

NPRR285 – Grey-Boxed Language

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NPRR Number	285	NPRR Title	Generation Resource Base Point Deviation Charge Corrections
Nodal Protocol Sections Revised		6.5.5.2, Operational Data Requirements 6.5.7.4, Base Points 6.5.7.9, Compliance with Dispatch Instructions 6.6.5.1, General Generation Resource Base-Point Deviation Charge 6.6.5.1.1, Base Point Deviation Charge for Over Generation 6.6.5.1.2, Base Point Deviation Charge for Under Generation 6.6.5.2, IRR Generation Resource Base Point Deviation Charge	

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6.5.5.2 Operational Data Requirements

- (1) ERCOT shall use Operating Period data to monitor and control the reliability of the ERCOT Transmission Grid and shall use it in network analysis software to predict the short-term reliability of the ERCOT Transmission Grid. Each TSP, at its own expense, may obtain that Operating Period data from ERCOT or directly from QSEs.
- (2) A QSE representing a Generation Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time telemetry data to ERCOT for each Generation Resource. ERCOT shall make that data available, in accordance with ERCOT Protocols, NERC standards and policies, and Governmental Authority requirements, to requesting TSPs and DSPs operating within ERCOT. Such data must be provided to the requesting TSP or DSP at the requesting TSP's or DSP's expense, including:
 - (a) Net real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered gross real power and conversion constants determined by the Resource Entity and provided to ERCOT as a result of Section 3.7, Resource Parameters. Net real power represents the actual generation of a Resource for all real power dispatch purposes, including use in Security-Constrained Economic Dispatch (SCED), determination of the High Ancillary Service Limit (HASL), High Dispatch Limit (HDL), Low Dispatch Limit (LDL) and Low Ancillary Service Limit (LASL), and is consistent with telemetered HSL and LSL;
 - (b) Gross real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered real power, which may include Supervisory Control and Data Acquisition (SCADA) metering, and conversions constants determined by the Resource Entity and provided to ERCOT as a result of Section 3.7;

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- (c) Gross Reactive Power (in Megavolt-Amperes reactive (MVar));
 - (d) Net Reactive Power (in MVar);
 - (e) Power to standby transformers serving plant auxiliary Load;
 - (f) Status of switching devices in the plant switchyard not monitored by the TSP or DSP affecting flows on the ERCOT Transmission Grid;
 - (g) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;
 - (h) Generation Resource breaker and switch status;
 - (i) HSL;
 - (j) High Emergency Limit (HEL), under Section 6.5.9.2, Failure of the SCED Process;
 - (k) Low Emergency Limit (LEL), under Section 6.5.9.2;
 - (l) LSL;
 - (m) Configuration identification for Combined Cycle Generation Resources;
 - (n) Ancillary Service Schedule for each quantity of RRS and Non-Spin which is equal to the Ancillary Service Resource Responsibility minus the amount of Ancillary Service deployment;
 - (o) Ancillary Service Resource Responsibility for each quantity of Regulation Up (Reg-Up), Regulation Down (Reg-Down), RRS and Non-Spin. The sum of Ancillary Service Resource Responsibility for all Resources in a QSE is equal to the Ancillary Service Supply Responsibility for that QSE; and
 - (p) Reg-Up and Reg-Down Services participation factors represent how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource(s).
- (3) For each Wind-powered Generation Resource (WGR), the QSE shall set the HSL equal to the current net output capability of the facility within one SCADA cycle after receiving the last SCED Base Point Dispatch Instruction from ERCOT. The HSL telemetered to ERCOT for the WGR shall not be changed until the receipt of the next Base Point. If the Base Point received from ERCOT is less than the telemetered HSL minus two MW, then the WGR shall respond to the Base Point Dispatch Instruction and shall be considered curtailed. During any curtailed SCED intervals, the WGR HSL shall be updated within one SCADA cycle after the receipt of a subsequent SCED Base Point with a value which represents the WGR's estimated, non-curtailed output potential. This estimated, non-

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curtailed output potential shall be based upon turbine availability, wind speed at the WGR and application of the appropriate wind/power curves. During SCED intervals when the telemetered Base Point of the WGR exceeds the last HSL telemetered to ERCOT minus two MW, the WGR shall be considered as not curtailed. HSLs telemetered to ERCOT for WGRs that are not curtailed shall be based on the WGRs' actual net output as stated above in this Section 6.5.5.2.

