Manual 14D (Generator Operational Requirements), Appendix A

APPENDIX A: Behind the Meter Generation Business Rules

Definition and Purpose of Behind-the-Meter Generation (BtMG)

(1) The purpose of these rules is to permit owner/operator of ~~market participants operating~~ Behind-the-Meter Generation (BtMG) to receive the associated benefits. These benefits are recognized by allowing such generation to net for the purposes of calculating transmission, capacity, ancillary services, and administrative fee charges.

BtM Adjustment Process

(38) Parties seeking a BtMG adjustment of any type must notify PJM at BTMG@pjm.com. The BtMG request must contain the following information:

- Contact name, company, email address and phone number

- Name of generation unit(s) and EIA plant and unit identification numbers

- Summer net dependable rating of the unit(s)

- Name of the applicable Load Serving Entity and Electric Distribution Company

- If applicable, written approval from the owner, lessee or operator of a distribution facility used to deliver energy from the BtM generator to load

- For non-retail BtM generation, the phone number to be added to the PJM all-call list

(39) PJM will respond to the request and coordinate data and information flow between all affected parties (customer, LSE, EDC, etc.) to determine eligibility, peak load adjustments, etc.

Transmission Owner BtMG Reporting and Communication Process

(40) PJM will maintain a list of municipal electric systems, electric cooperatives and electric distribution companies by transmission zone which will be verified by Transmission Owners on an annual basis.

(41) PJM will provide each Transmission Owner with a list of BtMG facilities greater than 1 MW located within the relevant transmission zone, delineated by municipal electric system, electric cooperative and/or electric distribution company as determined by PJM's examination of EIA forms or other available information. Transmission Owner will then provide PJM the necessary information, defined below in this section, to determine the impact of BtMG during a manual load dump event or other emergency situations on an annual basis. Municipal electric system, electric cooperative and/or electric distribution company will coordinate with Transmission Owner to provide the necessary information, defined below in this section, for BtMG located in their area upon request by the Transmission Owner.[1] If the Transmission Owner is unable to provide the information defined below in this section, the Transmission Owner will inform PJM. ~~contact PJM to determine how to report the information.~~ PJM will include the Transmission Owner verified BtMG information in the Post Contingency Local Load Relief Warning ("PCLLRW") tool or other tool as applicable. Transmission Owner will provide the following information[2] for each BtMG and as defined in Manual 3A, Appendix C:

- PJM Transmission Substation - Electrically connected Transmission Substation PJM 8 character EMS name.
- Voltage (kv) - Voltage (PJM EMS terminal voltage at high side of load transformer). If connected at distribution system then this should be the high side voltage at PJM interconnection facility.
- PJM equipment name – Official PJM name for equipment (transformer, line, loads) PJM 8 character.

(42) Transmission Owner may provide additional or updated information for BtMG facilities (i.e., contact information, typical operational mode, start up time, etc.) on the list or add BtMG facilities to the list as appropriate. Transmission Owner may also review and update the BtMG information more frequently than on an annual basis. PJM will maintain confidentiality of all information provided by Transmission Owner and will only release such information under conditions governed by Operating Agreement, section 18.17.

(43) Transmission Owner may coordinate with BtMG facility either directly, or through electric distributor, during expected prolonged emergency load dump/shed or as otherwise necessary to help mitigate a grid emergency. As BtMG facilities do not participate in the wholesale energy market any request ~~by PJM~~ to operate for the purpose of helping to mitigate a wholesale market issue is on a voluntary basis at the discretion of the BtMG owner. Any request to operate to mitigate a wholesale market issue will be communicated to the BtMG as a voluntary request at the discretion of the BTMG owner.

[1] If Municipal electric system, electric cooperative, electric distribution company or affiliated transmission company are not a PJM member, and such company will not cooperate with Transmission Owner request to provide the information described above, the Transmission Owner will provide such information on a best efforts basis.

[2] If BtMG is connected to more than one transmission substation then Transmission Owner will provide up to 3 connected transmission substation as needed.

