RTO-Wide Black Start RFP – Questions and Answers

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Questions and responses for 09/19/2013 posting:

Q. In a combined cycle plant with two combustion turbine generators (CTG), would the proposer need to designate which one of the two CTG’s is the Black Start unit if either CTG could be started from the diesel generators? In other words would the proposer have the flexibility to start either CTG first? In answering this question, please state how this flexibility if permitted would be evaluated by PJM relative to a situation with only one available CTG and state how your answer relates to the test requirements and cost recovery if only one CTG is the designated Black start unit.

A. If only one CTG is designated as Black Start, a Combined Cycle Owner would have the option to start either unit during an actual Restoration Event as long as both units have the same Interconnection point. One unit must be designated as the as a Black Start unit. Only the Black Start designated unit will be compensated and only that unit must complete an annual Black Start test. Note that if the owner keeps a successful Black Start test on file with PJM for the non-designated unit, it may be offered as a substitute to PJM when the designated unit is on outage.

Q. In a combined cycle plant with two Black Start designated combustion turbine generators (CTG), would the proposer need to designate which CTG is started first if either CTG can be started from the diesel generators? In other words would the proposer have the flexibility to start either CTG first?

A. If both CTGs are designated as Black Start, the unit owner would not have to designate which CTG is started first. However in the case of sequential starts, the second unit must be able to close to a dead bus within PJM’s new time criteria of 180 minutes from time 0 of the start of the first CTG. In other words, both CTGs would need to be closed to a dead bus in 180 minutes.

Q. Provided a combined cycle plant steam turbine generator can meet the Black Start unit requirements, indicate if the steam turbine generator can be a designated Black Start unit if one or more CTG’s can be cranked by a diesel generator set.

A. The steam turbine MWs of a combined cycle are not typically considered as Black Start MWs. The stabilizing loads required for combined cycle steam turbines are typically too large for the Transmission Owner to supply from the local substation. PJM typically requires a combined cycle unit to operate the CTGs in simple cycle or 100% steam bypass mode during a restoration event.

Q. At a multiple combustion turbine generator (CTG) combined cycle plant, does the proposer have the flexibility to utilize any one of the CTGs to meet the bid requirement of only 1 CTG at the facility that is being bid per the request for proposal? This assumes that the diesel generators can crank anyone of the CTGs first.

A. Yes, as long as they all have the same interconnection point.
Questions and responses for 08/23/2013 posting:

Q. Can a battery used to start a turbine in black start mode be able to participate in the performance based regulation market under the terms of the RFP?

A. In order for the battery to participate in the regulation market, it would have to be classified as a market unit. Given that it’s a market unit, the battery’s RPM revenues would be netted from its black start revenues. In addition, only the battery would be considered the compensated black start unit, not the CT.

Q. We own a 300MW facility comprised of three 100 MW CTs (CT1, CT2, and CT3). There are two ways in which we can submit an RFP response:

CASE 1: If an RFP response included one diesel to crank CT1 and then CT1 was used to crank CT2 and CT3, only CT1 would be considered a black start resource for 100 MW, correct?

CASE 2: What if that same diesel was configured in the RFP response to crank CT1, CT2, and CT3 sequentially, would all three CTs be considered black start resources with a total of 300 MW?

A. CASE 1: Yes, only CT1 would be considered a black start resource at 100 MW.

CASE 2: PJM rules require a Black Start Generator to have the ability to close to a Dead Bus within 90 minutes (but this will soon be extended to 180 minutes once FERC approves). If all three CTs can be started individually by the same diesel without relying on any CT cranking another CT and close to a dead bus within 90 (coming soon 180) minutes of the starting time of the diesel, then all 3 CTs could be considered black start. However, PJM has the ability to select any lesser combination of the CTs (just one CT, or any two CTs) as the designated and compensated black start resources. Note that annual Black Start testing of the designated and compensated CTs would have to be performed and the ability of the diesel to individually crank each of the compensated black start CTs would have to be proven.