[NPRR285: Replace paragraph (3) above with the following upon system implementation:]

- (3) For each Wind-powered Generation Resource (WGR), the QSE shall set the HSL equal to the current net output capability of the facility. During periods in which WGRs are required to comply with SCED Dispatch Instructions, this estimated, output potential shall be based upon turbine availability, wind speed at the WGR and application of the appropriate wind/power curves. HSLs telemetered to ERCOT for WGRs that are fully dispatched by SCED shall be based on the WGRs' actual net output as stated above in this Section 6.5.5.2.
- (4) A QSE representing a Load Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time data to ERCOT for each Load Resource and ERCOT shall make the data available, in accordance with ERCOT Protocols, NERC standards and policies, and Governmental Authority requirements, to the Load Resource's host TSP or DSP at the TSP's or DSP's expense. The Load Resource's net real power consumption, Low Power Consumption (LPC) and Maximum Power Consumption (MPC) shall be telemetered to ERCOT using a positive (+) sign convention:
 - (a) Load Resource net real power consumption (in MW);
 - (b) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;
 - (c) Load Resource breaker status;
 - (d) LPC (in MW);
 - (e) MPC (in MW);
 - (f) Ancillary Service Schedule (in MW) for each quantity of RRS and Non-Spin;
 - (g) Ancillary Service Resource Responsibility (in MW) for each quantity of Reg-Up and Reg-Down for Controllable Load Resources, and RRS and Non-Spin for all Load Resources;
 - (h) The status of the high-set under-frequency relay, if required for qualification;

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- (i) For a Controllable Load Resource, the Scheduled Power Consumption that represents zero Ancillary Service deployments;
 - (j) For a Controllable Load Resource, net Reactive Power (in MVar);
 - (k) Resource Status (Resource Status shall be ONRL if high-set under-frequency relay is active); and
 - (l) Reg-Up and Reg-Down services participation factor, which represents how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource.
- (5) A QSE with Resources used in SCED shall provide communications equipment to receive ERCOT-telemetered control deployments.
- (6) A QSE providing any Regulation Service shall provide telemetry indicating the appropriate status of Resources providing Reg-Up or Reg-Down, including status indicating whether the Resource is temporarily blocked from receiving Reg-Up and/or Reg-Down deployments from the QSE.
- (7) Real-Time data for reliability purposes must be accurate to within three percent. This telemetry may be provided from relaying accuracy instrumentation transformers.
- (8) Each QSE shall report the current configuration of combined-cycle Resources that it represents to ERCOT. The telemetered Resource Status for a Combined Cycle Generation Resource may only be assigned a Resource Status of OFFNS if no generation units within that Combined Cycle Generation Resource are On-Line.
- (9) A QSE representing combined-cycle Resources shall provide ERCOT with the possible operating configurations for each power block with accompanying limits. Combined Cycle Train power augmentation methods may only be included as part of one or more of the registered Combined Cycle Generation Resource configurations. The Energy Offer Curve in the Three-Part Supply Offer that includes the offered power augmentation method may reflect the price of the added capability. Such power augmentation methods may include:
 - (a) Combustion turbine inlet air cooling (CTIAC) methods;
 - (b) Duct firing;
 - (c) Other ways of temporarily increasing the output of combined-cycle Resources; and
 - (d) For Qualifying Facilities (QFs), an LSL that represents the minimum energy available, in MW, from the Combined Cycle Generation Resource for economic

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dispatch based on the minimum stable steam delivery to the thermal host plus a justifiable reliability margin that accounts for changes in ambient conditions.

6.5.7.4 Base Points

ERCOT shall issue a Base Point for each On-Line Generation Resource on completion of each SCED execution. The Base Point set by SCED must observe a Generation Resource's HDL and LDL. Base Points are automatically superseded on receipt of a new Base Point from ERCOT regardless of the status of any current ramping activity of a Resource. ERCOT shall provide each Base Point using Dispatch Instructions issued over Inter-Control Center Communications Protocol (ICCP) data link to the QSE representing each Resource that include the following information:

- (a) Resource identifier that is the subject of the Dispatch Instruction;
- (b) MW output;
- (c) Time of the Dispatch Instruction; and
- (d) Other information relevant to that Dispatch Instruction.

[NPRR285: Replace Section 6.5.7.4, Base Points, above, with the following upon system implementation:]

6.5.7.4 Base Points

ERCOT shall issue a Base Point for each On-Line Generation Resource on completion of each SCED execution. The Base Point set by SCED must observe a Generation Resource's HDL and LDL. Base Points are automatically superseded on receipt of a new Base Point from ERCOT regardless of the status of any current ramping activity of a Resource. ERCOT shall provide each Base Point using Dispatch Instructions issued over Inter-Control Center Communications Protocol (ICCP) data link to the QSE representing each Resource that include the following information:

- (a) Resource identifier that is the subject of the Dispatch Instruction;
- (b) MW output;
- (c) Time of the Dispatch Instruction;
- (d) Flag indicating SCED has dispatched a Generation Resource below HDL used by SCED;
- (e) Flag indicating SCED has dispatched a Generation Resource away from the

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Output Schedule submitted for that Generation Resource; and

- (f) Other information relevant to that Dispatch Instruction.

