

DOCKET NO. 33416

CONSTELLATION NEWENERGY'S
APPEAL AND COMPLAINT OF
ERCOT DECISION TO APPROVE
PRR 676, PRR 674 AND REQUEST
FOR EXPEDITED RELIEF

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PUBLIC UTILITY COMMISSION

OF TEXAS

**CONSTELLATION NEWENERGY INC.'S APPEAL AND COMPLAINT OF
ERCOT DECISION TO APPROVE PRR 676 AND PRR 674
AND REQUEST FOR EXPEDITED RELIEF**

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Constellation NewEnergy, Inc. ("CNE") files this Request for Expedited Relief and Appeal and Complaint against the Electric Reliability Council of Texas ("ERCOT") relating to ERCOT'S approval and adoption of Protocol Revision Requests ("PRR") 676 and 674 ("Appeal and Complaint").

On September 19, 2006, ERCOT erroneously approved PRR 676 which drastically alters the way in which Replacement Reserve Service ("RPRS") and Out of Merit Capacity ("OOMC") costs are allocated to qualified scheduling entities ("QSEs") and results in potentially millions in unjustified costs arbitrarily assigned to lawfully underscheduled QSEs. There is no legal or policy justification for allocating RPRS and OOMC costs almost exclusively to underscheduled QSEs. This unlawful and discriminatory methodology not only harms QSEs who desire to underschedule, but has serious negative market consequences as well. CNE requests that the Commission expeditiously reverse ERCOT's approval of PRR 676 and order ERCOT to adopt protocols for assignment of RPRS and OOMC costs in a manner that is lawful and consistent with the Public Utility Regulatory Act ("PURA") and the Commission's Substantive Rules. CNE further requests that the Commission reverse ERCOT's improper revision of PRR 674, which is a protocol that provides for temporary allocation of RPRS and OOMC costs, and which includes a sunset date that is the earlier of February 1, 2007 or implementation of PRR 676. Inclusion of

a sunset date for this PRR that is contingent upon the implementation of an unlawful protocol is clear error. CNE requests that the Commission extend the effectiveness of PRR 674 until a lawful and nondiscriminatory protocol is implemented by ERCOT.

I. SUMMARY OF THE CASE AND ARGUMENT

The ERCOT Board adopted PRR 676 (as revised by ERCOT's staff) on September 19, 2006. (A true and correct copy of PRR 676 and the ERCOT Board Action Report is attached hereto as Appendix A.) PRR 676 erroneously modifies the cost allocation and settlement for procurement of RPRS¹ and OOMC² to assign RPRS and OOMC costs primarily to one type of QSEs—those QSEs that are underscheduled based on their scheduled resources at the time of ERCOT's procurement.³ CNE asserts, however, that ERCOT's decision to adopt PRR 676 will result in an improper and discriminatory allocation and settlement of a disproportionate share of RPRS and OOMC costs to QSEs who desire to purchase balancing energy at the time of ERCOT's RPRS procurement.⁴

¹ RPRS is an ancillary service that is procured from generation resources planned to be offline and load acting as resources through their availability for interruption during a period of requirement. *See* ERCOT Protocols § 2.1. ERCOT uses RPRS to ensure that sufficient resources are online in appropriate locations to maintain overall capacity sufficiency, transmission security, and deliverability.

² OOMC is an ancillary service procured from resources selected by ERCOT outside the bidding process to provide for the availability of sufficient capacity so that enough capacity is available in the balancing energy market to solve capacity insufficiency, congestion, or other reliability needs. *See* ERCOT Protocols § 6.1.10.

³ As approved, PRR 676 proposed revisions to the following Protocol Sections: 1) 6.9.2.1.1 Replacement Reserve Under Scheduled Capacity; 2) 6.9.2.2 Capacity and Minimum Energy Payments; 3) 6.9.7.1 OOM Capacity Charge; and 4) 6.6.3.2.1 Specific Procurement Process Requirements for Replacement Reserve Service ("RPRS") in the Adjustment Period. The proposed allocation of these costs to QSEs with short positions under PRR 676 is subject to a cap, as discussed below.

⁴ These costs are allocated to those QSEs that are underscheduled during a settlement period. That is, to the QSEs that are net buyers of balancing energy from the real time market relative to their resource schedules at the time of RPRS procurement. QSEs are permitted to be underscheduled (called a "short" position in commodity market terminology) under ERCOT's current market design. The issue at hand is the proper price such "short" buyers pay for the capacity they need. The price and quantity of energy bought from the balancing energy market is not in dispute in this case.

Specifically, PRR 676 will improperly assign the following costs to underscheduled QSEs:

1. Costs associated with procuring RPRS and OOMC in compliance with North American Electric Reliability Council ("NERC") requirements relating to ERCOT system-wide security;
2. Costs associated with procuring additional RPRS due to ERCOT's own load forecast error at the time of RPRS and OOMC procurement; and
3. RPRS and OOMC costs associated with resolving congestion.

RPRS costs incurred to ensure NERC compliance and to meet inflated load forecasts or inaccurate resource plans are not incurred as a direct result of underscheduling. Similarly, OOMC costs that resolve local congestion and other reliability costs are not directly attributable to underscheduling. Overall, the adoption of PRR 676 will result in the significant misallocation of costs to underscheduled QSEs. These costs are more properly and lawfully borne by all load-serving QSEs in ERCOT; given the current structure of the market and that such costs collectively benefit all users of the ERCOT system and, for that reason, have historically been uplifted to all load serving QSEs in ERCOT. Through arbitrary assignment of costs, PRR 676 directly violates PURA §§ 39.001(c) and 39.151(a)(4), PUC Subst. R. § 25.361(b), and the policies behind implementation of PUC Subst. R. § 25.501.

At the time of its adoption of PRR 676 on September 19, 2006, ERCOT also adopted PRR 674, Temporary Alteration of Settlement Equations Related to the RPRS Under Scheduled Charge.⁵ A true and correct copy of PRR 674 and the ERCOT Board Action Report is attached hereto as Appendix B.) As discussed above, this PRR temporarily alters the allocation and settlement of RPRS costs by uplifting those costs to all QSEs on a load ratio share basis, effective until the earlier of February 1, 2007 or the implementation of PRR 676. CNE also

⁵As filed and approved, PRR 674 makes revisions to the following Protocol Sections: 1) 6.9.2.1.1 Replacement Reserve Underscheduled Capacity, and 2) 6.9.2.1.2 Replacement Reserve Uplift Charge.

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appeals ERCOT's erroneous decision to set this sunset date for PRR 674. PRR 674 should remain in effect until ERCOT adopts an allocation and settlement methodology for RPRS that is consistent with PURA and which properly allocates, accounts and settles the costs of such service.⁶ Failure to do so likewise violates PURA §§ 39.001 and 39.151(a)(4), PUC Subst. R. §§ 25.361(b) and the policies behind implementation of PUC Subst. R. § 25.501.

In addition, CNE respectfully requests that the Commission consider this matter on an expedited basis pursuant to PUC Proc. R. §§ 22.251(k) and 22.78. Implementation of PRR 676 prior to a ruling from this Commission could subject CNE to significant unlawful RPRS costs. Therefore, good cause exists to consider this matter expeditiously. Alternatively, CNE requests that the Commission suspend implementation of PRR 676 until a final decision is reached on this Appeal and Complaint pursuant to PUC Proc. R. 22.251(i).

In support of its Complaint and Appeal, CNE shows the following:

II. AUTHORIZED REPRESENTATIVES

As a QSE and a load serving entity that has incurred costs associated with the procurement of RPRS and OOMC, CNE is affected by the methodologies utilized in PRRs 674 and 676 to allocate those costs. CNE is the only Complainant and is represented by its authorized representatives below:

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⁶ For example, CNE has proposed PRR 692, which it believes lawfully addresses RPRS allocation and settlement methodology. Adoption of this protocol as filed could trigger expiration of PRR 674.

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III. RESPONDENTS

ERCOT is the only entity against whom CNE seeks relief. ERCOT can be served at 7620 Metro Center Drive, Austin, Texas 78744. ERCOT's Fax number is (512) 225-7079. ERCOT's General Counsel is James Thorne and his email address is jthorne@ercot.com.

IV. PREREQUISITES OF APPEAL

CNE has complied with all necessary prerequisites to appealing ERCOT's decision by complying with ERCOT Protocols Chapter 21, Process for Protocol Revision. Specifically, CNE has presented protocol revision requests to ERCOT and has commented on other proposed PRRs addressing the RPRS costs that are the subject of this Complaint.

V. AFFECTED PARTIES

If CNE's relief is granted, the assignment and settlement of RPRS costs would occur pursuant to PRR 674 until such time that ERCOT adopts an allocation and settlement methodology for RPRS that lawfully and properly allocates and settles the costs of such service. All load-serving QSEs in ERCOT would be affected by this relief. CNE is a load serving entity that has incurred RPRS charges and expects to incur such charges in the future.

VI. JURISDICTION

The Commission has jurisdiction over this Appeal and Complaint under PURA § 39.151; PUC Subst. § 25.362 and PUC Proc. R. § 22.251. Procedural Rule § 22.251 prescribes the procedure by which an entity may file a complaint with the Commission after a decision or an

000005

act done or omitted to be done by ERCOT. Entities must use Section 20 of the ERCOT Protocols relating to Alternative Dispute Resolution or Section 21, Process for Protocol Revision, before filing a complaint with the Commission. CNE filed its Request for Protocol Revision under Section 21 and has timely filed this Complaint under Proc. Rule 22.251.

VII. ISSUES PRESENTED FOR REVIEW

1) Whether ERCOT's arbitrary assignment of RPRS and OOMC costs related to system security and congestion almost exclusively to underscheduled QSEs pursuant to the methodology in PRR 676 violates PURA § 35.004(e) which requires the Commission and ERCOT to ensure that ancillary services are available at reasonable prices with terms and conditions that are not unreasonably preferential, discriminatory, predatory or anticompetitive.

2) Whether ERCOT's arbitrary assignment of RPRS and OOMC costs related to system security and congestion almost exclusively to underscheduled QSEs pursuant to the methodology in PRR 676 violates PURA § 39.001(c) which prohibits ERCOT from discriminating against any participant or type of participant in the competitive market.

3) Whether ERCOT's arbitrary assignment of RPRS and OOMC costs related to system security and congestion almost exclusively to underscheduled QSEs pursuant to the methodology in PRR 676 violates PURA § 39.151(a)(4) and PUC Subst. R. 25.361(b) which mandate that ERCOT ensure that electricity production and delivery are accurately accounted for among generators and wholesale buyers and sellers.

4) Whether ERCOT's arbitrary assignment of RPRS and OOMC costs related to ERCOT's load forecast error almost exclusively to underscheduled QSEs pursuant to the methodology in PRR 676 violates PURA §§ 39.151(a)(4) and 35.004(e) and PUC Subst. R. § 25.361(b).

5) Whether ERCOT's arbitrary assignment of RPRS and OOMC costs related to system security and congestion almost exclusively to underscheduled QSEs pursuant to the methodology in PRR 676 is contrary to the policy and spirit of PUC Subst. R. 25.501 which adopts a nodal market in ERCOT.

6) Whether ERCOT's revision of PRR 674 to include a sunset date of the earlier of February 1, 2007 or implementation of PRR 676, is erroneous because it allows implementation of an unlawful protocol.

VIII. STATEMENT OF FACTS

The PRR at issue in this appeal involve RPRS and OOMC. ERCOT uses RPRS and OOMC to ensure that sufficient resources are online in appropriate locations to maintain overall capacity sufficiency, transmission security, and deliverability. At least once for each operating day, ERCOT evaluates expected system conditions, including its own forecast of demand, reported availability of generation resources, LAARs⁷ and the status of transmission resources. Based on the inputs to the model, ERCOT often procures RPRS and OOMC from resources to maintain system security and deliverability. The issue in this appeal is which entities should be allocated the costs of procuring RPRS and OOMC and in what manner. The RPRS and OOMC costs at issue in this appeal are reliability related and include: (1) costs associated with system security; (2) costs associated with congestion; and (3) costs associated with ERCOT's load forecast error.

