reliability), the utility and the developer may not have the incentives to operate the facility in the most efficient manner.

12. If the IA again has a “reserve list” in addition to establishing the Competitive Tier during Step 1, the IA should provide more than a seven (7) day notice of when a proposal would have to provide Proposal Security.

The IA instituted the “reserve list” structure so MPs would only post Proposal Security when their proposal is put in the competitive tier. While MPs appreciated not incurring the expense of Proposal Security prematurely, the IA acknowledges that uncertainty in when a proposal may be moved to the competitive tier, and therefore have to post Proposal Security, creates a challenge for some MPs. The IA will include an “early warning system” in Tranche II so MPs will have ample notice of when Proposal Security will be required.

13. The Tranche II Renewable Purchase Power Agreement (“RPPA”) should clarify the process for determining when the MP is to provide the requisite Performance Security.

While the Stakeholders agreed revision would be appropriate, there was no consensus on whether the amount or timing of Performance Security should be revised. (See: non-consensus items below.)

14. The Tranche I treatment of Late Stage Projects should not be applied to Tranche II.

While the treatment of Late Stage Projects was raised during the discussions, no Stakeholder suggested incorporating the Tranche I treatment in Tranche II. Accordingly, the IA believes the Stakeholders are in agreement that the Late Stage Projects definition and concept is not applicable in Tranche II. ⁶

15. The Stakeholders agreed the CPRE program should proceed with the release of Tranche II, while transmission queue reform continues at the same time.

B. ISSUES WHERE CONSENSUS DOES NOT EXIST

The Stakeholders agreed there are some matters that should be addressed by the NCUC before Tranche II is released, but the Stakeholders were unable to reach consensus on a recommended course of action.

⁶ In Tranche I Late Stage Projects retained their original transmission queue position and were not included in the CPRE Transmission Queue position.

1. Whether the contracts used by the DEC/DEP Proposal Teams for project submitted for Asset Acquisition should be non-negotiable and reviewed by the IA and approved by the NCUC prior to bidding.

Some Stakeholders raised the desire to have contracts used by Duke with acquisition proposals be reviewed by the IA and approved by the NCUC. The IA understands the Commission previously determined this was not required. The stated reason for requiring pre-approval of contracts by the Commission was to permit all acquisition proposals be on an equal footing as to the construction schedule and financing needs.

2. Whether MPs should be compensated for all or part of expected output that is curtailed, other than for system reliability curtailment.

The issue of curtailment is discussed in the prior section. There is no consensus on whether compensation is appropriate, and if so the level of compensation to be made.

3. Transmission queue treatment: Setting the Tranche II and Tranche III queue position for CPRE proposals at an early date would assist in queue-wide reform.

At the urging of the IA, the Stakeholders discussed the immediate establishment of a transmission queue position for Tranche II projects. An alternative identified by the IA would be to establish the CPRE queue position when Tranche II is commenced or before, so those projects would be evaluated for grid impact without the base case including projects that had more recently sought a queue position. It was also discussed establishing a transmission queue position for Tranche III at the same time and for the same reasons.

The IA's identification of an alternative approach was part of the discussion focused on identifying ways to make the transmission queue more accurately include projects that are likely to be developed in the near term. The IA supports the concept and urges the Commission to consider this as one step towards a redesigned transmission queue.

4. Whether there should be an extension of the RCOD (and default date) due to unforeseeable project delays, and whether Duke should compensate MPs in the event Duke is unable to complete required grid upgrades resulting in a delay in a project reaching the contractual RCOD.

5. Whether the IA should publish post-Step 1 ranking.

The IA will seek guidance from the Commission regarding what information may be released publicly. The IA is unaware of the value of identifying a ranking of proposals before the Step 2 analysis is completed and is reluctant to release the identity of MPs or projects without clear direction from the Commission.