Formatted: Highlight
Formatted: Highlight
Formatted: Highlight
Formatted: Highlight
Formatted: Highlight
Formatted: Highlight
Formatted: Highlight
Formatted: Strikethrough, Highlight
Formatted: Highlight
Formatted: Highlight
Formatted: Highlight
Formatted: Highlight
Formatted: Highlight

Manual 3A (Energy Management System (EMS) Model Updates and Quality Assurance (QA), section 1.2.1

Provide generator location and contact information.

o The knowledgeable party should provide path that electrically connects facility with a Bulk Electric System (BES >100 kV) substation or at minimum the transmission station for which the path connects.

– This is the closest electrical path, or least impedance path, that is a normally closed-in path with a BES Station facility that is expected to supply this BtMG facility.

Section 1: General Requirements

o BtMG facility's generation typically reduce the amount of load that is supplied through the identified path from the BES station.

• Determine the feasible options for providing telemetry of generating units MW/MVAR output and status of switching devices. See Manual 14D, Appendix A for details.

o Manual 14D, Section 4.1.7 identifies guidelines for metering/telemetry installations

o Manual 14D, Section 4.2.3 identifies metering for individual generators

o Manual 14D, Appendix A includes the Transmission Owner BtMG reporting and communication process

When BtMG is 10 MW or greater (or has been identified as requiring metering for operational security reasons) provide engineering data updates for generator, transmission and distribution system models to PJM and other TOs as necessary

• Provide equipment model. The information submitted for the BtMG's NERC EIA-860 list should be used as a reference by the knowledgeable party for completing the form found at: http://pjm.com/committees-and-groups/subcommittees/dms.aspx. See Appendix D for details for form completion and submission. This NERC EIA-860 submission is at the following website: http://www.eia.gov/electricity/data/eia860/ (refer to detailed data in zipped files on right side of page, "3_1_Generator" spreadsheet).

Manual 13 (Emergency Operations), Section 2.3 and 5.2

Section 2.3

Step 8 (Real-time):
Manual Load Dump Warning

Note:
Issuance of this procedure will trigger a capacity **Performance Assessment Interval (PAI)** as detailed in *PJM Manual 18, PJM Capacity Market*.
The purpose of the Manual Load Dump Warning is to warn members of the increasingly critical condition of present operations that may require manually shedding load.. It is issued when available primary reserve capacity is less than the largest operating generator or the loss of a transmission facility jeopardizes reliable operations after all other possible measures are taken to increase reserve. The amount of load and the location of areas(s) are specified.

PJM Actions

• PJM Dispatch issues the warning to members and PJM management, stating the estimated amount of load relief that is required (if applicable). A Warning can be issued for the entire PJM RTO or for specific Control Zone(s) based on the projected location of transmission constraints.
• PJM Dispatch notifies PJM public information personnel.
• PJM Dispatch notifies FERC via the FERC Division of Reliability's email emergency@FERC.gov, consistent with FERC Order No. 659.
• PJM Dispatch issues a NERC Energy Emergency Alert Level 3 (EEA3 = ALERT LEVEL 3) via the RCIS to ensure all Reliability Authorities clearly understand potential and actual level of PJM System Emergencies. An EEA 3 is issued when the BA is unable to meet minimum Contingency Reserve Requirements.
• PJM Dispatch establishes a mutual awareness with the appropriate member dispatchers of the need to address the occurrence of a serious contingency with minimum delay.
• PJM Dispatch examines bulk power bus voltages and alerts the appropriate member dispatchers of the situation.
• PJM dispatcher cancels the Warning, when appropriate.

PJM Member Actions

• Transmission / Generation dispatchers notify management of the warning.
• Transmission dispatchers notify governmental agencies, as applicable.
• Transmission / Generation dispatchers advise all station and key personnel.
• Transmission dispatchers / DPs review local procedures and prepare to shed load in the amount requested.
• Transmission dispatchers / DPs reinforce internal communications so that load shed can occur with minimum delay.
• PJM marketers remain on heightened awareness regarding PJM system conditions and the potential need for Emergency Energy Purchases.