RPRS appeared in ERCOT's original protocols approved by the Commission in 2001.⁸ However, due to the fact that software was not yet developed, RPRS was neither procured nor charged. On or about March 21, 2006, RPRS software became operational. On April 10, 2006, ERCOT procured RPRS for the first time. Prior to this time, ERCOT used OOMC to resolve local congestion and capacity insufficiency. Traditionally, the costs of OOMC were "uplifted" to all market participants based on their load ratio share. PRR 676 is the first change in protocols that affects the cost assignment for OOMC.

ERCOT uses elaborate computer software sometimes referred to as "the RPRS Procurement Engine" to determine whether to purchase RPRS. The RPRS Procurement Engine

⁷ Loads acting as resources.

⁸ *Petition of the Electric Reliability Council of Texas for Approval of the ERCOT Protocols*, Docket No. 23220, Order on Rehearing (June 1, 2001).

determines the need for RPRS based on ERCOT's load forecast and the QSE's submitted resource plans. There are two categories of RPRS referred to as Step 1 and Step 2. Step 1 is used to procure resources that relieve local congestion. Step 2 is procured to meet the system capacity and energy needs of the system including replacing capacity that is modeled as constrained in the RPRS engine. An ERCOT white paper on Sept. 19, 2006 regarding RPRS states that "ERCOT has observed a **significant improvement in the security of the transmission grid** by the way of reduced occurrence of transmission congestion since RPRS began." (See Appendix C, ERCOT White Paper dated September 19, 2006)(emphasis added).

Using the RPRS Procurement Engine (prior to approval of PRRs 674 and 676), ERCOT uplifted the cost of Step 1 on a load ratio share basis and assigned the cost of Step 2 solely to underscheduled QSEs.⁹ ERCOT charged underscheduled QSEs at the same rate that they paid resources for Step 2; however, the total of underscheduled volume over all QSEs was much greater than the total Step 2 procurements. Consequently, ERCOT collected more revenue than was needed to pay RPRS Resources for Step 2. The over-collection was credited to all QSEs by uplifting on load ratio share. During the period April-September 2006, the charge to underscheduled QSEs was approximately 5 times the amount paid to resources for providing Step 2 RPRS. The implementation of PRR 674 on October 1, 2006, ended this practice. However, by September 30, 2006, ERCOT had already charged more than \$130 million in Step 2 RPRS costs to underscheduled QSEs.

⁹ ERCOT considers underscheduling to be the difference between a QSE's zonal schedule at the time of RPRS procurement and the actual metered load in that zone. PRR 666, passed by the ERCOT Board of Directors on July 18, 2006 altered this by considering the calculations on a system wide basis. At the time of this filing, PRR 666 has not been implemented.

As result of issues relating to the over-collection of funds and other issues associated with implementation of the new software, various parties affected by the proposed revisions to the protocols introduced additional protocol revisions related to RPRS and OOMC. CNE introduced PRR 674 on July 19, 2006, which altered the structure by uplifting the cost of RPRS Step 2 procurements on a load ratio share across all QSEs until such time as a permanent solution could be achieved. The ERCOT Board of Directors approved PRR 674, but decided to terminate the PRR 674 on the earlier of February 1, 2007 or the date of PRR 676 implementation.¹⁰

PRR 676 was introduced by CPS Energy on or about July 25, 2006. The ERCOT Board approved a modified version of PRR 676 on September 19, 2006. PRR 676 will essentially assign all RPRS and OOMC costs to underscheduled QSEs, subject to a maximum, so called a cap. The cap for each QSE is set at twice the total RPRS and OOMC payments for all QSEs multiplied by that QSE's underscheduled capacity, then divided by the total capacity of RPRS and OOMC resources procured in each hour. In other words, the cap for each QSE is set at twice the average cost of OOMC and RPRS procurement multiplied by that QSE's underscheduled capacity. The ERCOT Board directed ERCOT Staff to report to the Board in January 2007 regarding whether ERCOT can implement PRR 676 by February 1, 2007.

IX. ARGUMENT

ERCOT's erroneous decision to adopt PRR 676 will result in the improper, unlawful, and discriminatory allocation and settlement of RPRS and OOMC costs to QSEs that are lawfully

¹⁰ CNE has also proposed PRR 692, which would provide a permanent solution that CNE believes is a more equitable solution for all market participants. This PRR appropriately charges the system for system costs, and charges the portion of RPRS procurements caused by underscheduling to those that underschedule. The Board has taken no action on this PRR as of the date of this filing.

underscheduled at the time of ERCOT's RPRS and OOMC procurement, in direct violation of PURA and this Commission's Substantive Rules.

First, PRR 676 directly violates PURA § 35.004(e) which expressly requires the Commission to ensure that ancillary services necessary to facilitate the transmission of electric energy are available at reasonable prices with terms and conditions that are not unreasonably preferential, prejudicial, discriminatory, predatory, or anticompetitive. The proposed arbitrary, unreasonable, and discriminatory assignment of RPRS and OOMC costs to lawfully underscheduled QSEs pursuant to PRR 676 will violate this statutory requirement. RPRS costs incurred in order to achieve NERC compliance for purposes of ERCOT system-wide security and deliverability should not be borne only by the segment of market participants that underschedule when all QSEs benefit from these services. It is inherently and fundamentally unfair to arbitrarily assign these costs to only one class of QSEs. Costs associated with maintaining system reliability have historically been recognized by ERCOT and the Commission as system costs which should be borne by all market participants. Underscheduled QSEs do not cause the incurrence of such RPRS costs; those costs would be incurred by ERCOT regardless of whether any QSE underschedules. Because there is no cost causation link between underscheduling and the incurrence of these RPRS costs, those costs should be borne by all market participants, not only those QSEs with short positions. Allocating these RPRS costs solely to underscheduled QSEs results in the assessment of an unreasonable price for this ancillary service in a manner that is unreasonably preferential, prejudicial, discriminatory, and anticompetitive and violates PURA § 35.004(e).

The allocation of all OOMC costs incurred to relieve local congestion or to resolve security constraints primarily to underscheduled QSEs is likewise in direct violation of PURA § 35.004(e). There is not a causal link in each and every instance between the presence of one or more underscheduled QSEs in the market and the need for ERCOT to incur OOMC costs to relieve local congestion or to resolve security constraints. In the absence of such cause-and-effect, allocating OOMC costs to “short” QSEs is nothing more than a penalty without a purpose.

Second, the assignment of costs pursuant to PRR 676 clearly violates PURA § 39.001(c), which prohibits ERCOT from discriminating against any participant or type of participant in the competitive market. Without question, ERCOT’s almost exclusive assignment of RPRS and OOMC costs to one class of QSEs — those that are underscheduled at the time of procurement— without any cost justification whatsoever, is discriminatory. This arbitrary and discriminatory assignment drastically increases costs that these QSEs will pay and therefore directly impedes the ability of QSEs such as CNE to compete on a level playing field.

Costs under PRR 676 are not determined naturally by supply and demand for capacity. Instead, system costs related to congestion, security and reliability for the entire system are arbitrarily, discriminatorily, and unreasonably assigned to QSEs that underschedule. Therefore, without question, PRR 676 violates PURA § 39.001(c).

Third, PRR 676 violates PURA § 39.151(a)(4) and PUC Subst. R. 25.361(b), which direct that ERCOT must ensure that electricity production and delivery are accurately accounted for among the generators and wholesale buyers and sellers. Because PRR 676 improperly and unlawfully allocates RPRS and OOMC costs to underscheduled QSEs for the reasons described above, it results in an inaccurate accounting in violation of PURA § 39.151(a)(4).

Fourth, to the extent that RPRS is over-procured as a result of inaccurate resource plans and/or ERCOT's own load forecasting error, PRR 676 will improperly allocate such RPRS costs to underscheduled QSEs in contravention of PURA § 35.004(e). Again, in the absence of any causal link between such over-procurement and the allocation of those additional costs to underscheduled QSEs under PRR 676 for the simple purpose of imposing an unrelated penalty on them, the price paid by underscheduled QSEs for RPRS service will violate PURA § 35.004(e) by imposing terms that are unreasonably preferential, prejudicial, discriminatory, and anticompetitive.

Fifth, contrary to ERCOT's claim that PRR 676 is consistent with nodal market principles, PRR 676 violates the spirit and policy behind PUC Subst. R. § 25.501, which alters the current wholesale market design in ERCOT and requires that ERCOT adopt a nodal market design. The fundamental change that is brought about by a nodal market design is direct assignment of congestion costs to entities that cause congestion. By virtue of direct assignment, a nodal market will result in many benefits including:

1. reduced opportunities for gaming and manipulation,
2. more accurate wholesale prices, and
3. more efficient consumption.¹¹

PRR 676 does not directly assign costs to those entities that cause them. In fact, contrary to the policy, spirit and intent of P.U.C. Subst. R. § 25.501, PRR 676 arbitrarily and discriminatorily assigns these costs to QSEs that underschedule. The ERCOT Board Action Report approving PRR 676 claims that the cost allocation and settlement for RPRS and OOMC

¹¹ *Rulemaking Proceeding on Wholesale Market Design Issues in the Electric Reliability Council of Texas*, Project No. 26376, Order Adopting New § 25.501 as Approved at the August 21, 2003 Open Meeting at p. 1 (September 22, 2003).

is consistent with the procurement and cost allocation methods for Reliability Unit Commitment in the ERCOT Nodal Protocols. To the contrary, the cost assignment methodology in PRR 676 is antithetical to nodal market principles and concepts of direct assignment.

The problems with PRR 676 are not isolated to QSEs who under schedule. There is the potential for even broader negative market implications. Only a very small amount of past RPRS procurements can even arguably be attributable to under scheduling. As a result, RPRS charges under PRR 676 would essentially function as a tax that excessively increases the cost of spot (balancing) energy purchases. The effect, however, is not necessarily limited to the spot market. In theory, forward prices are a reflection of future expectations of spot prices. Consequently, these arbitrary additions to the cost of spot purchases will not only affect spot market purchases, but may have a distorting impact on forward markets as well.

Spot (balancing) purchases are often used as hedging tools to manage risk. Many retail customers access ERCOT's balancing energy market through retail products indexed to the market clearing price of energy. Purchasing balancing energy from ERCOT to hedge these products can be an appropriate business strategy and should not be subject to penalties or discriminatory allocation methodologies.

Finally, as discussed above, the Commission should extend the effective date of PRR 674 until a lawful protocol is implemented. ERCOT's decision to set a sunset date for PRR 674 that is contingent upon implementation of PRR 676 violates each of the above provisions of PURA and the Commission's Substantive Rules because the sunset date allows implementation of an unlawful protocol for the reasons discussed above.

X. REQUEST FOR EXPEDITED RELIEF

Pursuant to PUC Proc. R. 22.251(K), CNE requests that the presiding officer shorten the time periods established by Rule 22.251. Good cause exists to shorten the time periods established by Rule 22.251 because the inevitable implementation of PRR 676 prior to a ruling by this Commission could potentially cost CNE and other similarly situated QSEs tens of millions of dollars per month in RPRS costs that are unlawful. CNE's proposed procedural schedule is attached hereto as Exhibit A.

Moreover, CNE respectfully requests that the Commission determine this Appeal and Complaint itself rather than transferring this case to the State Office of Administrative Hearings ("SOAH"). Hearing this matter before the Commissioners will expedite the process for review of PRR 676 and 674. Given the significant amount of money that is at stake for RPRS and OOMC costs in this Appeal and Complaint, good cause clearly exists to expedite this case in such a manner.