6.5.7.9 Compliance with Dispatch Instructions

- (1) Except as otherwise specified in this Section, each TSP and each QSE shall comply fully and promptly with a Dispatch Instruction issued to it, unless in the sole and reasonable judgment of the TSP or QSE, such compliance would create an undue threat to safety, undue risk of bodily harm or undue damage to equipment, or the Dispatch Instruction is otherwise not in compliance with these Protocols.
- (2) If the recipient of a Dispatch Instruction does not comply because in the sole and reasonable judgment of the TSP or QSE, such compliance would create an undue threat to safety, undue risk of bodily harm, or undue damage to equipment, then the TSP or QSE must immediately notify ERCOT and provide the reason for non-compliance.
- (3) If the recipient of a Dispatch Instruction recognizes that the Dispatch Instruction conflicts with other valid instructions or is invalid, the recipient shall immediately notify ERCOT of the conflict and request resolution. ERCOT shall resolve the conflict by issuing another Dispatch Instruction.
- (4) ERCOT's final Dispatch Instruction to a QSE in effect applies for all Protocol-related processes. If the QSE does not comply after receiving the final Dispatch Instruction, the QSE remains liable for failure to meet its obligations under the Protocols and remains liable for any charges resulting from such failure.
- (5) ERCOT's final Dispatch Instruction to a TSP in effect applies for all Protocol-related processes. If the TSP does not comply after receiving the final Dispatch Instruction, the TSP remains liable for such failure under these Protocols under the TSP's Agreement with ERCOT.
- (6) In all cases in which compliance with a Dispatch Instruction is disputed, both ERCOT and the QSE or TSP shall document their communications, agreements, disagreements, and reasons for their actions, to enable resolution of the dispute through the Alternative Dispute Resolution (ADR) process in Section 20, Alternative Dispute Resolution Procedure.
- (7) An Intermittent Renewable Resource (IRR) must comply with Dispatch Instructions requiring it to reduce output two MW or more below the Resource's latest HSL.

[NPRR285: Replace paragraph (7) above with the following upon system implementation:]

- (7) An Intermittent Renewable Resource (IRR) must comply with Dispatch Instructions

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when receiving a flag signifying that the IRR has received a Base Point below the HDL used by SCED.

6.6.5.1 General Generation Resource Base Point Deviation Charge

- (1) Unless one of the exceptions specified in paragraphs (2) and (3) below applies, ERCOT shall charge a Generation Resource Base Point Deviation Charge for a Generation Resource other than those described in Section 6.6.5.2, IRR Generation Resource Base Point Deviation Charge, and Section 6.6.5.3, Generators Exempt from Deviation Charges, when:
 - (a) The Settlement Point Price for the Resource Node is positive; and
 - (b) The telemetered generation of the Generation Resource over the 15-minute Settlement Interval is outside the tolerances defined later in this Section 6.6.5.1.
- (2) ERCOT may not charge a QSE a Generation Resource Base Point Deviation Charge under paragraph (1) above when both of the following apply:
 - (a) The generation deviation of the Generation Resource over the 15-minute Settlement Interval is in a direction that contributes to frequency corrections that resolve an ERCOT System frequency deviation; and
 - (b) The ERCOT System frequency deviation is greater than +/-0.05 Hz at any time during the 15-minute Settlement Interval.
- (3) ERCOT may not charge a QSE a Generation Resource Base Point Deviation Charge under paragraph (1) above for any 15-minute Settlement Interval during which Responsive Reserve (RRS) is deployed.
- (4) ERCOT may not charge a QSE a Generation Resource Base Point Deviation Charge under paragraph (1) above for any 15-minute Settlement Interval which includes a SCED interval that is less than four minutes in duration.

[NPRR285: Replace Section 6.6.5.1, General Generation Resource Base Point Deviation Charge, above with the following upon system implementation:]

- (1) Unless one of the exceptions specified in paragraphs (2) and (3) below applies, ERCOT shall charge a Generation Resource Base Point Deviation Charge for a Generation Resource other than those described in Section 6.6.5.2, IRR Generation Resource Base Point Deviation Charge, and Section 6.6.5.3, Generators Exempt from Deviation Charges, when the telemetered generation of the Generation Resource over the 15-minute Settlement Interval is outside the tolerances defined later in this Section 6.6.5.1.

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- (2) ERCOT may not charge a QSE a Generation Resource Base Point Deviation Charge under paragraph (1) above when both of the following apply:
 - (a) The generation deviation of the Generation Resource over the 15-minute Settlement Interval is in a direction that contributes to frequency corrections that resolve an ERCOT System frequency deviation; and
 - (b) The ERCOT System frequency deviation is greater than +/-0.05 Hz at any time during the 15-minute Settlement Interval.
- (3) ERCOT may not charge a QSE a Generation Resource Base Point Deviation Charge under paragraph (1) above for any 15-minute Settlement Interval during which Responsive Reserve (RRS) is deployed.
- (4) ERCOT may not charge a QSE a Generation Resource Base Point Deviation Charge under paragraph (1) above for any 15-minute Settlement Interval which includes a SCED interval that is less than four minutes in duration.