6. The “cluster study” process should be identified and should be released before the start of Tranche II.⁷

7. The amount of and timing for providing the Pre-COD Performance Assurance under the RPPA should be revised.

8. Whether there are ways to expand competitive solicitation of energy storage in the CPRE program after Tranche II.

MP’s expressed concern over both the amount required for this Performance Assurance and the timeline in which a winning proposal that has executed the RPPA is required to provide it. The parties did not reach consensus on this issue.

IV. PROCESS

The IA conducted two public sessions with stakeholders to discuss the issues identified by the Commission and to identify areas the parties believed should be addressed by the Commission in advance of the release of Tranche II. The parties agreed it would be appropriate and useful to present the Commission with a list of issues, and to indicate where the parties were in agreement on how those issues should be managed. In this section the IA summarizes the two sessions.

Representatives of Duke, the Public Staff, the IA, and Market Participants were actively involved in each discussion session, either in-person or via a webinar platform. The IA believes the participants were sincere in wanting to reach consensus on the issues to be addressed in advance of the release of Tranche II, and that they participated in good faith.

The February 22, 2019 Stakeholder’s Meeting was announced on February 1, 2019 via the website Announcements page; all registered users of the three CPRE silos received an email with the announcement and an invitation to register to participate. To encourage participation, stakeholder meeting participation could be done in-person or via a webinar. The registration opened on February 1, 2019, and registration forms were available for either in-person or webinar participation on the IA website. The IA website has three sections: DEC, DEP, and Acquisition. Registration could be done on either the DEC or DEP sections. Registered users of the Acquisition silo were directed to register on either the DEC or DEP silo.

⁷ This issue was raised during the second meeting, so there was insufficient time for all parties to discuss fully. The IA and Duke expect to include details on the cluster study process when the Tranche II solicitation documents are released.

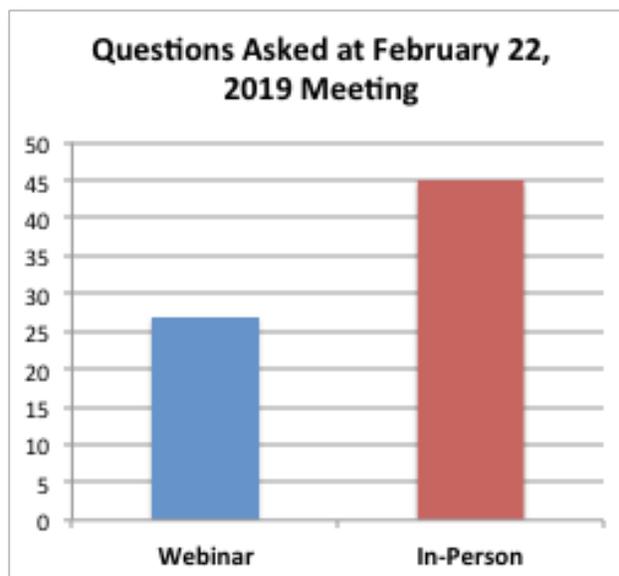
Announcements were posted on each website section online and e-mailed to all registered users on February 7, 2019, February 10, 2019, and February 18, 2019 reminding users to register for the meeting. Between February 1, 2019 and the conclusion of the Stakeholder’s



Meeting on February 22, sixty-one (61) individuals registered across both silos for webinar access, and twenty-three (23) users registered to attend in person. On February 21, 2019 users registered to attend the webinar were sent call-in directions and those users registered to attend in-person were sent meeting location directions. These messages were sent both at 12:00 PM and 5:00 PM on the day prior to the meeting. Users who registered after these messages were sent were shown access details upon registration. The IA further

emailed the PowerPoint presentation used in the meeting on February 22, 2019 to all registrants of the meeting. The presentation was also posted on the document page of the IA website.