In addition, PUC Proc. R. 22.78 also provides an additional basis for expedited consideration by this Commission. PUC Proc. R. § 22.78 provides that the Commission may take action on a pleading before any deadline for filing responsive pleadings when necessary to prevent or mitigate imminent harm or injury to persons or to real or personal property. Rule 22.78 specifically states that "[h]arm or injury shall include items affecting the ability of any provider to compete." Should PRR 676 take effect, CNE would suffer irreparable harm in that it would be forced to pay millions of dollars in unwarranted and unlawful RPRS charges, thus affecting its ability to compete in the retail market. Therefore, pursuant to the above provisions, CNE respectfully requests that the Commissioners consider this matter on an expedited basis.

XI. EVIDENTIARY HEARING

CNE is amenable to attempting to reach an agreement on the stipulated facts in this case. However, CNE respectfully asserts that given the need to ensure a quick ruling by the Commission on this matter, this case should move forward with discovery and testimony while the parties are attempting to reach a resolution on such facts. To the extent that there remain factual disputes concerning any information contained herein, CNE requests an evidentiary hearing before the Commissioners to resolve any factual disputes.

XII. PRAYER FOR RELIEF

For the reasons set forth above, CNE requests that the Commission expeditiously reverse approval of PRR 676 and extend the effective date of PRR 674 until a lawful protocol is implemented addressing RPRS. Alternatively, CNE requests that the Commission suspend implementation of PRR 676 and extend the effective date of PRR 674 until a final ruling can be reached on the validity of PRR 676. CNE further requests all other relief, legal and equitable, to which it is justly entitled.

Respectfully submitted,
Constellation NewEnergy, Inc.

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**ATTORNEYS FOR
CONSTELLATION NEWENERGY, INC.**

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing document was served upon ERCOT on October 23, 2006 by personal service. In addition, an electronic version was submitted to ERCOT's general counsel, James Thorne, via email.

Tammy Wavle Shea
Tammy Wavle Shea *by permission James W. Shea*

AFFIDAVIT

STATE OF CALIFORNIA

COUNTY OF SAN FRANCISCO

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BEFORE ME, the undersigned notary public, this day personally appeared Joseph Wharton duly sworn according to law, who deposes and says:

"My name is Joseph Wharton. I am of legal age and a resident of the State of California. I am employed as a Principal of The Brattle Group. I hold a Ph.D. and M.A. in economics from the University of California at Los Angeles and a B.A. in economics from Occidental College. The facts stated in the foregoing Constellation NewEnergy's Appeal and Complaint of ERCOT Decision to Approve PRR 676 and PRR 674 are, in my opinion and based upon my professional experience, true and correct."

Joseph Wharton

Subscribed and sworn before me on this 23rd day of October, 2006.

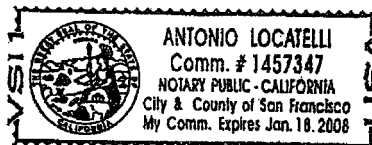
Notary Public in and for the State of California

My Commission Expires:

JURAT

State of California
County of San Francisco

Subscribed and sworn to (or affirmed) before me on
this 23RD day of OCTOBER, 2006
by JOSEPH BROOKE WHARTON
personally known to me or proved to me on the basis of satisfactory
evidence to be the person who appeared before me.
Notary Signature Antonio Locatelli



APPENDIX A

Board Action Report

PRR Number	676	PRR Title	RPRS Solution with Nodal RUC-Type Procurement and Cost Allocation
Timeline (Normal or Urgent)	Urgent	Board Action	Approved
Protocol Section(s) Requiring Revision (include Section No. and Title)	6.6.3.2.1 Specific Procurement Process Requirements for Replacement Reserve Service in the Adjustment Period 6.8.2.2 Capacity and Minimum Energy Payments 6.9.2.1.1 Replacement Reserve Under Scheduled Capacity. 6.9.7.1 OOM Capacity Charge ***** Changes to the following sections proposed in PRR676 as submitted were not adopted by PRS: 4.1.1 Day Ahead Scheduling Process 4.1.2 Adjustment Period Scheduling Process 4.4.16 ERCOT Receipt of Replacement Reserve Service Bids 4.4.17 ERCOT Procurement of Replacement Reserve Service As Needed 4.5.6 ERCOT Notice of Need to Procure Replacement Reserve Service Resources 4.5.7 Available Bids for RPRS 6.4.2 Determination of ERCOT Control Area Requirements 6.5.6 Replacement Reserve Service 6.8.1.1 Payments for Ancillary Service Capacity 6.8.1.10 Zonal or System Wide Replacement Reserve Service Capacity Payment to QSE. 6.8.1.11 Local Congestion Replacement Reserve Payment to QSE When Market Solution Exists 6.9.2.1 Settlement for RPRS Procured for System-wide Capacity Insufficiency 6.9.2.1.2 Replacement Reserve Uplift Charge 6.9.7 Settlement Obligations for Premiums for Individual resource Dispatch Payments 7.1 Overview of ERCOT Congestion Management 7.3.4.2 Replacement Reserve Service Zonal Congestion Charge 7.4.2 Resolution of Local Congestion		
Proposed Effective Date	Upon system implementation		
Priority and Rank Assigned	Priority of 2, ranking of 10.		
Revision Description	This PRR modifies the cost allocation methods for Replacement Reserve Service (RPRS) to be consistent with the procurement and		

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Board Action Report

	cost allocation methods for the Reliability Unit Commitment that is contained in the Nodal Protocols.
Overall Market Benefit	This PRR results in reductions in Capacity Insufficiency costs.
Overall Market Impact	Market Participants will accrue costs associated with performing shadow settlements.
Consumer Impact	None.
Credit Impacts: Has the Credit Work Group reviewed the PRR? If so, are there credit impacts? (indicate Yes or No, and if Yes, include a summary of impact)	Yes. ERCOT credit staff and the Credit Work Group (Credit WG) have reviewed PRR676 and do not believe that it requires changes to credit monitoring activity or the calculation of liability.
Procedural History	<ul style="list-style-type: none"> ➤ PRR676 was posted on 7/25/06, with a request for Urgent status. ➤ The request for Urgent status was granted by e-mail vote on 7/27/06. ➤ On 8/1/06, ERCOT posted a Preliminary Impact Analysis (PIA) and a Preliminary Cost Benefit Analysis (PCBA). ➤ On 8/2/06, PRS discussed this PRR. ➤ On 8/9/06, City Public Service (CPS) Energy posted comments. ➤ On 8/11/06, the RPRS Task Force (TF) discussed this PRR. ➤ On 8/17/06, PRS again discussed this PRR. ➤ On 8/25/06, the RPRS TF again discussed this PRR. ➤ On 8/31/06, PRS considered this PRR. ➤ On 9/6/06, ERCOT posted comments, an Impact Analysis (IA), and Cost Benefit Analysis (CBA). ➤ On 9/7/06, TAC considered this PRR. ➤ On 9/7/06, ERCOT posted an updated IA. ➤ On 9/19/06, the ERCOT Board (Board) considered this PRR.

Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

<p>PRS Recommendation (indicate whether all segments were present for the vote, and the segment of parties that voted no or abstained)</p>	<p>On 8/31/06, PRS voted by roll-call vote on a motion to recommend approval of PRR676 as revised by PRS, including an interim solution until full implementation of this PRR. The motion failed with seven yeas from the Municipally Owned Utility (MOU)(1), Independent Generator (IG)(1), and Consumer (4) Market Segments; 11 nays from the Electric Cooperative (Coop)(2), MOU (3), Investor Owned Utility (IOU)(1), IG (1), Independent REP (1), and Independent Power Marketer (IPM)(3) Market Segments; and six abstentions from the IOU(1), IG (2), Consumer (1), and IPM (1) Market Segments. The tally was 1.972 for and 5.083 against the motion. All Market Segments were present for the vote.</p> <p>Then PRS voted by roll-call vote on a motion to recommend approval as revised by PRS, but without an interim solution until full implementation. The motion passed with 16 yeas from the Coop (2), MOU (4), IOU (1), IG (3), Consumer (2), and IPM (4) Market Segments; four nays from the IG (1) and Consumer (3) Market Segments; and four abstentions from the IOU (1), IG (1), and Independent REPs (2). The tally was 5.375 for and 0.625 against the motion. All Market Segments were present for the vote.</p>
<p>Summary of PRS Discussion</p>	<p>Participants discussed the need to synchronize this PRR with PRR666, Modification of RPRS Under-Scheduled Capacity Charge Calculation, and PRR687, Replacement Reserve Under-Scheduled Capacity Delineation. Some participants objected to PRR676, stating that it has the same shortcoming as PRR674, Temporary Alteration of Settlement Equations Related to the RPRS Under-Scheduled Charge, in that it provides an incentive for Qualified Scheduling Entities (QSEs) to submit short schedules. It was further noted that the analysis should be based on the most recent four weeks that shows that RPRS procurement has decreased. Participants also debated whether penalties encourage efficient market behavior, whether the system costs are appropriately assigned to QSEs with short schedules; and whether the proposal should include a competitive procurement mechanism. Consumers expressed a preference for having elements of PRR674 included in this PRR.</p>
<p>TAC Recommendation (indicate whether all segments were present for the vote, and the segment of parties that voted no or abstained)</p>	<p>On 9/7/06, TAC voted on a motion to recommend approval of PRR676 as revised by ERCOT comments dated 9/6/06 and directing ERCOT to implement this PRR as part of the project to implement PRR666, Modification of RPRS Under-Scheduled Capacity Charge Calculation, and PRR687, Replacement Reserve Under-Scheduled Capacity Delineation (Option 2 on the IA). The motion passed with one opposing vote from the Consumer Market Segment and seven abstentions from the IG (1), IPM (1), IREP (1), and IOU (4) Market</p>

Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

	Segments. All Market Segments were present for the vote.
Summary of TAC Discussion	There was a discussion about the impact of combining the implementation of this PRR with the implementation of PRR666 and PRR687. Combining these PRRs under one project will delay overall implementation of PRR666 and PRR687, but shorten the timeframe for implementation of PRR676, reduce overall cost, and result in testing efficiencies. Participants noted that there was no discussion regarding the substance of PRR676 because the issue it addresses has already been the subject of extensive discussion at the PRS, WMS, the PRS RPRS Working Group, and the Qualified Scheduling Entity Manager Working Group.
ERCOT Board	The Board voted to approve this PRR as revised by the Board and directed ERCOT Staff to report back to the Board in January 2007 regarding whether ERCOT is able to implement PRR676 by 2/1/06..

ERCOT/Market Segment Impacts and Benefits

Assumptions	1	<i>All capacity procured by ERCOT will be based on generic costs</i>	
	2	<i>The allocation of costs to short QSEs will be limited to two times the Capacity Charge Rate, which will reduce the charges to short QSEs relative to the current process while maintaining a reasonable incentive not to lean of the market to meet capacity obligations</i>	
		Impact Area	Monetary Impact
Market Cost	1	<i>MP Shadow Settlement</i>	<i>Unknown</i>
		Impact Area	Monetary Impact
Market Benefit	1	<i>Reduced Capacity Insufficiency costs</i>	<i>Unknown</i>
Additional Qualitative Information	1	<i>Approach consistent with Nodal RUC procurement and allocation which provides experience and represents a methodology approved by the PUCT</i>	
Other	1		

Original Sponsor

Name	Dan Jones
Company	City Public Service (CPS) Energy
Segment	Municipally Owned Utility

Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

Comments Received	
Comment Author	Comment Description
CPS Energy 080906	Offered consistency changes, clarifications and revised equations.
ERCOT 090606	Offered consistency changes for the equations and with PRR687.

Proposed Protocol Language Revision

Note: PRS made extensive revisions to PRR676. The revisions below do not necessarily reflect the original language of this PRR as it was submitted.