6.6.5.1.1 *Base Point Deviation Charge for Over Generation*

- (1) ERCOT shall charge a QSE for a Generation Resource for over-generation that exceeds the following tolerance. The tolerance is the greater of:
 - (a) 5% of the average of the Base Points in the Settlement Interval adjusted for any Ancillary Service deployments; or
 - (b) Five MW for metered generation above the average of the Base Points in the Settlement Interval adjusted for any Ancillary Service deployments.
- (2) The charge to each QSE for over-generation of each Generation Resource at each Resource Node Settlement Point, if the Real-Time metered generation is greater than the upper tolerance during a given 15-minute Settlement Interval, is calculated as follows:

$$\text{BPDAMT}_{q,r,p} = \text{Max}(0, \text{RTSPP}_p) * \text{Max}[0, (\text{TW TG}_{q,r,p} - \frac{1}{4} * \text{Max}(((1 + \text{K1}) * \text{AABP}_{q,r,p}), (\text{AABP}_{q,r,p} + \text{Q1})))]$$

Where:

$$\text{TW TG}_{q,r,p} = \sum_y (\text{ATG}_{q,r,p,y} * \text{TLMP}_y / 3600)$$

The above variables are defined as follows:

Variable	Unit	Definition
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Variable	Unit	Definition
BPDAMT _{q, r, p}	\$	<i>Base Point Deviation Charge per QSE per Settlement Point per Resource</i> —The charge to QSE q for Generation Resource r at Resource Node p , for its deviation from Base Point, for the 15-minute Settlement Interval. The Base Point Deviation Charge is charged to the Combined Cycle Train for all Combined Cycle Generation Resources.
RTSPP _p	\$/MWh	<i>Real-Time Settlement Point Price per Settlement Point</i> —The Real-Time Settlement Point Price at Settlement Point p , for the 15-minute Settlement Interval.
TWTG _{q, r, p}	MWh	<i>Time-Weighted Telemetered Generation per QSE per Settlement Point per Resource</i> —The telemetered generation of Generation Resource r represented by QSE q at Resource Node p , for the 15-minute Settlement Interval. Where for a Combined Cycle Train, the Resource r is the Combined Cycle Train.
AABP _{q, r, p}	MW	<i>Adjusted Aggregated Base Point per QSE per Settlement Point per Resource</i> —The aggregated Base Point adjusted for Ancillary Service deployments, of Generation Resource r represented by QSE q at Resource Node p , for the 15-minute Settlement Interval. Where for a Combined Cycle Train, AABP is calculated for the Combined Cycle Train considering all SCED Dispatch Instructions to any Combined Cycle Generation Resources within the Combined Cycle Train.
ATG _{q, r, p, y}	MW	<i>Average Telemetered Generation</i> —The average telemetered generation of Generation Resource r represented by QSE q at Resource Node p , for the SCED interval.
TLMP _y	second	<i>Duration of SCED interval per interval</i> —The duration of the portion of the SCED interval y within the 15-minute Settlement Interval.
K1	none	The percentage tolerance for over-generation, 5%.
Q1	MW	The MW tolerance for over-generation, five MW.
q	none	A QSE.
3600	none	The number of seconds in one hour.
p	none	A Resource Node Settlement Point.
r	none	A non-exempt, non-Intermittent Renewable Resource (IRR) Generation Resource.
y	none	An Emergency Base Point interval or SCED interval that overlaps the 15-minute Settlement Interval.

[NPRR285: Replace Section 6.6.5.1.1, Base Point Deviation Charge for Over Generation, above, with the following upon system implementation:]

6.6.5.1.1 Base Point Deviation Charge for Over Generation

- (1) ERCOT shall charge a QSE for a Generation Resource for over-generation that exceeds the following tolerance. The tolerance is the greater of:
 - (a) 5% of the average of the Base Points in the Settlement Interval adjusted for any Ancillary Service deployments; or
 - (b) Five MW for metered generation above the average of the Base Points in the Settlement Interval adjusted for any Ancillary Service deployments.
- (2) The charge to each QSE for over-generation of each Generation Resource at each Resource Node Settlement Point, if the Real-Time metered generation is greater than the

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upper tolerance during a given 15-minute Settlement Interval, is calculated as follows:

$$\text{BPDAMT}_{q,r,p} = \text{Max}(\text{PR1}, \text{RTSPP}_p) * \text{Max}[0, (\text{TWGTG}_{q,r,p} - \frac{1}{4} * \text{Max}(((1 + \text{K1}) * \text{AABP}_{q,r,p}), (\text{AABP}_{q,r,p} + \text{Q1}))))]$$

Where:

$$\text{TWGTG}_{q,r,p} = \sum_y (\text{ATG}_{q,r,p,y} * \text{TLMP}_y / 3600)$$

The above variables are defined as follows:

Variable	Unit	Definition
$\text{BPDAMT}_{q,r,p}$	\$	<i>Base Point Deviation Charge per QSE per Settlement Point per Resource</i> —The charge to QSE q for Generation Resource r at Resource Node p , for its deviation from Base Point, for the 15-minute Settlement Interval. The Base Point Deviation Charge is charged to the Combined Cycle Train for all Combined Cycle Generation Resources.
RTSPP_p	\$/MWh	<i>Real-Time Settlement Point Price per Settlement Point</i> —The Real-Time Settlement Point Price at Settlement Point p , for the 15-minute Settlement Interval.
$\text{TWGTG}_{q,r,p}$	MWh	<i>Time-Weighted Telemetered Generation per QSE per Settlement Point per Resource</i> —The telemetered generation of Generation Resource r represented by QSE q at Resource Node p , for the 15-minute Settlement Interval. Where for a Combined Cycle Train, the Resource r is the Combined Cycle Train.
$\text{AABP}_{q,r,p}$	MW	<i>Adjusted Aggregated Base Point per QSE per Settlement Point per Resource</i> —The aggregated Base Point adjusted for Ancillary Service deployments, of Generation Resource r represented by QSE q at Resource Node p , for the 15-minute Settlement Interval. Where for a Combined Cycle Train, AABP is calculated for the Combined Cycle Train considering all SCED Dispatch Instructions to any Combined Cycle Generation Resource within the Combined Cycle Train.
$\text{ATG}_{q,r,p,y}$	MW	<i>Average Telemetered Generation</i> —The average telemetered generation of Generation Resource r represented by QSE q at Resource Node p , for the SCED interval.
TLMP_y	second	<i>Duration of SCED interval per interval</i> —The duration of the portion of the SCED interval y within the 15-minute Settlement Interval.
PR1	\$/MWh	The minimum price to use for the charge calculation when RTSPP is positive, \$20.
K1	none	The percentage tolerance for over-generation, 5%.
Q1	MW	The MW tolerance for over-generation, five MW.
q	none	A QSE.
3600	none	The number of seconds in one hour.
p	none	A Resource Node Settlement Point.
r	none	A non-exempt, non-Intermittent Renewable Resource (IRR) Generation Resource.
y	none	An Emergency Base Point interval or SCED interval that overlaps the 15-minute Settlement Interval.

6.6.5.1.2 Base Point Deviation Charge for Under Generation

- (1) ERCOT shall charge a QSE for a Generation Resource for under generation if the metered generation is below the lesser of:

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- (a) 95% of the average of the Base Points in the Settlement Interval adjusted for any Ancillary Service deployments; or
 - (b) The average of the Base Points in the Settlement Interval adjusted for any Ancillary Service deployments minus five MW.
- (2) The charge to each QSE for under-generation of each Generation Resource at each Resource Node Settlement Point for a given 15-minute Settlement Interval is calculated as follows:

$$\text{BPDAMT}_{q,r,p} = \text{Max}(0, \text{RTSPP}_p) * \text{Min}(1, \text{KP}) * \text{Max}\{0, \{\text{Min}[\frac{1}{4}((1 - \text{K2}) * \frac{1}{4}(\text{AABP}_{q,r,p})), \frac{1}{4}(\text{AABP}_{q,r,p} - \text{Q2})]\} - \text{TWGT}_{q,r,p}\}$$

Where:

$$\text{TWGT}_{q,r,p} = \sum_y (\text{ATG}_{q,r,p,y} * \text{TLMP}_y / 3600)$$

The above variables are defined as follows:

Variable	Unit	Definition
$\text{BPDAMT}_{q,r,p}$	\$	<i>Base Point Deviation Charge per QSE per Settlement Point per Resource</i> —The charge to QSE q for Generation Resource r at Resource Node p , for its deviation from Base Point, for the 15-minute Settlement Interval. A Base Point Deviation Charge is charged to the Combined Cycle Train for all Combined Cycle Generation Resources.
RTSPP_p	\$/MWh	<i>Real-Time Settlement Point Price per Settlement Point</i> —The Real-Time Settlement Point Price at Settlement Point p , for the 15-minute Settlement Interval.
$\text{TWGT}_{q,r,p}$	MWh	<i>Time-Weighted Telemetered Generation per QSE per Settlement Point per Resource</i> —The telemetered generation of Generation Resource r represented by QSE q at Resource Node p , for the 15-minute Settlement Interval. Where for a Combined Cycle Train, the Resource r is the Combined Cycle Train.
$\text{AABP}_{q,r,p}$	MW	<i>Adjusted Aggregated Base Point</i> —The aggregated Base Point adjusted for Ancillary Service deployments of Generation Resource r represented by QSE q at Resource Node p , for the 15-minute Settlement Interval. Where for a Combined Cycle Train, AABP is calculated for the Combined Cycle Train considering all SCED Dispatch Instructions to any Combined Cycle Generation Resources within the Combined Cycle Train.
$\text{ATG}_{q,r,p,y}$	MW	<i>Average Telemetered Generation</i> —The average telemetered generation of Generation Resource r represented by QSE q at Resource Node p , for the SCED interval.
TLMP_y	second	<i>Duration of SCED interval per interval</i> —The duration of the portion of the SCED interval y within the 15-minute Settlement Interval.
KP	None	The coefficient applied to the Settlement Point Price for under-generation charge, 1.0.
K2	None	The percentage tolerance for under-generation, 5%.
Q2	MW	The MW tolerance for under-generation, five MW.
q	none	A QSE.
p	none	A Resource Node Settlement Point.
r	none	A non-exempt, non-IRR Generation Resource.