• Transmission Owner may coordinate with BtMG facility either directly, or through electric distributor, during expected prolonged emergency load dump/shed or as otherwise necessary to help mitigate a grid emergency. As BtMG facilities do not participate in the wholesale energy market any request ~~by PJM~~ to operate for the purpose of helping to mitigate a wholesale market issue is on a voluntary basis at the discretion of the BtMG owner. Any request to operate to mitigate a wholesale market issue will be communicated to the BtMG as a voluntary request at the discretion of the BTMG owner. ~~As~~ Refer to Manual 14D Appendix A for more

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

information regarding BtMG ~~Refer to Manual 14D Appendix A for more information regarding~~

Step 10 (Real-time):
Manual Load Dump Action
Note:
Issuance of this procedure will trigger a capacity **Performance Assessment Interval (PAI)** as detailed in *PJM Manual 18, PJM Capacity Market*.
The Manual Load Dump Action is an Operating Instruction from PJM to shed firm load when the PJM RTO cannot provide adequate capacity to meet the PJM RTO's load and tie schedules, or critically overloaded transmission lines or equipment cannot be relieved in any other way. Under capacity deficient conditions, the PJM EMS load dump allocation calculator was modified to institute changes to the Operating Agreement set forth in Schedule 1, Section 1.7.11 that states that "…the Office of Interconnection may not order a manual load dump in a Control Zone solely to address capacity deficiencies in another Control Zone."
The load shed calculation determines which Control Zone(s) is short based on real-time load and energy values from EMS and capacity values received daily from the Capacity Adequacy Planning Department. Real-time energy values are used as a surrogate for available capacity, because in a capacity shortage situation all available generation should be loaded to full capacity. Since most of the values used in the load shed calculation are real-time dynamic numbers, the calculation is performed in the PJM EMS. Load Serving Entities will be able to designate within eCapacity that capacity resources are being used to serve load in a specific Control Zone. Similarly ExSchedule users will be able to specify that an external energy schedule is designated for a specific Control Zone. Resources that are not designated for a specific Control Zone will be considered an RTO resource for load shed calculation purposes and allocated across all Control Zones according to load ratio share. Only Control Zones that are determined to be deficient will be assigned a share of a load shed request initiated due to RTO capacity deficiencies. If the PJM Mid-Atlantic Region is determined to be deficient, its share will be further allocated according to Attachment E.
PJM Actions
• PJM Dispatch verifies separations have not occurred and load shed is desirable on the system being controlled (i.e., make sure load shed will help, not aggravate the condition).
• PJM Dispatch instructs members to suspend all remaining regulation, if not already suspended previously.
• PJM Dispatch determines which Control Zone (s) are capacity deficient and the relative proportion of deficiency. PJM Dispatch estimates the total amount of load to be dumped and utilizes the PJM EMS to determine deficient Control Zones and their share of load shed required.
PJM Dispatch orders the appropriate member dispatchers to shed load according to PJM EMS calculations. The PJM Mid-Atlantic Region share will be further allocated according to Attachment E. PJM Dispatch will implement load shedding, while minimizing overlap with automatic load shedding, in controlled step sizes to minimize system impact and further uncontrolled separation.
• PJM Dispatch notifies PJM management, PJM public information personnel, and members. PJM Dispatch advises members to consider the use of public appeals to conserve electricity usage and public announcements of the emergency. PJM Dispatch notifies other Control Areas through the RCIS, and notifies DOE, FEMA, and NERC offices, using established procedures.
• PJM Dispatch notifies FERC via the FERC Division of Reliability's email emergency@FERC.gov, consistent with FERC Order No. 659.

• PJM Dispatch issues a NERC Energy Emergency Alert Level 3 (EEA3 = ALERT LEVEL 3) via the RCIS to ensure all Reliability Authorities clearly understand potential and actual level of PJM System Emergencies.
• PJM Management issues a system-wide or Control Zone specific Public/Media Notification Message W3. Typically, this would be issued prior to a Manual Load Dump. See Attachment A.
• If it has not already begun, the PJM Dispatch will initiate Shortage Pricing if the region where the manual load shed action has been initiated corresponds with an entire Synchronized Reserve Zone or Sub-Zone.
• PJM Dispatch cancels the Action, when appropriate.