Q. Can a unit submit a conditional bid to the Region-wide RFP based on the outcome of the stakeholder process currently discussing the base formula rate? Said differently, is a bid into the RFP binding despite the fact that the compensation formula may change as a result of ongoing stakeholder deliberations?

A. All RFP responses are considered non-binding. In the event that cost recovery terms are revised as a result of the current SRSTF stakeholder process, a transition time for implementation will be identified.
Q. Will PJM consider a black start proposal from an external capacity resource that will have firm transmission to PJM? Please answer the question assuming that the results of the transmission study and the effective dates of the firm transmission service will not be known until after I submit an RFP response.

A. While not optimal, PJM would consider a black start proposal of this type. Significant factors would need to be considered during evaluation such as agreements in place with neighboring TOPs to guarantee priorities during restoration events and coordination issues for cranking paths across TOP borders.

Questions and responses for 08/02/2013 posting:

Q 1: Assume that an RFP response was submitted that involves adding a small diesel (assume < 5MW) to an existing 100 MW plant. The developer has a choice of whether to (A) go through the interconnection process to make the new diesel a capacity resource in PJM or (B) limit its use to starting the existing 100 MW plant. How would PJM analyze choices A and B in an RFP response?

A 1: PJM’s interpretation of both options is detailed below.

Option A:

1) Both the 5 MW diesel and the 100 MW existing unit would have to offer into RPM, and either or both could potentially clear

2) Only the 5 MW diesel would be considered a black start unit (if chosen by PJM), since it is both a capacity resource, and the only unit at the plant that can start by itself with no outside power

3) The existing 100 MW unit would NOT be considered a black start unit, even if the diesel’s output could be used to get the existing unit started in under 3 hours.

4) If PJM decided to retain the diesel as a black start resource after its initial capital recovery period, the formula rate for compensation would be based on the <5MW capacity of the diesel.

Option B:

1) Only the 100 MW existing unit would have to (be able to) offer into RPM, since the diesel has no CIRs, and is accepted as being installed and maintained only to provide
cranking power to the 100 MW unit so that the 100 MW unit can qualify as a black start unit for PJM.

2) The new <5 MW diesel would NOT be considered a black start unit, since it is not a capacity resource, and is not set up to provide energy outside the plant fence.

3) The existing 100 MW unit would be considered a black start unit, if chosen by PJM.

4) If PJM decided to retain the 100 MW unit as a black start resource after the initial capital recovery period for the starting diesel and related equipment, the formula rate for compensation would be based on the 100 MW capacity of the existing unit.

Q2: Two plants each have an existing 100 MW unit that could be fitted out for black start by installing a starting diesel (assume diesel is to enable black start only). One plant has natural gas as its only fuel. The other has oil on site, which could also be piped to the startup diesel. Assuming that everything else is equal, would you select one plant over the other to serve as a black start resource to fill a critical load need?

A 2: An RFP response with onsite fuel storage and dual fuel capability is weighted higher in the evaluation process than Natural Gas only units for two units with identical cost, capabilities, locations, and cranking paths. However, cranking paths to the critical load would more likely determine which unit is selected.

Q 3: Is there any informational resource to indicate LDAs or specific locations where new black start capability is particularly needed?

A 3: No. PJM is interested in responses that are located anywhere within the PJM footprint. PJM will consider any option that has the potential to reduce restoration cost, complexity, or time, even in areas where previous RFP have been requested.

Q4: As we work on some potential proposals in response to PJM’s RTO-Wide Black Start RFP, we have been struggling with a permitting question. We recognize that a black start unit will need to start and operate initially at very low load covering only its auxiliaries. Technically, we believe that most units can do that for an extended period of time. However, emissions can be poor at those loads and would not be in compliance with a unit’s permit limits for normal operation. Can you offer any guidance regarding the time a black start unit will need to be able to operate at essentially no load?