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y	none	An Emergency Base Point interval or SCED interval that overlaps the 15-minute Settlement Interval.
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[NPRR285: Replace Section 6.6.5.1.2, Base Point Deviation Charge for Under Generation, above with the following upon system implementation:]

6.6.5.1.2 Base Point Deviation Charge for Under Generation

- (1) ERCOT shall charge a QSE for a Generation Resource for under generation if the metered generation is below the lesser of:
 - (a) 95% of the average of the Base Points in the Settlement Interval adjusted for any Ancillary Service deployments; or
 - (b) The average of the Base Points in the Settlement Interval adjusted for any Ancillary Service deployments minus five MW.
- (2) The charge to each QSE for under-generation of each Generation Resource at each Resource Node Settlement Point for a given 15-minute Settlement Interval is calculated as follows:

$$\text{BPDAMT}_{q, r, p} = (-1) * \text{Min}(\text{PR2}, \text{RTSPP}_p) * \text{Min}(1, \text{KP}) * \text{Max}\{0, \{\text{Min}[(1 - \text{K2}) * \frac{1}{4}(\text{AABP}_{q, r, p})], \frac{1}{4}(\text{AABP}_{q, r, p} - \text{Q2})] - \text{TWTG}_{q, r, p}\}\}$$

Where:

$$\text{TWTG}_{q, r, p} = \sum_y (\text{ATG}_{q, r, p, y} * \text{TLMP}_y / 3600)$$

The above variables are defined as follows:

Variable	Unit	Definition
$\text{BPDAMT}_{q, r, p}$	\$	<i>Base Point Deviation Charge per QSE per Settlement Point per Resource</i> —The charge QSE q for Generation Resource r at Resource Node p , for its deviation from Base Point the 15-minute Settlement Interval. A Base Point Deviation Charge is charged to the Combined Cycle Train for all Combined Cycle Generation Resources.
RTSPP_p	\$/MWh	<i>Real-Time Settlement Point Price per Settlement Point</i> —The Real-Time Settlement Point Price at Settlement Point p , for the 15-minute Settlement Interval.
$\text{TWTG}_{q, r, p}$	MWh	<i>Time-Weighted Telemetered Generation per QSE per Settlement Point per Resource</i> —telemetered generation of Generation Resource r represented by QSE q at Resource Node p , for the 15-minute Settlement Interval. Where for a Combined Cycle Train, the Resource r is the Combined Cycle Train.

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AABP _{q, r, p}	MW	<i>Adjusted Aggregated Base Point</i> —The aggregated Base Point adjusted for Ancillary Service deployments of Generation Resource <i>r</i> represented by QSE <i>q</i> at Resource Node <i>p</i> , for the 15-minute Settlement Interval. Where for a Combined Cycle Train, AABP is calculated for the Combined Cycle Train considering all SCED Dispatch Instructions to any Combined Cycle Generation Resources within the Combined Cycle Train.	
ATG _{q, r, p, y}	MW	<i>Average Telemetered Generation</i> —The average telemetered generation of Generation Resource <i>r</i> represented by QSE <i>q</i> at Resource Node <i>p</i> , for the SCED interval.	
TLMP _y	second	<i>Duration of SCED interval per interval</i> —The duration of the portion of the SCED interval <i>y</i> within the 15-minute Settlement Interval.	
KP	None	The coefficient applied to the Settlement Point Price for under-generation charge, 1.0.	
PR2	\$/MWh	The minimum price to use for the charge calculation when RTSPP is negative, \$-20.	
K2	None	The percentage tolerance for under-generation, 5%.	
Q2	MW	The MW tolerance for under-generation, five MW.	
<i>q</i>	none	A QSE.	
<i>p</i>	none	A Resource Node Settlement Point.	
<i>r</i>	none	A non-exempt, non-IRR Generation Resource.	
<i>y</i>	none	An Emergency Base Point interval or SCED interval that overlaps the 15-minute Settlement Interval.	

6.6.5.2 IRR Generation Resource Base Point Deviation Charge

ERCOT shall not charge a QSE for an IRR a Base Point Deviation Charge.