6.6.3.2.1 *Specific Procurement Process Requirements for Replacement Reserve Service in the Adjustment Period*

ERCOT shall procure Replacement Reserve Service (RPRS) in the AP as follows:

- (1) ERCOT will evaluate Zonal Congestion, Local Congestion, and capacity insufficiency using ERCOT's Operational Model, balanced QSE schedules, Resource Plans, and ERCOT forecast of next day Load.
- (2) ERCOT will define the level of Resources available to meet next-day reliability needs of the ERCOT System based on QSE schedule submissions, Resource Plans and ERCOT Load forecast. ERCOT will determine incremental Resource capacity available from Generation Resources that are Off-line, or Generation Resources that are expected to be Off-line in the requested hours or Loads acting as a Resource shown as available in the Resource Plans.
- (3) RPRS procurement produces an optimum solution for the whole Operating Day. The RPRS procurement resolves Local Congestion problems first and then resolves capacity inadequacy and Zonal Congestion problems simultaneously. The solution of the RPRS is a result of ERCOT performing analysis of the current physical system operations for each hour to recognize potential transmission constraints that would require Resources not currently planned to be available. The purpose and use of the RPRS procurement is to provide capacity from which energy would be available to solve the following system security violations:
 - (a) ERCOT System capacity insufficiency using any RPRS bid;
 - (b) Zonal Congestion using the RPRS bids by Congestion Zone in bid price Merit Order and the current physical system operations in the ERCOT System; and
 - (c) Local Congestion using Resource Category Generic Cost and the current physical system operations in the ERCOT System.
- (4) ERCOT will solve security violations using a transmission security-constrained mathematical optimization application. The application will solve as if each bid can be proportioned into individual MW bids. The objective of the optimization is to minimize

Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

the total cost, based on Resource Category Generic Cost, capacity price, operation price, and Resource Shift Factors, as described in Section 4.4.16, ERCOT Receipt of Replacement Reserve Service Bids, as well as lead time, minimum up time, and minimum down time captured through the registration process, for the whole Operating Day while satisfying all the security constraints for each hour.

- (5) The Market Clearing Prices on the capacity insufficiency, CSC constraint, and Operational Constraint will represent the marginal cost for the solution of each constraint and will be produced as an output of the mathematical optimization application. The output of the application will be as follows:
- (a) The marginal cost (Shadow Price of the power balance constraint) to solve system insufficiency defines MCPC for insufficiency.
 - (b) The marginal cost (Shadow Price of the CSC constraint) to solve a CSC constraint defines the Congestion price of the CSC constraint.
 - (c) The bidder of RPRS shall be paid the higher of RPRS bid price (as defined in Section 6.8.1.10, Zonal or System Wide Replacement Reserve Service Capacity Payment to QSE) and MCPC of the Congestion Zone unless the bid has been selected to solve Local Congestion. Resources taken to solve Local Congestion shall be paid in accordance with the Local Congestion Replacement Reserve formula in Section 6.8.1.11, Local Congestion Replacement Reserve Payment to QSE.
- (6) QSEs whose schedules have impacts on CSCs according to the Commercial Model (using zonal Shift Factors at the time of RPRS procurement for each Zone) shall be charged Congestion costs associated with the impact.
- (7) The costs of resolving Local Congestion are based on the amount of capacity required to solve Local Congestion. This cost will be tracked by specific constraint to aid the determination of the potential addition to the constraint as a CSC.
- (8) RMR Units will be considered available to offset RPRS needs in resolving Local Congestion in the RPRS procurement process. The selection process will set a bid price for each RMR Unit based on its contract start and operational costs. If the optimal solution indicates an RMR Unit is a more economic option in resolving Local Congestion, the RMR Unit will be deployed and paid as an RMR deployment.
- Generation Resources that are eligible for RPRS procurement that do not submit an RPRS bid will be considered in the RPRS procurement process. The selection process will set a bid price for each non-bid Generation Resource based on its generic cost times an adjustment factor. If the non-bid Generation Resource with an adjustment factor is a more economic option, the non-bid Generation Resource will be deployed and paid as an OOMC deployment.

Deleted: (5) The costs associated with resolving system security violations will be identified separately into the following categories: capacity inadequacy, Zonal Congestion, and Local Congestion.¶

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Deleted: (9) If all of the cost of RPRS is not allocated by one of the above methods, then the allocation will be uplifted to all QSEs based on the Load Ratio Share for the relevant period. If ERCOT collects more RPRS costs in this manner than are necessary, the excess funds collected by ERCOT will be credited to all QSEs based on the Load Ratio Share for the relevant period.¶

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Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

- | (9) In the case of tied bids for the selection of RPRS, ERCOT will select the bid that meets the requirement most closely (achieving the optimal solution). When the price and capacity are identical from unaffiliated bidders, ERCOT may request re-bids.
- | (10) For RPRS, for each hour, for each Congestion Zone, ERCOT will post the quantity of capacity procured and the MCPCs and Shadow Prices.

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6.8.2.2 Capacity and Minimum Energy Payments

- (1) OOMC Service may be used by ERCOT as a procured Replacement Reserve Resource in the Adjustment Period where necessary to support emergency operations and provide voltage support, stability, or to manage localized transmission limitations. All Generation Resources that are available and plan to be off-line during the interval for which Ancillary Services are being procured are eligible to be selected to provide OOMC Service. ERCOT shall not issue an OOME Up Dispatch Instruction for the energy associated with the Low Sustainable Limit as set forth in the Resource Plan (as required by Section 4.4.15, QSE Resource Plans) for which it has issued an OOMC Dispatch Instruction. Zonal OOME Service will only be provided from Resources that are already On-line at the time of the Zonal OOME Dispatch Instruction and will not receive a capacity payment.
- (2) The QSE for a Generation Resource selected to provide OOMC Service that actually reconnects to the ERCOT Transmission Grid and starts the unit in order to provide the OOMC Service will be paid both the Resource Category Generic Startup Cost for starting the unit as well as the Resource Category Generic Minimum Energy Cost less the MCPE for operating at the Low Sustainable Limit as set forth in the Resource Plan for that unit during the instructed interval(s).
- (3) If the Generation Resource remains On-line beyond the time period specified by the OOMC Dispatch Instruction, there shall be a charge against the Resource Category Generic Startup Cost. This charge will only be applied if the MCPE is greater than the Resource Category Generic Fuel Cost for an upward instruction. If the difference is positive and the Resource Category Generic Startup Cost due is greater than zero, it will be subtracted from the payment for Resource Category Generic Startup Cost for starting the unit. This charge shall continue to be calculated for all intervals, except for the first three hours after the end of the OOMC Dispatch Instruction, until:
 - (a) the unit is disconnected from the ERCOT Transmission Grid;
 - (b) the end of the Operating Day; or
 - (c) the next Resource-specific deployment for the unit within the Operating Day, whichever comes first.

Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

- (4) Generation Resources that are connected to the ERCOT Transmission Grid when their QSE is instructed to provide OOMC Service will be paid the Resource Category Generic Minimum Energy Cost less the MCPE for operating at the Low Sustainable Limit of the Resource during the instructed interval(s).

When the Resource-specific OOMC instruction is issued, the QSE may maintain a Balanced Schedule, such as scheduling the ramping and minimum energy or being selected by ERCOT to provide Balancing Energy Service. When a QSE receives an OOMC Dispatch Instruction less than thirty minutes before the end of the Adjustment Period or during the Operating Period, the deviation resulting from ramping or minimum energy of a Resource selected to provide OOMC Service will not be subject to Uninstructed Resource Charge during the instructed interval(s), including the ramp interval(s) of such Resource.

- (5) If ERCOT sends a QSE a Resource-specific Dispatch Instruction for OOMC Service ("OOMC Instruction") and the payment for OOMC Service does not cover all costs of providing the OOMC Service plus a ten percent (10%) premium, then that QSE may submit verifiable, additional costs directly attributable to the OOMC Dispatch Instruction, which exceed the payment for OOMC Service calculated pursuant to Section 6.8.2.2 (6). The QSE will be paid only for additional costs directly attributable to the OOMC Service, plus the premium. Verifiable costs are subject to the approved documentation requirements in Section 6.8.2.2(5)(b). The premium to be provided shall be the product of the costs of providing the service times ten percent (10%). Verification of these costs must be submitted to ERCOT by the QSE or the Resource to allow resolution by the end of the dispute process for Settlement True-Up as defined in Section 9.2.6, True-Up Statement. QSEs requesting cost based recovery shall perform the following:

- (a) After receiving the Initial Statement for the subject Operating Day, submit a settlement dispute in accordance with the dispute process outlined in Section 9.5, Settlement and Billing Dispute Process. In addition to the standard information required on the dispute form on the ERCOT Portal, the dispute should clearly indicate:
- (i) The Dispatch Instruction received from ERCOT to provide the OOMC Services;
 - (ii) The payment received for providing the OOMC Service;
 - (iii) The actual cost of providing the OOMC Service; and
 - (iv) A reference to the documentation to be provided in writing as indicated in Section 6.8.2.2(5)(b).
- (b) Provide documentation to allow ERCOT to verify the claimed amounts. All documentation submitted to ERCOT for verification pursuant to this Section 6.8.2.2(5)(b) shall be considered Protected Information in accordance with

Deleted: 676PRR-14 Board Action
Report 091906

Board Action Report

Section 1.3.1.1, Items Considered Protected Information. ERCOT shall not make payments for verifiable costs outside the defined documentation requirements until after the QSE has followed the steps outlined in Section 6.8.2.2(5)(c) and the ERCOT Board has approved the documentation requirements. Fuel costs, including transportation and storage costs directly related to this OOMC event for use in calculating the costs in Section 6.8.2.2(5)(b) (i), (iii) and (v), will require supporting documentation of sufficient detail to allow for the verification of the cost of fuel consumed by the Resource receiving the OOMC Instruction. Documentation may include contracts, invoices or other documents. For gas fired Resources, such documentation will not be required if the requested incremental fuel cost is less than one hundred ten percent (110%) of the Fuel Index Price.

Defined Documentation Requirements

- (i) Startup Fuel Cost which is the fuel cost for bringing the unit online and up to its LSL and ready to go to full load or the beginning of the OOMC period, whichever occurs first, to provide the OOMC Service shall be determined by multiplying the fuel consumption (MMBtu) to start up the Resource by the associated fuel cost (\$/MMBtu).
- (ii) Startup Non-Fuel Cost which shall be based on either A or B below:
 - (A) Documented historical non-fuel startup costs expressed on a per unit start basis for the deployed Resource. If the historical Non-Fuel Startup costs are more than one hundred percent (100%) of the Resource Category Non-Fuel Startup Costs (RCNFSC), the QSE shall provide documentation for such costs. Non-fuel start-up costs are limited to the costs associated with water, chemicals, labor, emission allowances and start-up power used in the start-up of the Resource. Supporting documentation shall include an itemized list in sufficient detail to allow for the verification of each cost incurred due to the OOMC Service.
 - (B) Generic Resource Category Non-Fuel Startup Costs (RCNFSC) as defined in Section 6.8.2.2(5)(b)(ii)(B). If the QSE chooses to use RCNFSC, all subsequent requests for non-fuel startup cost-based recovery requested by the QSE for the remainder of the calendar year for the specific deployed Resource shall be based on the RCNFSC.