A 4: While there are no clear pointers in the PJM manuals on duration of black start units at low loads, we are aware that there are environmental and operation concerns about operating for extending periods at minimal loads. Our rough estimate is that you should assume that the black start unit will be
operating for approximately 2 hours until the TO has coordinated additional load pickup for you to move up your loading curve. Any environmental or operational concerns beyond this 2 hour marker, should be clearly indicated in your RFP response so that PJM and the TOs can ensure that your specific restrictions are considered in our analysis and included in the TO system restoration plans.

There is one clear exception to the above statement. An RFP unit that is selected for use within a nuclear safe-shutdown power plan may need to operate at low loads well beyond the 2 hour mark. These specifics will vary amongst the particular cases, but these generally longer run time expectations would be communicated to the RFP responder by PJM and the TOs.

Q5: We are considering offering blackstart service from a plant with a scheme that a series of units, the most likely cases being A) diesels -> small CT -> large CT  B) small CT -> large CT or C) diesels -> large CT. Are all of these combinations acceptable? What are the impacts in terms of cost recovery? Can PJM comment on any black start specific preferences?

A5: Yes, all of these combinations are acceptable, some are preferred on a case-by-case basis and the evaluation weighting will be assigned according to the specific TO needs. However, with respect to classification of which of the units in the schemes is designated as ‘the black start unit’, flexibility in approach is recommended. There will be cases where less black start is required to meet restoration plan needs (i.e. the small CT is the black start unit) and cases where the greater black start is required to meet restoration plan needs (i.e. the larger CT is the black start unit).

Q6: Is there any information available about where and how much Black Start MW you may be looking for in specific TO zones - some general information about MW and parts of states or TO zones would be useful for considering making a response. Bidders may be more likely to do a better, more detailed job on the proposals if they could focus on a smaller number of resources that might best match PJM’s location and size needs.

A6: This question is more relevant to the previous replacement RFPs, or as we now call them in PJM Manual M14D – “Incremental RFPs” for when there is a specific black start need in a TO zone due to a termination or retirement. The intent of the RTO wide 5 year selection process RFP is not necessarily to address a specific black start need in a TO zone – it could do that - but it is really intended to look across the RTO and see what could be available to balance against what we already have in order to optimize the black start resources. PJM understands that this approach can impact the level of detail in proposals and that during the evaluation phase additional details may need to be requested as necessary.
Summary of questions and responses from the 7/9/13 Pre-Bid WebEx, plus questions and answers received by PJM after the WebEx:

Section 1.2 - Black Start Availability Date

Q – Would responses that have an availability date beyond 4/1/15 be considered? For example, what if the availability date would be sometime in the Summer of 2015? What if the availability date would be in 2016?

A – PJM would consider units that will be in service later than 4/1/2015 but an explanation of the potential delay should be included in the RFP response. The in service date is an important factor in PJM’s proposal evaluation, but PJM may be more flexible for RFP responses that may take longer to finish if they are technically viable and are in key areas.

Q - The duration from the end of the PJM evaluation, award date and the required in service date is approximately one year. Has PJM considered the time required for submitting and receiving the required construction and environmental permits? Will PJM work to accommodate these potential schedule impacts after notice of award and extend the required in service date accordingly?

A - PJM suggests that if timing due to environmental permits is a concern, responders should include several scenarios such as the earliest possible in service date, the latest possible in service date, and the most likely in service date for project time line estimates.

Section 3.4 – Confidential Matters – PJM Data

Q – Will PJM keep the responders data confidential?

A – PJM will abide by the terms in the OA & Tariff but will have to share certain data with the IMM and the host zone Transmission Owner. In addition, any information provided to State Commissions would not include unit specific information.

Section 4.2 - RFP Proposal Submission

Q – Can the bidder get an “advance copy” of the questions that will be in the SmartSource electronic tool?

A – PJM’s use of the SmartSource electronic tool will greatly assist in compiling and analyzing the responses and is the preferred method for PJM to receive a response. The questions within SmartSource will follow the same sequence with the same data requests that is in the RFP Section 5 and will allow for responses in various formats for each question such as text, document attachments, project schedules, etc. PJM will not exclude a proposal that does not respond via SmartSource tool.
Section 4.3 - Evaluation and Acceptance of Proposals

Q – Should the responder coordinate with the Transmission Owner (TO) regarding any upgrades to the TO owned equipment which would be required to allow the plant to be black start capable, such as modifications to relays, etc. Should these TO costs be included in the RFP response?