The Stakeholder’s Meeting was conducted at the Duke Energy Headquarters building in Raleigh, North Carolina. The meeting lasted two hours and fifteen minutes and covered a wide range of topics regarding the CPRE program and what changes were needed or requested for Tranche II. The IA moderated the meeting and fielded questions from those in the room and from those on the webinar. Forty-five (45) questions and comments were fielded within the room and seventeen questions were asked and ten comments were made online. Collectively, more than twenty (20) participants were heard in the meeting. A recording of the meeting was posted on the website in its entirety on February 25, 2019.



Following the February 22, 2019 meeting, the IA established a message board on the website for confidential communication between stakeholders and the IA about topics for discussion in the March 6, 2019 meeting. This message board was available to all registrants of the CPRE website and was made available until March 5, 2019. Two interested persons used the message board to ask four questions and raise twelve issues for discussion before the second meeting.

The March 6, 2019, Stakeholder’s Meeting was announced at the conclusion of the February 22 meeting. An announcement was posted on February 25, 2019 to each silo of the CPRE site and was emailed to all registered users. Registration to attend the February 6, 2019 meeting either in person or via webinar was opened on February 25, 2019 on all three silos of the website. A reminder announcement was posted on March 4, 2019 and was subsequently



emailed to all registered users. In total, seventy (70) users registered for webinar access while twelve (12) users registered to attend the meeting in person. On March 5, 2019 users registered to attend the webinar were sent call-in directions and those users registered to attend in-person were sent meeting location directions. These messages were sent both at 12:00 PM and 5:00 PM on the day prior to the meeting. Users who registered after these messages were sent were shown access details upon registration. The IA further emailed the PowerPoint presentation used in the meeting on March 6, 2019 to all registrants of the meeting. The

presentation was also posted on the document page of the IA website.

The second Stakeholder’s Meeting was conducted at the Duke Energy Headquarters building in Raleigh, North Carolina. The IA moderated the meeting and led discussion on a wide

range of topics. In total, fourteen (14) questions and one comment were made via the webinar and more than twenty-seven (27) questions and comments were made in person. Collectively, more than fifteen participants were heard. A recording of the meeting was posted in its entirety on the IA website on March 7, 2019.

The IA believes the level of participation represented interest in the CPRE program and the willingness of Stakeholders to collectively participate in reaching consensus on issues. The discussion was on a professional level, robust, and included frank expressions of what is needed for Tranche II to receive attractive proposals.

V. CONCLUSION

The IA believes the Stakeholder meetings were well publicized and attracted a significant number of participants. The IA believes that, while the Stakeholders discussed a number of additional matters, the issues identified herein are the ones the Stakeholders believe should be resolved by the NCUC before Tranche II begins. Further, the Stakeholders firmly expressed the desire for Tranche II to commence without delay so that projects can move forward. The Stakeholders also agreed that queue-wide reform should proceed separately.

ATTACHMENT A

STORAGE PRODUCTS AND ATTRIBUTES

- 1. Load Following: Production Shifting**
 - Facility that adjusts output in coordination with demand. Produces only enough power to meet demand.
- 2. Distributed Storage to Avoid Transmission Investment**
 - Locate storage at distributed locations to meet peak needs
- 3. Spinning Reserve**
 - On-line reserve capacity synchronized to the grid that can respond within 10 minutes to compensate for shortfalls
- 4. Non-Spinning Reserve**
 - Off-line generation capacity that can be synchronized to grid within 10 minutes to compensate for shortfalls
- 5. Fast Start/Fast Ramping**
 - Facility that can stop and start on command.
- 6. Volt-Ampere Reactive (Var) Support**
 - Solar and Wind produce low to no reactive power. Hence, support is needed to produce reactive power to maintain voltage stability
- 7. Voltage Regulation**
 - Battery storage systems used to solve voltage rise during peak PV generation as well as voltage drop while meeting peak load
- 8. Generation Efficiency**
 - Use storage for short-term needs (peaking & other)
 - Avoid Start Up costs of higher cost generation
- 9. Maximize Low Cost Units**
 - Avoid shut down of low cost units by charging batteries
- 10. Frequency Regulation**
 - Energy storage to regulate AC frequency