Resource Category Non-Fuel Startup Costs (RCNFSC)

For the purpose of documentation, the RCNFSC represents the startup cost (excluding fuel) of capacity used for Replacement Reserve Service. The RCNFSC for each type of Resource shall be:

Combined Cycle greater than 90 MW** = \$6,810

Deleted: 676PRR-14 Board Action
Report 091906

Board Action Report

Combined Cycle less than or equal to 90 MW** = \$5,310
Gas-Steam Supercritical Boiler = \$4,800
Gas-Steam Reheat Boiler = \$3,000
Gas-Steam Non-reheat or boiler without air-preheater = \$2,310
Simple Cycle greater than 90 MW = \$5,000
Simple Cycle less than or equal to 90 MW = \$2,300
Renewable = \$0

** Determined by capacity of largest simple-cycle combustion turbine in the train

- (iii) Operational Fuel Cost, which shall be determined by multiplying the fuel consumption (MMBtu) at the Low Sustainable Limit of the Resource by its associated fuel cost (\$/MMBtu) for the intervals covered by the OOMC Instruction. Fuel consumption at the Low Sustainable Limit shall be based upon a heat rate curve for the Resource from the most recently conducted heat rate tests filed with ERCOT. Test data shall be provided in sufficient detail to allow ERCOT to validate the heat rate curve provided.
 - (iv) Variable non-fuel maintenance cost (in dollars per MWh) for a specific deployed Resource, which shall be calculated based on: actual itemized variable maintenance costs contained in contracts with a third party or the manufacturer's recommended maintenance schedule and associated costs. Supporting documentation will be the corresponding excerpt of the appropriate contract from the third party or the maintenance schedule.
 - (v) Fuel cost for bringing the unit offline from LSL as soon as possible (not to exceed three (3) hours) after the end of the OOMC period, in a manner consistent with Good Utility Practices, shall be determined by multiplying the fuel consumption (MMBtu) to bring the Resource offline by the associated fuel cost (\$/MMBtu) minus the MCPE multiplied by the actual generation for shut down. Fuel quantity will be based on the Real-Time metering of the fuel consumption for the Resource.
 - (vi) Unavoidable costs directly resulting from a delay in an accepted Outage for a Generating Resource due to an OOMC instruction. Supporting documentation shall include an itemized list in sufficient detail to allow for the verification of each cost incurred due to the Outage delay. Further documentation supporting each line item must be provided upon ERCOT's request and may include copies of contracts, vendor invoices or other documents.
- (c) Compensation for types of cost, whose documentation requirements are not covered in Sections 6.8.2.2(5)(b)(i) through 6.8.2.2(5)(b)(vi) for the deployed Resource, will be denied pending possible review by the ERCOT Board of Directors. The requesting QSE may request approval of the documentation

Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

requirements by the Board, and if requested will be considered by the Board at its next regularly scheduled meeting for which proper notice may be posted following ERCOT's receipt of the request. The requesting party may request that this review be conducted at an Executive Session of the ERCOT Board of Directors. Requests must be presented in person by a representative of the company submitting the request and must also include language suitable to be included in the Protocols to define the documentation requirements for future requests of a similar nature. Subsequent to the approval of such costs, the requesting company shall submit a Protocol Revision Request, in accordance with Section 21, Process for Protocol Revision, incorporating the necessary documentation standards provided to the ERCOT Board. Once approved by the ERCOT Board, ERCOT will process the request for payments as described in Section 9.2.5, Resettlement Statement.

- (d) Submit a signature sheet signed by the authorized representative of the Resource Entity certifying the costs submitted are directly attributable to the OOMC deployment and which satisfies the documentation standards in Section 6.8.2.2(5)(b).
- (6) The calculation for capacity payments and minimum energy of Out of Merit Service is as follows:

$$PC_{OOMRP_{qi}} = \text{SUM}(PC_{OOMRP_{qi}})_u$$

If $BP_{RP_{qui}}$ exists,

Then:

$$PC_{OOMRP_{qi}} = -1 * \text{MIN} [(BP_{RP_{qui}} * C_{OOMRP_{ui}}), (PS_{ui} + PO_{ui})]$$

Else:

$$PC_{OOMRP_{qi}} = -1 * (PS_{ui} + PO_{ui})$$

If the unit is deemed to be On-line as described in 6.8.2.2(4),

Then:

$$PS_{ui} = 0$$

$$PO_{ui} = \text{SUM} [(RCGMEC_c - MCPE_{jz}) * \text{MIN} (\text{MINCAP}_u/4, MR_{uj})]_j$$

If the unit is deemed to be Off-line as described in 6.8.2.2(2),

Then:

$$PS_{ui} = \frac{[\text{Max}(0, RCGSC_c - (\text{SUM}_s(MCPE_{wz} * MR_{uw})))]}{(\# \text{ of instructed hours})}$$

Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

$$PO_{ui} = \text{SUM} [(RCGMEC_c - MCPE_{jz}) * \text{MIN} (\text{MINCAP}_{u/4}, MR_{uj})]_j$$

If the unit is not a Nuclear, Hydro, Coal or Lignite unit and continues to remain On-line after the instructed intervals as described in 6.8.2.2(3),

Then:

$$CRCGSC = \text{SUM}_s [(MCPE_{sz} - RCGFC_c) * MR_{ua}]$$

$$\text{If } CRCGSC > 0 \text{ and } [RCGSC_c - \text{SUM}_s (MCPE_{wz} * MR_{uw})] > 0$$

Then:

$$PS_{ui} = \text{Max}(0, \{RCGSC_c - \text{SUM}_s (MCPE_{wz} * MR_{uw}) - CRCGSC\} / (\# \text{ of instructed hours}))$$

$$PO_{ui} = \text{SUM} [(RCGMEC_c - MCPE_{jz}) * \text{MIN} (\text{MINCAP}_{u/4}, MR_{uj})]_j$$

$$\text{If } CRCGSC = 0$$

Then:

$$PS_{ui} = \{[\text{Max}(0, RCGSC_c - (\text{SUM}_s (MCPE_{wz} * MR_{uw})))] / (\# \text{ of instructed hours})\}$$

$$PO_{ui} = \text{SUM} [(RCGMEC_c - MCPE_{jz}) * \text{MIN} (\text{MINCAP}_{u/4}, MR_{uj})]_j$$

The equation below will be used to determine the Total OOM Capacity Payments to be allocated to each QSE as described in Section 6.9.7.1, OOM Capacity Charge.

$$PC_{OOMRPi} = \text{SUM} (PC_{OOMRPqi})_q$$

Where:

- a Settlement Intervals beginning three (3) hours after the end of an OOMC Dispatch Instruction and continuing until the unit goes Off-line, the end of the Operating Day, or the next Resource-specific deployment, whichever occurs first
- c Resource Category
- i hourly interval
- j Settlement Intervals within the hourly interval, i
- q QSE
- s The twelve (12) Settlement Intervals prior to the Dispatch Instruction
- u single Resource
- w Settlement Interval prior to the Dispatch Instruction
- z zone
- BP_{RPqi} Bid Price for Replacement Reserve (\$/MW) of the unit per interval

Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

C _{OOMRP} _{ui}	Out of Merit Replacement Reserve Capacity awarded capacity (MW) per single Resource per interval
CRCGSC	Charge against the Resource Category Generic Startup Cost due if the generation unit continues to run past a Dispatch Instruction.
MCPE _{az}	Market Clearing Price for Energy during a Settlement Interval between the end of a Dispatch Instruction and the unit going Off-line, the end of the Operating Day, or the next OOMC deployment, whichever occurs first
MCPE _{jz}	Market Clearing Price for Energy during a Settlement Interval within the hourly interval, i
MCPE _{wz}	Market Clearing Price for Energy for a Settlement Interval prior to the Dispatch Instruction
MINCAP _u	Generating unit Low Sustainable Limit as reported in the Resource Plan
MR _{ua}	Actual metered output of the Resource during a Settlement Interval between the end of a Dispatch Instruction and the unit going Off-line, the end of the Operating Day, or the next OOMC deployment, whichever occurs first
MR _{uj}	Actual metered output of the Resource during a Settlement Interval within the hourly interval, i
MR _{uw}	Actual metered output of the Resource for a Settlement Interval prior to the Dispatch Instruction
PC _{OOMRP} _i	Summation of OOM Replacement Capacity Payment (\$) per interval for all QSEs in the market
PC _{OOMRP} _{qi}	Total OOM Replacement Reserve Capacity Payment (\$) by interval for that QSE (All OOM single Resources added together for that QSE)
PC _{OOMRP} _{qui}	OOM Replacement Reserve Capacity Payments by single Resource by interval for that QSE
PO _{ui}	Price for operating a unit that is selected Out of Merit Order to provide Balancing Energy.
PS _{ui}	Price for starting a unit that is selected Out of Merit Order to provide Balancing Energy.
RCGFC _c	Resource Category Generic Fuel Cost for a specific category for upward instructions.
RCGMEC _c	Resource Category Generic Minimum Energy Cost for a specific category of generation unit
RCGSC _c	Resource Category Generic Startup Cost for a specific category of generation unit

Deleted: 676PRR-14 Board Action
Report 091906

Board Action Report

6.9.2.1 Settlement for RPRS

The Settlement for RPRS shall be as follows:

6.9.2.1.1 Replacement Reserve Under Scheduled Capacity

- (1) The product of the MCPC multiplied by the amount of capacity insufficiency of each QSE. The insufficiency for the Operating Hour shall be the sum of:
 - (a) The greatest of zero (0) or each difference between the Adjusted Meter Load and the amount of Load scheduled in each Settlement Interval for the Operating Hour at the time of procurement; and
 - (b) The greater of zero or the amount of capacity that results from either (i) a mismatch in the QSE's Schedule as defined in Section 4.7.2, Schedule Validation Process, or (ii) a QSE selecting ERCOT as a Resource, at the time of procurement.
- (2) The calculation for Replacement Reserve Service Obligation for underscheduled capacity will be as follows:

$$US_{RP_{izq}} = \text{Max}_M(\text{MCPC}_{RP_{Miz}}) * \left\{ \text{Max} \left[\begin{array}{l} 0, \\ \text{Max}_M[(\text{AML}_{i1zq} - \text{CL}_{Mi1zq})], \\ \text{Max}_M[(\text{AML}_{i2zq} - \text{CL}_{Mi2zq})], \\ \text{Max}_M[(\text{AML}_{i3zq} - \text{CL}_{Mi3zq})], \\ \text{Max}_M[(\text{AML}_{i4zq} - \text{CL}_{Mi4zq})] \end{array} \right] + \text{MMQ}_{izq} \right\}$$

Where:

$$\text{MMQ}_{izq} = \sum_{\text{Across } q_b} \left\{ \text{Max} \left[\begin{array}{l} 0 \\ \text{Max}_M[(\text{MMS}_{Mi1zq_b} q_b)], \\ \text{Max}_M[(\text{MMS}_{Mi2zq_b} q_b)], \\ \text{Max}_M[(\text{MMS}_{Mi3zq_b} q_b)], \\ \text{Max}_M[(\text{MMS}_{Mi4zq_b} q_b)] \end{array} \right] \right\}$$

Where:

$$\text{MMS}_{Mi1zq_b} = \text{MAX} \left(0, \text{QSSA}_{TORP_{i1z}} - \text{QOSB}_{TORP_{i1z}} \right)$$

Deleted: 676PRR-14 Board Action Report 091906

Board Action Report

$$MMS_{Mi2zq_aq_b} = \max\left(0, QSSA_{TORPi2z} - QOSB_{TORPi2z}\right)$$

$$MMS_{Mi3zq_aq_b} = \max\left(0, QSSA_{TORPi3z} - QOSB_{TORPi3z}\right)$$

$$MMS_{Mi4zq_aq_b} = \max\left(0, QSSA_{TORPi4z} - QOSB_{TORPi4z}\right)$$

Where:

i Hourly interval being calculated.

Note: intervals 1, 2, 3, and 4 denote the set of 15-minute Settlement Intervals in a given hour

M	Markets, in the event of multiple markets. i.e. Day Ahead versus the Adjustment Period
q	QSE
q _a	Buying QSE
q _b	Selling QSE
z	Zone
AML _{i1zq}	Adjusted Metered Load (MW) per QSE, for the first Settlement Interval of the settlement hour, per zone, which will include estimated and/or actual meter values and the associated Transmission Losses & Distribution Losses and UFE.
AML _{i2zq}	Adjusted Metered Load (MW) per QSE, for the second Settlement Interval of the settlement hour, per zone, which will include estimated and/or actual meter values and the associated Transmission & Distribution Losses and UFE.
AML _{i3zq}	Adjusted Metered Load (MW) per QSE, for the third Settlement Interval of the settlement hour, per zone, which will include estimated and/or actual meter values and the associated Transmission Losses & Distribution Losses and UFE.
AML _{i4zq}	Adjusted Metered Load (MW) per QSE, for the fourth Settlement Interval of the settlement hour, per zone, which will include estimated and/or actual meter values and the associated Transmission Losses & Distribution Losses and UFE.
CL _{i1zq}	Current Schedule Load (MW) of that QSE for the first Settlement Interval of the settlement hour, per zone at the time of capacity procurement.
CL _{i2zq}	Current Schedule Load (MW) of that QSE, for the second Settlement Interval of the settlement hour, per zone at the time of capacity procurement.