A – PJM would prefer that the responder coordinate with the TO if it is known that modifications to the TO equipment are required. The TO’s estimated expenses should be included in the response but be clearly delineated as a TO expense. In addition to the TO expenses, information such as the scope of the modifications and timing of the TO work should be included in the response. The TO’s expenses will not be included in responder’s annual revenue requirements but will be used in the overall evaluation of the proposal. If the proposal is accepted, the TO will be responsible for the upgrades. If it is uncertain whether TO modifications are required, the responder is requested to make note of this in the RFP response and PJM will facilitate working with the TO to determine if any modifications will be required.

Q - RFP page 12, sec 4.5 RFP Timeline, clarify “PJM evaluation and award of viable Black Start solutions” 10/1/13 – 4/1/14. Is it possible PJM would award and notify bidder earlier?

A – Yes. PJM anticipates that the analysis may take as long as six months, but in cases where we can identify technical viability and make early selections accordingly, it is intended to notify successful bidders prior to 4/1/14 whenever possible.

Section 5.1.2 - Black Start Unit

5.1.2.3

Q – How can the black start capability differ than the full plant capability?

A – An example would be a combined cycle plant where only one of the CTs is being proposed as a black start unit. PJM wants to know the black start CT’s capability along with the entire generating station’s capability.

Section 5.4.3 - Estimated Black Start Service Annual O&M Cost

Q – What can be included in the projected annual Variable Black Start Service Costs (Variable BSSC)?

A – Operating and maintenance costs that are attributable to maintain the unit in a state of black start readiness, including the cost to maintain compliance with NERC Reliability Standards can be included in the projected annual Variable Black Start Service Costs (Variable BSSC). Documentation of these expenses is required and revised expenses can be submitted annually in May of each year for a June 1st effective date. Unless a higher or lower value is supported by the documentation, the resource owner can recover 1% of the Unit’s O&M costs on the unit’s cost-
based energy schedule, calculated based on the Cost Development Guidelines in the PJM Manuals.

Section 6.1.2 - Black Start Service Annual Revenue Components

Q – Please clarify the Incentive Factor (Z) as used in the following sentence: “Units using the Base Formula Rate for Fixed Black Start Service Costs will be able to use an Incentive Factor (Z) of 10. For all other Fixed Black Start Service Rates the incentive Factor (Z) will be 0%.”

A – The Incentive Factor (Z) for Units using the Base Formula Rate for Fixed Black Start Service Costs is 10%. The Incentive factors for Units on the Capital Cost Recovery Rate or the Capital Cost Recovery Rate – NERC-CIP Specific Recovery will be 0%.

Additional guidance on the calculation of a Unit’s Annual Black Start Service Revenue Requirements may be found in the Black Start Cost Submittal Forms in the link [http://pjm.com/markets-and-operations/ancillary-services/black-start-service.aspx](http://pjm.com/markets-and-operations/ancillary-services/black-start-service.aspx)

The following link is included for reference from the SRSTF 5/7/2013 presentation on Black Start Compensation:

[http://pjm.com/~media/committees-groups/task-forces/srstf/20130510/20130507-black-start-compensation.ashx](http://pjm.com/~media/committees-groups/task-forces/srstf/20130510/20130507-black-start-compensation.ashx)

Section 6.1.3 - Upgrade Estimated Capital Cost Actual Cost Determination

6.1.3.3. Supporting Documentation

Q – Please clarify when payments will begin.

A – Payments will begin the month following the agreed upon final capital cost between the Black Start Unit owner and IMM. In addition, a successful black start test must be completed and the resource must be integrated into the TO restoration plan and submitted to PJM by the TO.

Section 6.1.4.1 - Testing

Q – What if a black start resource fails the annual black start test?