Note:
If partial restoration of the load shed is requested by PJM dispatcher, confirmation of the load restored by each member must be made prior to further restoration requests by PJM dispatcher. If step 1 of UFLS is insufficient to return frequency to acceptable ranges and if emergency procedures cannot be implemented in a timely fashion then PJM Dispatch shall shed sufficient load to restore system frequency.

PJM Member Actions
• Generation dispatchers suspend remaining regulation, when directed by PJM prior to shedding load.
• Transmission dispatchers / DPs shed an amount of load equal to or in excess of the amount requested by PJM dispatcher (Mid-Atlantic Region operators refer to Attachment E for specific allocation) within 5 minutes of the issued directive. The load shed plan should consider/recognize priority/critical load.
• Transmission / Generation dispatchers notify management of the emergency procedure.
• Transmission dispatchers / DPs consider the use (or continued use) of public appeals to conserve electricity usage and consider the use of public announcements of the emergency.
• Transmission dispatchers notify governmental agencies, as applicable.
• Transmission dispatchers / DPs maintain the requested amount of load relief until the load shed order is cancelled by PJM dispatcher.
Transmission dispatchers report the amount of load curtailed / restored upon implementation to the PJM Power Dispatcher.

- Transmission Owner may coordinate with BtMG facility either directly, or through electric distributor, during expected prolonged emergency load dump/shed or as otherwise necessary to help mitigate a grid emergency. As BtMG facilities do not participate in the wholesale energy market any request ~~by PJM~~ to operate for the purpose of helping to mitigate a wholesale market issue is on a voluntary basis at the discretion of the BtMG owner. Any request to operate to mitigate a wholesale market issue will be communicated to the BtMG as a voluntary request at the discretion of the BTMG owner. ~~As~~ Refer to Manual 14D Appendix A for more information regarding BtMG.

Note:
PJM Dispatch should take necessary actions to support system frequency, consistent with good utility practices. These actions may include emergency procedures to arrest frequency decline, but PJM will not violate BAAL (Balancing Authority ACE Limit) limits by over-generating to correct for a low frequency. PJM shall only use the assistance provided by the Interconnection's frequency bias for the time needed to implement corrective actions. PJM will not unilaterally adjust generation in an attempt to return
Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes. In general, emergency procedures are preserved to ensure

PJM net tie deviation is not adversely impacting system frequency after all economic options have been exhausted. However, Emergency Procedures should be exhausted, including Manual Load Dump, to arrest frequency decline once Under Frequency Load Shedding Schemes (UFLS) have triggered but prior to generating stations tripping off-line (57.5 Hz).
Under-frequency Load Shedding Plan settings are defined in Attachment F, “PJM Manual Load Dump Capacity.”

Section 5.4

5.4 Post Contingency Local Load Relief Warning

Post Contingency Local Load Relief Warning
Non-Market Post Contingency Local Load Relief Warning
The purpose of the Post Contingency Local Load Relief Warning (PCLLRW) is to provide advance notice to a Transmission Owner(s) (TOs) of the potential for load shed in their area(s). It is issued after all other means of transmission constraint control have been exhausted or until sufficient generation is on-line to control the constraint within designated limits and timelines as identified in the PJM Manual for Transmission Operations (M-03), Section 2 – Thermal Operating Guidelines.
For facilities which are not Monitored Priority 1 “Reliability and Markets” facilities, PJM will issue a corresponding Non-Market Post Contingency Local Load Relief Warning. For the purposes of this procedure, the steps and actions listed in this section apply to both Market and Non-Market PCLLRWs.
A Post Contingency Local Load Relief Warning is to be communicated to the applicable TO(s) and posted via the Emergency Procedures Posting Application and is not communicated via the PJM ALL-CALL). The PCLLRW is not considered a standing Directive to the TO for load shed. If the contingency for which the PCLLRW was issued occurs, PJM will evaluate the system conditions and then, if needed, issue a Load Shed Directive. The Load Shed Directive will be posted via the Emergency Procedures Posting Application. This procedure is distinct and separate from the MANUAL LOAD DUMP WARNING (Use “ALL-CALL”). Refer to Manual Load Dump Warning procedure for Capacity Shortages, Interface Reactive Constraint Management or Multi Area Transmission Constraint Management.