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Board Action Report

CL _{i3zq}	Current Schedule Load (MW) of that QSE, for the third Settlement Interval of the settlement hour, per zone at the time of capacity procurement.
CL _{i4zq}	Current Schedule Load (MW) of that QSE, for the fourth Settlement Interval of the settlement hour, per zone at the time of capacity procurement.
MCPC _{RPMiz}	Replacement Reserve Service Market Clearing Price of Capacity (\$/MW) per hourly interval per zone.
MMQ _{izq}	Mismatched amount (MW) for each zone by hourly interval for that QSE
MMS _{Mi1zq_aq_b}	Mismatched Schedule Quantity (MW) representing either Inter-QSE Trades, or ERCOT scheduled as a Resource for the first Settlement Interval of the settlement hour per zone per QSE.
MMS _{Mi2zq_aq_b}	Mismatched Schedule Quantity (MW) representing either Inter-QSE Trades, or ERCOT scheduled as a Resource for the second Settlement Interval of the settlement hour per zone per QSE.
MMS _{Mi3zq_aq_b}	Mismatched Schedule Quantity (MW) representing either Inter-QSE Trades, or ERCOT scheduled as a Resource for the third Settlement Interval of the settlement hour per zone per QSE.
MMS _{Mi4zq_aq_b}	Mismatched Schedule Quantity (MW) representing either Inter-QSE Trades, or ERCOT scheduled as a Resource for the fourth Settlement Interval of the settlement hour per zone per QSE.
QSSA _{TORP_{i1}}	QSE Supply Schedule for the buying QSE, A, for the first Settlement Interval of the settlement hour, at the time of the Replacement Reserve Market.
QSSA _{TORP_{i2}}	QSE Supply Schedule for buying QSE, A, for the second Settlement Interval of the settlement hour, at the time of the Replacement Reserve Market.
QSSA _{TORP_{i3}}	QSE Supply Schedule for buying QSE, A, for the third Settlement Interval of the settlement hour, at the time of the Replacement Reserve Market.
QSSA _{TORP_{i4}}	QSE Supply Schedule for buying QSE, A, for the fourth Settlement Interval of the settlement hour, at the time of the Replacement Reserve Market.
QOSB _{TORP_{i1}}	QSE Obligation Schedule for the selling QSE, B, for the first Settlement Interval of the settlement hour, at the time of the Replacement Reserve Market.
QOSB _{TORP_{i2}}	QSE Obligation Schedule for the selling QSE, B, for the second Settlement Interval of the settlement hour, at the time of the Replacement Reserve Market.
QOSB _{TORP_{i3}}	QSE Obligation Schedule for the selling QSE, B, for the third Settlement Interval of the settlement hour, at the time of the Replacement Reserve Market.
QOSB _{TORP_{i4}}	QSE Obligation Schedule for the selling QSE, B, for the fourth Settlement Interval of the settlement hour, at the time of the Replacement Reserve Market.

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000034

Board Action Report

US_{RPiq}

Replacement Reserve Service Under Scheduled Charge (\$) for each zone by hourly interval for that QSE

[PRR666: Replace Section 6.9.2.1 and 6.9.2.1.1 (above), with the following upon system implementation:]

6.9.2.1 Settlement for Under Scheduled Capacity

The Settlement for Under Scheduled Capacity, for each QSE, is as follows:

6.9.2.1.1 Under Scheduled Capacity Charge

- (1) The dollar amount charged to each QSE due to Under Scheduled Capacity for each Settlement Interval is the QSE's shortfall ratio share multiplied by the total OOMC and RPRS payments for the Settlement Interval, subject to a cap. The cap on the charge to each QSE is two multiplied by the total RPRS and OOMC payments for all QSEs multiplied by that QSE's Under Schedule Capacity, divided by the total capacity of RPRS and OOMC Resources procured during each Settlement Interval. For the Operating Hour, a QSE's maximum capacity insufficiency, is the sum of (a) and (b) where (a) and (b) are as follows:
 - (a) The greater of zero (0) or the maximum interval sum of the difference, evaluated across the four (4) intervals in the hour, between a QSE's Adjusted Meter Load and the QSE's scheduled Load in each Settlement Interval for the Operating Hour at the time ERCOT initiates the process to procure RPRS.
 - (b) The maximum mismatch amount that results from either (i) a mismatch in the QSE's Schedule as defined in Section 4.7.2, Schedule Validation Process, or (ii) a QSE selecting ERCOT as a Resource, at the time ERCOT initiates the process to procure RPRS, evaluated over all applicable RPRS market snapshots for the hour for all Supply and Obligation mismatch combinations.
- (2) The calculation of the Under Scheduled Capacity Charge shall be as follows:

$$USQ_{RP_h} = \text{Max}_i \left[0, \left(\text{Max}_i \left(\sum_i (AMI_{iq} - CL_{iq}) * 4 \right) + MMQ_{iq} \right) \right]$$

Where:

Deleted: RPRS Procured for System-wide

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Deleted: RPRS procured for system-wide capacity insufficiency

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Deleted: The product of the maximum MCPC of Replacement Reserve procured for the hour (where the MCPC evaluated across all RPRS markets executed for the hour), multiplied by the QSE's maximum capacity insufficiency evaluated across all zones for each hour. A QSE's capacity insufficiency amount includes the maximum mismatch amount, evaluated across all zones for the hour.

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$$USQ_{RP_h} = \text{Max}_i \left[0 \right]$$

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Board Action Report

$$MMQ_{h,q} = \sum_{\text{Across } q} \{ \text{Max}_{Mq} [MMS_{h,q}] \}$$

and

$$MMS_{h,q} = \text{Max}_i \left(\sum_q \text{Max}(0, (QSSA_{TORP} - QOSB_{TORP})) + \sum_q \text{Min}(0, (QSSB_{TORP} - QOSA_{TORP})) \right)$$

$$US_{RPhq} = \text{Min} \{ 2 * USQ_{RPhq} * (PC_{OOMRPhq} + LPC_{RPhq} + PC_{RPhq}) / Cap_{OOMRPhq} + [(PC_{OOMRPhq} + LPC_{RPhq} + PC_{RPhq}) * USQ_{RPhq}] / [S(USQ_{RPhq})] \}$$

Where:

h	Hour in trade day for which ERCOT purchased capacity.
i	Hourly interval being evaluated, i=1, ... 4 where intervals 1, 2, 3, and 4 denote the set of 15-minute Settlement Intervals in a given hour
M	RPRS markets, in the event of multiple RPRS markets for a particular Operating Hour. This includes both the Day Ahead RPRS market all applicable RPRS markets executed during the Adjustment Period
q	QSE
z	Zone
AML _{iq}	Adjusted Metered Load (MWh) summed across all zones for a QSE, for Settlement Interval, i, of the settlement hour, h. This value includes estimated and/or actual meter values and the associated Transmission Losses & Distribution Losses and UFE.
CL _{iq}	QSE's Scheduled Load (MWh) by Settlement Interval, i, summed across all zones. (This quantity is evaluated across all snapshots of QSE's schedule for all RPRS markets for the particular hour)
MMQ _{iq}	Maximum Mismatched net amount (MW), by hour, h, for the QSE. (This value is summed across all zones for all intervals in the hour and is evaluated across all applicable schedule snapshots.)
MMS _{h,q}	Mismatched Schedule Quantity (MW) representing either Inter-QSE Trades, or ERCOT scheduled as a Resource by settlement hour, h, by QSE, for each Replacement Reserve Market.
QSSA _{TORP,i}	QSE Supply Schedule for the buying QSE, A, by Settlement Interval, i, of the settlement hour, h, at the time of the Replacement Reserve Market.
QOSA _{TORP,i}	QSE Obligation Schedule for the selling QSE, A, by Settlement Interval, i, of the settlement hour, h, at the time of the Replacement Reserve Market.
QOSB _{TORP,i}	QSE Obligation Schedule for the selling QSE, B, by Settlement Interval, i, of the settlement hour, h, at the time of the Replacement Reserve Market.
QSSB _{TORP,i}	QSE Supply Schedule for the buying QSE, B, by Settlement Interval, i, of

$$MMQ_{iq} = \sum_{\text{Across } q} \{ \text{Max}_{Mq} [MMS_{h,q}] \}$$

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$$MMS_{Miq,qh} = \text{Max}(0,$$

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q, Selling QSE¶

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Board Action Report

US_{RPiq}	the settlement hour, h, at the time of the Replacement Reserve Market.
	Under Scheduled Charge (\$) by hour for the QSE.
USQ_{RPiq}	Under Scheduled Quantity (MW) for each QSE for each hour
$PC_{OOMRPiq}$	Sum of all OOMC payments (\$/hr) across ERCOT
LPC_{RPiq}	Sum of all Local RPRS payments (\$/hr) across ERCOT
PC_{RPiq}	Sum of all Zonal/Capacity Insufficiency RPRS payments (\$/hr) across ERCOT
Cap_{OOMRPi}	Sum of all Capacity (HSL) (MW) procured for OOMC or RPRS for the hourly interval

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6.9.2.1.2 Replacement Reserve Uplift Charge

The calculation for Replacement Reserve Uplift Charge will be as follows:

$$UC_{RPiq} = -1 * (\$ (PC_{OOMRPiq} + PC_{RPiq} + LPC_{RPiq})_q + \$ (US_{RPiq}) + TCRPAY_{RPi} + \$ (CSC_{RPiq})_q CSC) * LRS_{qi}$$

$$TCRPAY_{RPi} = -1 * (\$ (TCRcsc_i) * SP_{CSCI}) CSC$$

Where:

i:	Interval being calculated
q:	QSE
z:	CSC zone being settled
UC_{RPi} :	Replacement Reserve Service Uplift Charge (\$/hr) by QSE
PC_{RPiq} :	Service payment (\$/hr) by QSE of Procured Capacity of Replacement Reserve procured to resolve Zonal Congestion and Capacity Insufficiency per single Resource
LPC_{RPiq} :	Service payment (\$/hr) by QSE of Procured Capacity of Replacement Reserve procured to resolve Local Congestion per single Resource
US_{RPiq} :	Replacement Reserve Service Under Scheduled Charge (\$) by hour by, QSE.
CSC_{RPiq} :	Replacement Reserve Service CSC Impact Capacity Charge (\$) per interval by QSE.
LRS_{qi} :	Load Ratio Share (Factor) (Adjusted Metered Load / Total System Load) per hourly interval of that QSE
$TCRPAY_{RPi}$:	Payment to TCR Account Holders for RPRS market per hourly interval

Deleted: (1) Prior to direct assignment of Zonal Congestion costs, the QSE's Obligation for Replacement Reserve procured for CSC Congestion will be recovered as part of the System Congestion Fund described in Section 7.3.3.1, System Congestion Fund.†

(2)

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Board Action Report

TCR_{csc_i} Total number of TCRs per CSC per hourly interval
SP_{csc_i} Shadow Price of RPRS per CSC per hourly interval
PC_{OOMRP_i} OOMC payments (\$/hr) by QSE

Deleted: 6.9.7.1 OOM Capacity Charge¶

(1) The cost of Replacement Capacity that is not assigned in the mathematical optimization process will be shared by all QSEs in relation to their Load Ratio Share of the total ERCOT Load for the interval. The OOM Replacement Capacity Load Allocation will be calculated as follows:¶

$$LA_{OOMRP,i} = -1 \cdot PC_{OOMRP,i} \cdot LRS_{u,i}$$

Where:¶

i interval¶

u unit¶

z zone¶

LA_{OOM_u} OOM Replacement Capacity Load Allocation Charges (\$) for that QSE in that interval¶

PC_{OOMRP_i} OOM Replacement Capacity Costs (\$) for the total market for that interval¶

LRS_{u,i} Load Ratio Share (0-1) = (Adjusted Metered Load for that QSE per interval/ Total System Load per interval)¶