[NPRR285: Replace Section 6.6.5.2, IRR Generation Resource Base Point Deviation Charge, above, with the following upon system implementation:]

6.6.5.2 IRR Generation Resource Base Point Deviation Charge

- (1) ERCOT shall charge a QSE for an IRR a Base Point Deviation Charge if the IRR metered generation is more than 10% above its Adjusted Aggregated Base Point and the flag signifying that the IRR has received a Base Point below the HDL used by SCED has been received.
- (2) The charge to each QSE for non-excused over-generation of each IRR at each Resource Node Settlement Point, if the Real-Time metered generation is greater than the upper tolerance during a 15-minute Settlement Interval, is calculated as follows:

If the flag signifying that the IRR has received a Base Point below the HDL used by SCED is not set in all SCED intervals within the 15-minute Settlement Interval:

$$\text{BPDAMT}_{q, r, p} = 0$$

If the flag signifying that the IRR has received a Base Point below the HDL used by SCED is set in all SCED intervals within the 15-minute Settlement Interval:

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$$\text{BPDAMT}_{q, r, p} = \text{Max}(\text{PR1}, \text{RTSPP}_p) * \text{Max}(0, \text{TWG}_{q, r, p} - \frac{1}{4} * \text{AABP}_{q, r, p} * (1 + \text{KIRR}))$$

Where:

$$\text{TWG}_{q, r, p} = \sum_y (\text{ATG}_{q, r, p, y} * \text{TLMP}_y / 3600)$$

The above variables are defined as follows:

Variable	Unit	Definition
$\text{BPDAMT}_{q, r, p}$	\$	<i>Base Point Deviation Charge per QSE per Settlement Point per Resource</i> —The charge to QSE q for Generation Resource r at Resource Node p , for its deviation from Base Point, for the 15-minute Settlement Interval.
RTSPP_p	\$/MWh	<i>Real-Time Settlement Point Price per Settlement Point</i> —The Real-Time Settlement Point Price at Resource Node p , for the 15-minute Settlement Interval.
$\text{TWG}_{q, r, p}$	MWh	<i>Time-Weighted Telemetered Generation per QSE per Settlement Point per Resource</i> —The telemetered generation of Generation Resource r represented by QSE q at Resource Node p , for the 15-minute Settlement Interval.
$\text{AABP}_{q, r, p}$	MW	<i>Adjusted Aggregated Base Point Generation per QSE per Settlement Point per Resource</i> —The aggregated Base Point adjusted for Ancillary Service deployments, of Generation Resource r represented by QSE q at Resource Node p , for the 15-minute Settlement Interval.
$\text{ATG}_{q, r, p, y}$	MW	<i>Average Telemetered Generation</i> —The average telemetered generation of Generation Resource r represented by QSE q at Resource Node p , for the SCED interval.
TLMP_y	second	<i>Duration of SCED interval per interval</i> —The duration of the portion of the SCED interval y within the 15-minute Settlement Interval.
PR1	\$/MWh	The minimum price to use for the charge calculation when RTSPP is positive, \$20.
KIRR		The percentage tolerance for over-generation of an IRR, 10%.
q	none	A QSE.
p	none	A Resource Node Settlement Point.
r	none	An IRR Generation Resource.
y	none	An Emergency Base Point interval or SCED interval that overlaps the 15-minute Settlement Interval.

6.5.5.2 Operational Data Requirements

- (1) ERCOT shall use Operating Period data to monitor and control the reliability of the ERCOT Transmission Grid and shall use it in network analysis software to predict the short-term reliability of the ERCOT Transmission Grid. Each TSP, at its own expense, may obtain that Operating Period data from ERCOT or directly from QSEs.
- (2) A QSE representing a Generation Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time telemetry data to ERCOT for each Generation Resource. ERCOT shall make that data available, in accordance with

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ERCOT Protocols, NERC standards and policies, and Governmental Authority requirements, to requesting TSPs and DSPs operating within ERCOT. Such data must be provided to the requesting TSP or DSP at the requesting TSP's or DSP's expense, including:

- (a) Net real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered gross real power and conversion constants determined by the Resource Entity and provided to ERCOT as a result of Section 3.7, Resource Parameters. Net real power represents the actual generation of a Resource for all real power dispatch purposes, including use in Security-Constrained Economic Dispatch (SCED), determination of the High Ancillary Service Limit (HASL), High Dispatch Limit (HDL), Low Dispatch Limit (LDL) and Low Ancillary Service Limit (LASL), and is consistent with telemetered HSL and LSL;
- (b) Gross real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered real power, which may include Supervisory Control and Data Acquisition (SCADA) metering, and conversions constants determined by the Resource Entity and provided to ERCOT as a result of Section 3.7;
- (c) Gross Reactive Power (in Megavolt-Amperes reactive (MVar));
- (d) Net Reactive Power (in MVar);
- (e) Power to standby transformers serving plant auxiliary Load;
- (f) Status of switching devices in the plant switchyard not monitored by the TSP or DSP affecting flows on the ERCOT Transmission Grid;
- (g) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;
- (h) Generation Resource breaker and switch status;
- (i) HSL;
- (j) High Emergency Limit (HEL), under Section 6.5.9.2, Failure of the SCED Process;
- (k) Low Emergency Limit (LEL), under Section 6.5.9.2;
- (l) LSL;
- (m) Configuration identification for Combined Cycle Generation Resources;