Note:
Except for the single area “Post Contingency Local Load Relief Warning”, the Manual Load Dump Warning is unchanged. This change should preserve the sense of urgency appropriate for both.
Post-Contingency Local Load Relief Warnings are intended to relieve localized constraints, generally 230kV and below. A Manual Load Dump Warning should still be used for Capacity Shortage conditions which result in Interface Reactive Constraint or Multi Area Transmission Constraint Management.
Attachment I, Local Post-Contingency Operating Guide, contains planning guidelines to identify and document known contingency pairs where post-contingency load shed would be acceptable in lieu of transmission reinforcements. These guidelines do not impact how PJM Dispatch implements Post-Contingency Local Load Relief Warnings.
PJM Dispatch operates more conservative for designated Interconnection Reliability Operating Limits (IROL).
PCLLRW should be implemented as post-contingency violations approach 60 minutes in duration. PCLLRW can be issued sooner at the request of the Transmission Owner or at the discretion of the PJM dispatcher if it is anticipates that generator startup + notification exceed 60 minutes.
PJM Actions

• PJM and TO dispatcher(s) review contingency flows / limits and discuss off-cost operations/switching solutions prior to implementation of a Post-Contingency Local Load Relief Warning, system conditions and time permitting.
• PJM and TO dispatcher(s) review and implement acceptable pre-contingency switching, load transfer, and generation redispatch options. If post-contingency actions are required, PJM will issue a Post-Contingency Local Load Relief Warning.

Note:
If post contingency flows exceed the Load Dump rating, PJM will direct the Transmission Owner to implement any available switching solutions, provided they do not create any additional actual overloads in exceedance of their normal rating or post-contingency overloads.

• PJM Dispatch commits/de-commits effective generation consistent with Manual 12 – Dispatch Operations, Attachment B – Transmission Constraint Control Guidelines, including adjusting hydro/pumping schedules, curtailing interchange transactions, and/or committing quick-start generation to control flows within acceptable limits, as appropriate. The market to market redispatch must be implemented where applicable.

Note:
As indicated in M-12, for "Reliability Only" facilities (i.e. facilities not under PJM Congestion Management) the Transmission Owners have the option to pay for generation redispatch on a pre-contingency basis or accept a PCLLRW. However, if a "Reliability Only" facility exceeds its Load Dump rating, PJM will manually dispatch generation to maintain flows below the Load Dump rating. Transmission Owners will be responsible for financial impacts of generation that is redispatched to alleviate an overloaded facility above it Load Dump Rating.

• PJM Dispatch implements 100% Synchronized Reserves (refer to PJM Manual M-12: Section 4.1.2 "Loading Reserves" for member actions) and/or declares a Local Maximum Generation Emergency Event, as appropriate.
• PJM Dispatch issues the Post-Contingency Local Load Relief Warning to the TO dispatcher of the overloaded equipment, stating that enough load must be shed to maintain flows on the monitored facility below the Emergency Rating or an agreed upon level. If the TO does not have sufficient load to shed or sufficient time to shed the load to comply, the TO will inform PJM. PJM will then review the PCLLRW to include neighboring TO loads if applicable or develop an alternative plan to control.

Note:
If all of the load to be shed is in the non-owning Transmission Owner's territory, PJM may issue the PCLLRW to the Transmission Owner with the load and not the Transmission Owner of the limiting equipment. However, PJM will inform/coordinate the post contingency load shed plan with the Transmission Owner of the equipment.

• PJM Dispatch provides the load distribution factor report to the impacted TO dispatcher(s) via the PCLLRW eTool application and via e-mail. Load Distribution Factor reports should be redistributed as changes to system reconfiguration warrant. Any post contingency switching solutions or post contingency generation redispatch will be documented in the PCLLRW application.
• PJM will include the Transmission Owner verified Behind the Meter Generation (BtMG) information in the Post Contingency Local Load Relief Warning ("PCLLRW") tool or other as applicable. PJM dispatch will NOT instruct the TO to schedule BtMG. This information is provided for awareness only.