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000038

Protocols Revision Request

PRR Number	676	PRR Title	RPRS Solution with Nodal RUC-Type Procurement and Cost Allocation
Protocol Section(s) Requiring Revision (include Section No. and Title)		4.1.1	Day Ahead Scheduling Process
		4.1.2	Adjustment Period Scheduling Process
		4.4.16	ERCOT Receipt of Replacement Reserve Service Bids
		4.4.17	ERCOT Procurement of Replacement Reserve Service As Needed
		4.5.6	ERCOT Notice of Need to Procure Replacement Reserve Service Resources
		4.5.7	Available Bids for RPRS
		6.4.2	Determination of ERCOT Control Area Requirements
		6.5.6	Replacement Reserve Service
		6.6.3.2.1	Specific Procurement Process Requirements for Replacement Reserve Service in the Adjustment Period
		6.8.1.1	Payments for Ancillary Service Capacity
		6.8.1.10	Zonal or System Wide Replacement Reserve Service Capacity Payment to QSE.
		6.8.1.11	Local Congestion Replacement Reserve Payment to QSE When Market Solution Exists
		6.8.2.2	Capacity and Minimum Energy Payments
		6.9.2.1	Settlement for RPRS Procured for System-wide Capacity Insufficiency
		6.9.2.1.1	Replacement Reserve Under Scheduled Capacity.
		6.9.2.1.2	Replacement Reserve Uplift Charge
		6.9.7	Settlement Obligations for Premiums for Individual resource Dispatch Payments
		6.9.7.1	OOM Capacity Charge
		7.1	Overview of ERCOT Congestion Management
		7.3.4.2	Replacement Reserve Service Zonal Congestion Charge
	7.4.2	Resolution of Local Congestion	
Requested Resolution (Normal or Urgent)		Urgent	

Protocols Revision Request

Revision Description	<p>This PRR modifies the current day ahead capacity procurement and cost allocation methods to be consistent with the procurement and cost allocation methods for the Reliability Unit Commitment that is contained in the Nodal Protocols as approved by the PUCT. The PRR also removes the provisions related to the direct assignment of zonal capacity procurements.</p> <p>The PRR generally provides as follows:</p> <ul style="list-style-type: none"> • All ERCOT capacity procurements are performed using generic costs. The 24-hour capacity procurement optimization is maintained for RPRS, with all procurements for all purposes being performed in a single step. ERCOT continues to have the ability to procure additional capacity outside of the RPRS process through OOMC. All Resources procured to provide capacity to ERCOT maintain the ability to submit documentation for verifiable cost recovery. • QSE short positions are measured per the method in the current Protocols (or per the method in PRR 666 once implemented) at 1600 in the DA. The total cost of all RPRS and OOMC purchases are allocated to each QSE based on its short position, subject to a cap which limits the total cost incurred by each short QSE to two times the RPRS and OOMC Capacity Charge Rate times each QSEs measured short position. The RPRS and OOMC Capacity Charge Rate is equal to the total payments by ERCOT for RPRS and OOMC divided by the total RPRS and OOMC capacity procured for each Settlement Interval. The total costs of all RPRS and OOMC less the amounts charged to short QSEs for each Settlement Interval is Uplift to all QSEs on a Load Ratio Share basis. • All provisions related to the direct assignment of zonal capacity procurements are removed from the Protocols.
Reason for Revision	Per the direction of the ERCOT Board of Directors to provide solutions to the current RPRS issues.
Credit Implications (Yes or No, and summary of impact)	Yes. Should be positive as this PRR limits the amount of charges for QSEs with short positions relative to the current approach.
Relevance to Nodal Market (Yes or No, and	Yes. Consistent with the procurement and cost allocation methodologies in the Nodal Protocols for the Reliability Unit

Protocols Revision Request

summary of impact)	Commitment.
Nodal Protocol Section(s) Requiring Revision (include Section No. and Title)	None. Already addressed in the Nodal Protocols.
Timeline	
Date Posted	July 25, 2006

Sponsor	
Name	Dan Jones
E-mail Address	dljones@cpsenergy.com
Company	CPS Energy
Company Address	401 W. 15 th Street, Suite 800, Austin, TX 78701
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Fax Number	(512) 477-5329

ERCOT/Market Segment Impacts and Benefits

Instructions: To allow for comprehensive PRR consideration, please fill out each block below completely, even if your response is "none," "not known," or "not applicable." Wherever possible, please include reasons, explanations, and cost/benefit analyses pertaining to the PRR.

Assumptions	1	All capacity procured by ERCOT will be based on generic costs
	2	The allocation of costs to short QSEs will be limited to two times the Capacity Charge Rate, which will reduce the charges to short QSEs relative to the current process while maintaining a reasonable incentive not to lean of the market to meet capacity obligations
Impact Area		
Market Cost	1	MP Shadow Settlement
		Unknown
Impact Area		
Market Benefit	1	Reduced Capacity Insufficiency costs
		Unknown
Additional Qualitative Information	1	Approach consistent with Nodal RUC procurement and allocation which provides experience and represents a methodology approved by the PUCT
Other	1	

Protocols Revision Request

Proposed Protocol Language Revision

SCHEDULING

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4.1 Overview of the Scheduling Process

4.1.1 Day Ahead Scheduling Process

Time Period at or before:	Qualified Scheduling Entity (QSE) Submission:	ERCOT Action:
Day Ahead		
0600		<ul style="list-style-type: none">• Publish updated transmission system information, Load Forecasts (Congestion Zone, and by total ERCOT Transmission System), Ancillary Service (AS) Plan, AS responsibility, mandatory decremental Balancing Energy Service bid percentage requirements and Transmission Loss Factors and Distribution Loss Factors.
1100	<ul style="list-style-type: none">• Balanced Energy Schedule of Obligations and Resources.• Self-Arranged AS Schedule.	<ul style="list-style-type: none">• Validate Schedules and notify affected Qualified Scheduling Entities (QSEs) of any invalid or mismatched schedules.
1115	<ul style="list-style-type: none">• Resubmit corrected schedules.	<ul style="list-style-type: none">• Review Schedules: Commercial Model.• CSC Congestion.• Notify QSEs of Congested CSCs.• Post schedule impact on CSCs.• Notify QSEs of any difference in ERCOT's zonal Load forecast and the aggregate of QSE schedules in a zone.
1300	<ul style="list-style-type: none">• Update Balanced Energy Schedule of Obligations and Resources.• Update Self-Arranged AS schedule• AS bids to supply AS to ERCOT AS Market.	<ul style="list-style-type: none">• Validate Schedules and notify affected QSEs of any invalid or mismatched schedules.
1315	<ul style="list-style-type: none">• Resubmit corrected updated schedules.	<ul style="list-style-type: none">• Validate resubmitted schedules and adjust as necessary.
1330		<ul style="list-style-type: none">• Purchase AS through ERCOT AS Market in order to complete ERCOT's Day Ahead AS plan.• Review Day Ahead Market Clearing Prices for Capacity (MCPC) for each Day Ahead AS market operated by ERCOT.

000042

Protocols Revision Request

Time Period at or before:	Qualified Scheduling Entity (QSE) Submission:	ERCOT Action:
Day Ahead		
1500	<ul style="list-style-type: none"> Submit updated AS schedule that includes Self-Arranged and AS bids selected by ERCOT. 	<ul style="list-style-type: none"> Review and validate AS schedules as necessary.
1600	<ul style="list-style-type: none"> Submit Resource Plans with unit-specific information. ▼ 	<ul style="list-style-type: none"> Verify that Resource Plans are sufficient to meet the QSE schedule. If not, ERCOT will notify the QSE.
By 1800		<ul style="list-style-type: none"> Evaluate Resource Plans to determine system security. Evaluate RPRS needed to meet next-day reliability requirements.
▼		<ul style="list-style-type: none"> ▼
▼		<ul style="list-style-type: none"> ▼
By 1800		<ul style="list-style-type: none"> Close and clear Day Ahead RPRS market.
▼	<ul style="list-style-type: none"> ▼ 	

Deleted: Submit Replacement Reserve Service (RPRS) Bids.

Deleted: correct CSC, and Operational Congestion – Operational Model, and capacity insufficiency

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Deleted: Create Merit Order of RPRS by Zone or Operational Constraint as applicable.

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Deleted: Determine MCPC for RPRS by Zone as applicable.

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Protocols Revision Request

4.1.2 Adjustment Period Scheduling Process

The Adjustment Period Scheduling Process will follow the following timeline with time T being the start of the Operating Hour:

Adjustment Period	QSE Responsibility:	ERCOT Responsibility:
Time = T minus 60 minutes	<ul style="list-style-type: none"> Submit updated Balanced Schedule of Obligations and Supply for the hour beginning at Time T, and any hour after T. Submit bids for Balancing Energy including any mandatory decremental Balancing Energy bids. Submit updated Self-Arranged AS schedule for the hour beginning at Time T and any hour after Time T (the amount of Self-Arranged AS may not change from Day Ahead, however, the Resources supplying the Self Arranged AS may be altered. If ERCOT calls on additional AS in the AP, the allocated portion of the additional AS may be self-arranged). Submit updates to Resource Plan. Submit bids for additional Ancillary Services. Submit bids for incremental and decremental Resource specific premiums. 	<ul style="list-style-type: none"> Review updated Balanced Schedule. Review updated Resource Plans. Review updated Self-Arranged AS Schedule. Validate Schedules and notify affected Qualified Scheduling Entities (QSEs) of any invalid or mismatched schedules. Identify CSC or OC Congestion or capacity insufficiency.
Time = T minus 45 minutes	<ul style="list-style-type: none"> Resubmit corrected schedules. 	

Deleted: <#> Submit bids for RPRS.¶

4.4.17 ERCOT Procurement of Replacement Reserve Service As Needed

ERCOT will purchase RPRS by 1800 based on ERCOT's most current Load forecast, and in accordance with Ancillary Services Section 6.6, Selection Methodology. ERCOT will notify QSEs of accepted RPRS bids by 1800. .

4.5.6 ERCOT Notice of Need to Procure Replacement Reserve Service Resources

During the Adjustment Period, after the evaluation referenced in Section 4.5.5, ERCOT Evaluation of System Security and Adequacy, ERCOT may announce the need to procure RPRS in accordance with Section 6.6.3.2.1, Specific Procurement Process Requirements for Replacement Reserve Service in the Adjustment Period. Following an ERCOT Notice of the

Deleted: 4.4.16 ERCOT Receipt of Replacement Reserve Service Bids¶
QSEs may submit unit-specific Replacement Reserve Service (RPRS) bids to ERCOT by 1600. RPRS bids will have the following components:¶
(1) A dollar per megawatt capacity price not exceeding one thousand dollars (\$1,000) per megawatt, at which the supplier will provide the service;¶
(2) A dollar per megawatt operational price not exceeding one thousand dollars (\$1,000) per megawatt per hour;¶
(3) Designation of the specific Resource;¶
(4) Designation of the amount of capacity represented by the bid;¶
(5) The hours that the bid is effective;¶
(6) An expiration time for the bid.¶
(7) A Balancing Energy bid point in \$/MWh for each hour that the RPRS capacity bid is effective, not exceeding one thousand dollars (\$1,000) per megawatt hour.¶

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Protocols Revision Request

need to procure any additional Ancillary Services, QSEs may adjust their energy schedules in accordance with Section 4.5.1, Receipt of Adjustment Period Schedule Changes.

The typical RPRS procurement process will follow the following timeline with time X being the start of a clock hour when ERCOT identifies the need for additional RPRS. Time X can be the start of any clock hour during the Adjustment Period but cannot be less than two (2) hours prior to the Operating Hour that energy from the RPRS unit is required.