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- (n) Ancillary Service Schedule for each quantity of RRS and Non-Spin which is equal to the Ancillary Service Resource Responsibility minus the amount of Ancillary Service deployment;
 - (o) Ancillary Service Resource Responsibility for each quantity of Regulation Up (Reg-Up), Regulation Down (Reg-Down), RRS and Non-Spin. The sum of Ancillary Service Resource Responsibility for all Resources in a QSE is equal to the Ancillary Service Supply Responsibility for that QSE; and
 - (p) Reg-Up and Reg-Down Services participation factors represent how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource(s).
- (3) For each Wind-powered Generation Resource (WGR), the QSE shall set the HSL equal to the current net output capability of the facility within one SCADA cycle after receiving the last SCED Base Point Dispatch Instruction from ERCOT. The HSL telemetered to ERCOT for the WGR shall not be changed until the receipt of the next Base Point. If the Base Point received from ERCOT is less than the telemetered HSL minus two MW, then the WGR shall respond to the Base Point Dispatch Instruction and shall be considered curtailed. During any curtailed SCED intervals, the WGR HSL shall be updated within one SCADA cycle after the receipt of a subsequent SCED Base Point with a value which represents the WGR's estimated, non-curtailed output potential. This estimated, non-curtailed output potential shall be based upon turbine availability, wind speed at the WGR and application of the appropriate wind/power curves. During SCED intervals when the telemetered Base Point of the WGR exceeds the last HSL telemetered to ERCOT minus two MW, the WGR shall be considered as not curtailed. HSLs telemetered to ERCOT for WGRs that are not curtailed shall be based on the WGRs' actual net output as stated above in this Section 6.5.5.2.

[NPRR285: Replace paragraph (3) above with the following upon system implementation:]

- (3) For each Wind-powered Generation Resource (WGR), the QSE shall set the HSL equal to the current net output capability of the facility. During periods in which WGRs are required to comply with SCED Dispatch Instructions, this estimated, output potential shall be based upon turbine availability, wind speed at the WGR and application of the appropriate wind/power curves. HSLs telemetered to ERCOT for WGRs that are fully dispatched by SCED shall be based on the WGRs' actual net output as stated above in this Section 6.5.5.2.
- (4) A QSE representing a Load Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time data to ERCOT for each Load Resource and ERCOT shall make the data available, in accordance with ERCOT Protocols, NERC standards and policies, and Governmental Authority requirements, to the Load Resource's host TSP or DSP at the TSP's or DSP's expense. The Load Resource's net

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real power consumption, Low Power Consumption (LPC) and Maximum Power Consumption (MPC) shall be telemetered to ERCOT using a positive (+) sign convention:

- (a) Load Resource net real power consumption (in MW);
 - (b) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;
 - (c) Load Resource breaker status;
 - (d) LPC (in MW);
 - (e) MPC (in MW);
 - (f) Ancillary Service Schedule (in MW) for each quantity of RRS and Non-Spin;
 - (g) Ancillary Service Resource Responsibility (in MW) for each quantity of Reg-Up and Reg-Down for Controllable Load Resources, and RRS and Non-Spin for all Load Resources;
 - (h) The status of the high-set under-frequency relay, if required for qualification;
 - (i) For a Controllable Load Resource, the Scheduled Power Consumption that represents zero Ancillary Service deployments;
 - (j) For a Controllable Load Resource, net Reactive Power (in MVar);
 - (k) Resource Status (Resource Status shall be ONRL if high-set under-frequency relay is active); and
 - (l) Reg-Up and Reg-Down services participation factor, which represents how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource.
- (5) A QSE with Resources used in SCED shall provide communications equipment to receive ERCOT-telemetered control deployments.
- (6) A QSE providing any Regulation Service shall provide telemetry indicating the appropriate status of Resources providing Reg-Up or Reg-Down, including status indicating whether the Resource is temporarily blocked from receiving Reg-Up and/or Reg-Down deployments from the QSE.
- (7) Real-Time data for reliability purposes must be accurate to within three percent. This telemetry may be provided from relaying accuracy instrumentation transformers.

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- (8) Each QSE shall report the current configuration of combined-cycle Resources that it represents to ERCOT. The telemetered Resource Status for a Combined Cycle Generation Resource may only be assigned a Resource Status of OFFNS if no generation units within that Combined Cycle Generation Resource are On-Line.
- (9) A QSE representing combined-cycle Resources shall provide ERCOT with the possible operating configurations for each power block with accompanying limits. Combined Cycle Train power augmentation methods may only be included as part of one or more of the registered Combined Cycle Generation Resource configurations. The Energy Offer Curve in the Three-Part Supply Offer that includes the offered power augmentation method may reflect the price of the added capability. Such power augmentation methods may include:
 - (a) Combustion turbine inlet air cooling (CTIAC) methods;
 - (b) Duct firing;
 - (c) Other ways of temporarily increasing the output of combined-cycle Resources; and
 - (d) For Qualifying Facilities (QFs), an LSL that represents the minimum energy available, in MW, from the Combined Cycle Generation Resource for economic dispatch based on the minimum stable steam delivery to the thermal host plus a justifiable reliability margin that accounts for changes in ambient conditions.