• PCLLRW eTool application link: https://pjmpcllrw.pjm.com/

• PJM Dispatch issues a Post-Contingency Local Load Relief Warning via Emergency Procedure Posting Application to the PJM web-site, detailing any post-contingency switching, quantity of generation reduction, procedure or load-transfer solution, providing

additional information regarding the firmness of anticipated post-contingency load shed.
• PJM and TO dispatcher (s) periodically review and monitor approved post-contingency switching options.
• PJM Dispatch reviews acceptable post-contingency switching options. Post-contingency switching, generator reduction, or load transfer options should be implemented prior to implementing a Load Shed Directive.
• PJM and TO Dispatcher(s) should review potential post-contingency manual generation trip schemes. Manual generation trip schemes should be identified and agreed to in advance.

PJM and TO dispatch (s) should agree upon post-contingency load transfer options. Transmission owner dispatch(s) would need to periodically re-evaluate the load transfer solution.
• PJM Dispatch establishes a mutual awareness with the appropriate TO dispatcher(s) of the need to address the occurrence of a serious contingency with minimum delay.
• PJM Dispatch examines area bulk power bus voltages and alerts the appropriate TO dispatcher(s) of the situation.
• PJM Dispatch shall be prepared to implement a Load Shed Directive if post-contingency switching, generator reduction, or load transfer options fail and the contingency occurs. The Load Shed Directive will be posted via the Emergency Procedures Posting Application.
• PJM Dispatch cancels the warning, when appropriate.

Note:
A Load Shed Directive will be issued in accordance with the Load Shed Directive Operating Procedure as outlined in the Section 5.7

PJM Member Actions
• PJM and the TO dispatcher(s) discuss the amount of load to be curtailed to return flows below emergency ratings and the effective location(s). The TO dispatcher(s) shall utilize the PCLLRW eTool application to notify PJM when the load to shed has been identified. The TO dispatcher(s) will also notify PJM if there is not sufficient load to shed, or sufficient time to implement the load shed, to reduce the post contingency flows below the emergency rating.
• TO dispatcher(s) shall identify facility loading concerns which would necessitate additional load shed to reduce post-contingency flows below emergency rating.
• TO dispatcher(s) continues to monitor expected post-contingency flows and adjusts their load shed strategy as appropriate in the PCLLRW eTool application.
• TO dispatcher(s) advise appropriate station/stations and key personnel.
• TO dispatcher(s)/DPs review local procedures and prepare to shed load in the amount requested.
• TO dispatcher(s)/DPs reinforce internal communications so load shed can occur with minimum delay.
• TO dispatcher(s) shall be prepared to implement post-contingency switching options, manual generation trip schemes or load transfer via SCADA with minimum delay.
• TO dispatcher(s) shall be prepared to implement a Load Shed Directive if post contingency switching, generator reduction, or load transfer options fail.
• TO dispatcher(s) man substations as necessary if SCADA control is unavailable or insufficient.

• Transmission Owner may coordinate with BtMG facility either directly, or through electric distributor, during expected prolonged emergency load dump/shed or as otherwise necessary to help mitigate a grid emergency. As BtMG facilities do not participate in the wholesale energy market any request ~~by~~

~~PJM~~ to operate for the purpose of helping to mitigate a wholesale market issue is on a voluntary basis at the discretion of the BtMG owner. Any request to operate to mitigate a wholesale market issue will be communicated to the BtMG as a voluntary request at the discretion of the BTMG owner. ~~As~~ Refer to Manual 14D Appendix A for more information regarding BtMG.

• TO dispatcher (s) shall notify PJM Dispatch if post-contingency flows fall below Emergency Ratings and the PCLLRW has not been canceled.
• Generator Operators to reduce/trip generation if instructed by PJM.