A – If a unit fails a black start test, the unit is given a ten day grace period within which it may retest without financial penalty if within the thirteen month testing period. If the unit does not successfully pass a black start test within the ten day grace period immediately following notification of PJM a failed test, monthly black start revenues will be forfeited from the time of the first day of the month in which the unsuccessful test occurred until the first day of the first month AFTER the unit successfully passes a black start test.

Section 6.3 - Black Start Unit /Transmission Owner Coordination
Q – What is the PJM restoration plan?

A – The PJM restoration plan consists of an aggregate of the TO restoration plans.

Section 7.0 – Black Start Generator Reference Guide

Q - RFP page 23, M-14D Rev 23, please clarify and confirm the correct version is Rev 24.

A – PJM Manual M-14D, Rev 24 was coincidently issued the same date as the RFP, 7/1/13, and is the correct version to use.

PJM has incorporated the large majority of the SRSTF enhancements throughout the current version of its manuals. A tariff change to support the remaining SRSTF changes was filed with the FERC on 7/9/2013 (see above link to proposed tariff changes related to the SRSTF changes). When the tariff changes are finalized and approved, additional manual changes will be made as required to match the tariff. The current set of PJM manuals can be accessed here:

General questions:

Q – In round numbers what would be the annual compensation for a 10 MW unit that does not require any capital upgrades?

A – Assuming similar circumstances as used in slide #18 of the presentation on Black Start Compensation given at the May 7th System Restoration Strategy Task Forced (SRSTF) meeting, the annual compensation would be approximately $30,000.

Q – What is the limit of number of black start units allowed at one generating station.

A – The current limit is 3 unless there is an exception granted by the PJM System Operations Subcommittee - Transmission. The proposed PJM Tariff filing required to implement the SRSTF recommendations will eliminate this restriction and will allow any number of black start units at one generating station.

Q – Currently, are there known deficiencies in the amount of black start generation within PJM?

A – One outcome of this RTO wide RFP is the re-optimization of the entire PJM wide black start plan. Prior to this RTO wide RFP, transmission zone specific RFPs have been issued, responses have been evaluated, and awards made. Incremental RFPs may be issued if required following this RTO wide RFP.

Q – When will notification be made to all responders?

A – Successful and unsuccessful responders will be notified no later than 4/1/14.

Q – If the 8/30/13 Notification of Intent to Bid deadline is missed will that disqualify a proposal?
A – All responders with intent to submit a proposal are requested to make a non-binding notification to PJM by 8/30/13. However, PJM will not disqualify a responder if that notification is not made within the posted time line.

Q - Can PJM verify that within this proposal that the compensation method for black start service provision has not changed.

A – PJM's compensation method as documented in the PJM Open Access Transmission Tariff (OATT), Schedule 6A, Black Start Service has not changed within this proposal.

Link to current version of the PJM OATT:
http://pjm.com/~media/documents/agreements/tariff.ashx

Link to proposed revisions to the PJM OATT, which include the System Restoration Strategy Task Force (SRSTF) changes: http://www.pjm.com/~media/documents/ferc/2013-filings/20130709-er13-1911-000.ashx

Link to Black Start Compensation presentation from the May 7th 2013 SRSTF meeting:
http://pjm.com/~media/committees-groups/task-forces/srstf/20130510/20130507-black-start-compensation.ashx


A – PJM Manual M-14D’s Section 10 “Black Start Generation Procurement” is the proper reference for the incremental and RTO-wide black start RFP replacement process. The reference in PJM M36 will be corrected in the next manual revision.

Q - We have a plant with a small size CT (< 40 MW) and larger frame CTs (>100 MW). The small CT and the large CTs offer into the PJM Energy Market. Can the RFP response include the installation of a new diesel generator to be used to crank the small CT which in turn will crank the large CT, thus considering the large CT as the black start unit?

A – Please refer to Section 6.5 of the RFP. In the case of the above proposed configuration and assuming that the diesel generator does not offer into the PJM Energy Market, only the small CT would be considered as the black start unit. If the responder would like to offer in a large CT as the black start unit then a diesel generator(s) large enough to crank a large CT should be included in the proposal.