5.7 Load Shed Directive Procedure

Load Shed Directive

Note:
Issuance of this procedure will trigger a capacity **Performance Assessment Interval (PAI)** as detailed in *PJM Manual 18, PJM Capacity Market.*
For a facility exceeding its LTE, STE or LD thermal rating, PJM and TO Operators should utilize the following steps to determine when to Shed Load:

STEP 1: Contact between the PJM and TO should be made immediately. In particular for a facility exceeding its LD rating, there is minimal time for delay outside of the initial recognition of the event.

STEP 2: Compare real-time (RT) flows to state estimator (SE) flows.
• If there are no discrepancies, move on to **STEP 3.**
• For any discrepancies:
o If the reason for the discrepancies is NOT immediately obvious, PJM and TO shall agree upon the most-conservative values.
o If the reason for the discrepancies is immediately obvious, and the facility is determined not to be in an LTE, STE or LD overload:
− PJM and TO should work together as needed to resolve the discrepancy.
− PJM and TO operators should log the discrepancy.
− Cease Load Shed Determination Procedure if it is determined that the facility is not in an overload situation. Otherwise, go to next step.
STEP 3: Compare LD and Emergency (LTE and STE, if both are provided) ratings between PJM and TO.
• If there are no ratings discrepancies, move on to **STEP 4.**
• For any discrepancies:

o If the reason for the discrepancies is NOT immediately obvious, PJM and TO shall agree upon the most-conservative/lowest values.
o If the reason for the discrepancies is immediately obvious, and the facility is determined not to be in an LTE, STE or LD overload:
− PJM and TO should work together as needed to resolve the discrepancy.
− PJM and TO operators should log the discrepancy.
− Cease Load Shed Determination Procedure if it is determined that the facility is not in an overload situation. Otherwise, go to next step.

STEP 4: Switching and or Generation Option
Step 4A: Flow exceeds LD
• There are only 3 options available to alleviate to ensure flow is brought below limits within 5 minutes:
• A reclose attempt on a facility that just tripped and caused the present Load Dump overload; and/or
• A Pre-Studied Switching Solution; and/or
• ONLINE Generation Redispatch; Provided the generation has significant enough ramprate and relief potential to alleviate the overload within the given time constraints (5 minutes for a LD overload from the time Flow exceeded the LD rating). If reducing generation or shedding load are both options, generation should be reduced or tripped offline before shedding load.
• If a Pre-Studied Switching Solution or ONLINE Generation Redispatch is not immediately implemented … Go to **STEP 5**.

Step 4B: Flow exceeds STE but not LD (including if STE = LTE)
• Operators have some time to study Switching Solutions and/or Generation Redispatch.
• If no controlling actions are identified or if the actions will not alleviate the overload within 15 minutes from identification of the overload…Go to **STEP 5**.

Step 4C: Flow exceeds LTE but not STE
• Operators may have additional time to study Switching Solutions and/or Generation Redispatch. The additional time is dependent upon the STE time based rating for the facility as documented in Manual M-03 Attachment F and posted on at this OASIS site (typically 30 mins – 2hours).
• http://www.pjm.com/~/media/etools/oasis/system-information/m03-attachment-f-sterating-list.ashx
• However, if flow is above the LTE rating and 5 minutes away from becoming a Violation of the STE time based rating AND if a Switching Solution and/or Generation Redispatch is not expected to alleviate the overload …Go to **STEP 5**.

STEP 5: PJM will initiate a Load Shed Directive to the Transmission Owner(s) immediately and without delay.

• Transmission Owner may coordinate with BtMG facility either directly, or through electric distributor, during expected prolonged emergency load dump/shed or as otherwise necessary to help mitigate a grid emergency. As BtMG facilities do not participate in the wholesale energy market any request ~~by~~ PJM to operate for the purpose of helping to mitigate a wholesale market issue is on a voluntary basis at the discretion of the BtMG owner. Any request to operate to mitigate a wholesale market issue will be communicated to the BtMG as a voluntary request at the discretion of the BTMG owner. ~~As~~ Refer to Manual 14D Appendix A for more information regarding BtMG.