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RPRS Procurement Process	QSE Responsibility:	ERCOT Responsibility:
Time X		<ul style="list-style-type: none"> Identify need for additional RPRS. Notify market of intent to purchase RPRS at time X+60 minutes.
Time X plus 30 minutes	<ul style="list-style-type: none"> QSEs have the opportunity to update their Balanced Schedules. 	<ul style="list-style-type: none"> Review updated Balanced Schedules. Validate schedules and notify affected Qualified Scheduling Entities (QSEs) of any invalid or mismatched schedules.
Time X plus 45 minutes	<ul style="list-style-type: none"> Resubmit corrected schedules. 	<ul style="list-style-type: none"> Re-evaluate the need for RPRS based on the updated AP schedules.
Time X plus 60 minutes		<ul style="list-style-type: none"> Purchase needed RPRS using bids received at time X.

Deleted: 4.5.7 Available Bids for RPRS
QSEs may submit, change, or delete RPRS bids throughout the Adjustment Period. If ERCOT notifies Market Participants that RPRS is needed, only bids that were submitted before the Notice are eligible. Once the Notice is given, no further bids are eligible for that procurement cycle.

6.4.2 Determination of ERCOT Control Area Requirements

By the twentieth (20th) day of the current month, ERCOT will post a forecast of minimum Ancillary Services quantity requirements for the next calendar month.

Prior to 0600 of the Day Ahead, ERCOT will use the Day Ahead Load forecast and will develop an Ancillary Services Plan that identifies the amount of Ancillary Services necessary for each hour of the next day as specified in Section 4, Scheduling. The amount of Ancillary Services required may vary depending on ERCOT System conditions from hour to hour.

By 0600 of the Day Ahead, ERCOT will post an ERCOT System and zonal Load forecast for the next seven (7) days, by hour. ERCOT will notify each QSE of its allocated share of Ancillary Services for each hour for the next day, as specified in Section 4, Scheduling. ERCOT will make available to Market Participants any ERCOT area Load forecasts used in the determination of its ERCOT System and zonal forecasts.

Protocols Revision Request

ERCOT will determine the total required amount of each Ancillary Service using the Operating Guides and the following:

- (1) **Balancing Energy Service:** ERCOT will estimate Balancing Energy needs based on the actual Load, the difference in forecasted Loads and Loads reported in bilateral schedules, deployed Regulation Service, and forecasted Congestion.
- (2) **Regulation Service:** ERCOT will use its operational judgment and experience to determine the quantity of Regulation Up Service and Regulation Down Service procured. The quantity of Regulation Up Service may differ from the quantity of Regulation Down Service in any particular hour.
- (3) **Responsive Reserve Service:** The requirement for Responsive Reserve Service is specified in the Operating Guides. Using ERCOT-approved procedures ERCOT may increase the quantity requirement based on its judgment of reliability conditions.
- (4) **Non-Spinning Reserve Service:** ERCOT will use its operational judgment and experience to determine the quantity of Non-Spinning Reserve Service procured.
- (5) **Replacement Reserve Service:** Replacement Reserve Service is procured from Generation Resource units planned to be Off-line and LaaRs that are available for interruption during the period of requirement. The QSE for a procured RPRS Resource must additionally make available to ERCOT via Balancing Energy Service bid(s) (i) for a Generation Resource, a quantity greater or equal to the High Sustainable Limit (if unavailable, the High Operating Limit) minus the Low Sustainable Limit (if unavailable, the Low Operating Limit) of the Generation Resource receiving the RPRS Dispatch Instruction in the Congestion Zone of the Generation Resource, and (ii) for a LaaR, a quantity equal to the amount of procured capacity from the LaaR in the Congestion Zone of the LaaR. ERCOT will consider the Generation Resource capacity On-line, based on Resource Plans, in its determination of capacity requirements. ERCOT shall determine the amount of RPRS to provide sufficient capacity in appropriate locations to provide ERCOT System security as specified in the Operating Guides, given ERCOT forecasted Load conditions as posted on the Market Information System.
- (6) **Voltage Support:** ERCOT in coordination with the TDSPs shall conduct studies to determine the normally desired Voltage Profile for all Voltage Support busses in the ERCOT System and shall post all Voltage Profiles on the Market Information System. ERCOT may temporarily modify its requirements based on Current System Conditions. ERCOT shall determine the amount of Voltage Support Service needed to provide sufficient reactive capacity in appropriate locations to provide ERCOT System security as specified in the Operating Guides.
- (7) **Black Start Service:** ERCOT shall periodically determine and review the location and number of Black Start Resources required, as well as any special transmission or voice communication needs required. ERCOT and providers of this service shall meet the requirements as specified in the Operating Guides and in NERC policy.

Deleted: Zonal Congestion and Local Congestion

Deleted: ERCOT will evaluate the need for Replacement Reserve Service necessary to correct for ERCOT total capacity insufficiency, Zonal Congestion, or Local Congestion.

Protocols Revision Request

6.5.6 Replacement Reserve Service

- (1) Replacement Reserve Service (RPRS) is provided by Resources that may otherwise be unavailable to ERCOT in the hours that ERCOT requests RPRS. These Resources may include Generation Resources that are expected to be off-line in the requested hours and Loads acting as a Resource that otherwise may be unavailable to be dispatched by ERCOT, i.e. Loads not declared as an active Resource in the Resource Plan at the time of the RPRS procurement.

[PRR307: Revise Section 6.5.6(1) as follows when system change implemented.]

6.5.6 Replacement Reserve Service

- (1) Replacement Reserve Service (RPRS) is provided by Resources that may otherwise be unavailable to ERCOT in the hours that ERCOT requests RPRS. These Resources may include Generation Resources that are expected to be off-line in the requested hours and Loads acting as a Resource that are declared to be available in the Resource Plan but are not committed to any service Obligation.
- (2) Resources providing RPRS must provide a telemetered output signal, including breaker status.
- (3) The minimum amount of RPRS that may be offered to ERCOT is one (1) MW.
- (4) Resources eligible to bid must meet additional technical requirements specified in Operating Guides
- (5) There may only be one RPRS bid from any given Resource.
- (6) Generation Resource and Loads acting as a Resource accepted for RPRS must be able to respond in the hours for which they have been selected to provide the Ancillary Service.
- (7) QSEs using Loads to provide RPRS must be capable of responding to ERCOT Dispatch Instructions in a similar manner to QSEs using Generation Resources to provide RPRS.
- (8) Each Generation Resource and Load acting as a Resource providing RPRS must meet additional technical requirements specified in the Ancillary Service Qualification, Testing and Performance Standards, 6.10. QSEs must comply with their Balanced Schedule despite any generation provided by the RPRS unit. For example, the QSE supplying RPRS must adjust other Resources to accommodate the minimum operating output of the RPRS Resource selected by ERCOT in order to comply with their Balanced Schedule and Dispatch Instructions.
- (9) QSE bids for RPRS will be in accordance with Section 4, Scheduling.

Protocols Revision Request

- (10) RPRS may not be self-arranged by the QSE.
- (11) For RPRS procurements due to Congestion, on or before the second (2nd) Business Day after each Operating Day, ERCOT will post on the MIS, for such Operating Day:
- (a) Each Resource receiving an RPRS Dispatch Instruction;
 - (b) Intervals for which each Resource received an RPRS Dispatch Instruction;
 - (c) The Low Sustainable Limit for each Resource receiving an RPRS Dispatch Instruction; and
 - (d) The binding transmission constraint (contingency and/or overloaded element(s)) causing the RPRS deployment.
- (12) On or before the second (2nd) Business Day after each Operating Day, ERCOT will post on the MIS, for such Operating Day, the total amount of RPRS procured by hour,

6.6.3.2.1 Specific Procurement Process Requirements for Replacement Reserve Service in the Adjustment Period

ERCOT shall procure Replacement Reserve Service (RPRS) in the AP as follows:

- (1) ERCOT will evaluate capacity required to meet next-day reliability needs using ERCOT's Operational Model, balanced QSE schedules, Resource Plans, and ERCOT forecast of next day Load.
- (2) ERCOT will define the level of Resources available to meet next-day reliability needs of the ERCOT System based on QSE schedule submissions, Resource Plans and ERCOT Load forecast. ERCOT will determine incremental Resource capacity available from Generation Resources that are Off-line, or Generation Resources that are expected to be Off-line in the requested hours or Loads acting as a Resource shown as available in the Resource Plans.
- (3) RPRS procurement produces an optimum solution of capacity required to meet next-day reliability needs for the whole Operating Day. The solution of the RPRS is a result of ERCOT performing analysis of the current physical system operations for each hour to recognize potential transmission constraints that would require Resources not currently planned to be available. The purpose and use of the RPRS procurement is to provide capacity from which energy would be available to solve all system security violations,
- (4) ERCOT will solve security violations using a transmission security-constrained mathematical optimization application. The application will solve as if each bid can be proportioned into individual MW bids. The objective of the optimization is to minimize

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Deleted: (12) For RPRS procurements due to Zonal Congestion, on or before the second (2nd) Business Day after each Operating Day, ERCOT will post on the MIS, for such Operating Day:
(a) The amount of RPRS procured by zone; and
(b) The Market Clearing Price for Capacity (MCPC) by zone.

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(a) Local Congestion;
(b) Zonal Congestion; and
(c) System capacity.

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Deleted: (a) ERCOT System capacity insufficiency using any RPRS bid;
(b) Zonal Congestion using the RPRS bids by Congestion Zone in bid price Merit Order and the current physical system operations in the ERCOT System; and
(c) Local Congestion using Resource Category Generic Cost and the current physical system operations in the ERCOT System.

Protocols Revision Request

the total cost, based on Resource Category Generic Cost and Resource Shift Factors, as described in Section 4.4.16, ERCOT Receipt of Replacement Reserve Service Bids, as well as lead time, minimum up time, and minimum down time captured through the registration process, for the whole Operating Day while satisfying all the security constraints for each hour.

(5) A QSE with a Resource selected for RPRS shall be paid in accordance with Section 6.8.2.2, Capacity and Minimum Energy Payments.,

(6) RMR Units will be considered available to offset RPRS needs. The selection process will set a bid price for each RMR Unit based on its contract start and operational costs. If the optimal solution indicates an RMR Unit is a more economic option, the RMR Unit will be deployed and paid as an RMR deployment.

Generation Resources that are eligible for RPRS procurement will be considered in the RPRS procurement process. The selection process will set a bid price for each non-bid Generation Resource based on its generic cost,

6.8.1.1 Payments for Ancillary Service Capacity

- (1) A QSE whose bid to provide an Ancillary Service Resource to ERCOT is accepted in a particular market in ERCOT's Day-Ahead and Adjustment Period Ancillary Service procurement process shall be paid for services other than RPRS the amount (in megawatts) of Ancillary Service capacity accepted by ERCOT in that market, multiplied by the MCPC in that market for the Operating Hour.
- (2) During periods of insufficient bids for Ancillary Service markets for RGS, RRS, and NSRS, the following shall apply:
 - (a) A QSE whose bid to provide an Ancillary Service Resources has been awarded, shall be paid the amount (in megawatts) of Ancillary Service capacity accepted by ERCOT, multiplied by the MCPC for the Ancillary Service by hour.
 - (b) A QSE called upon by ERCOT to provide an Ancillary Service Resource after market insufficiency has been declared, excluding previously accepted bids, shall be paid the amount (in megawatts) of the Ancillary Service capacity called for by ERCOT multiplied by the MCPC that would have resulted if ERCOT had procured only eighty percent (80%) of the capacity procured prior to declaration of insufficiency, for that particular Ancillary Service.
- (3) A QSE with a Resource selected for RPRS in ERCOT's Adjustment Period procurement process shall be paid in accordance with Section 6.8.2.2, Capacity and Minimum Energy Payments.,

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Deleted: (5) The costs associated with resolving system security violations will be identified separately into the following categories: capacity inadequacy, Zonal Congestion, and Local Congestion.¶

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Deleted: The Market Clearing Prices on the capacity insufficiency, CSC constraint, and Operational Constraint will represent the marginal cost for the solution of each constraint and will be produced as an output of the mathematical optimization application. The output of the application will be as follows:¶

(a) The marginal cost (Shadow Price of the power balance constraint) to solve system insufficiency defines MCPC for insufficiency.¶

(b) The marginal cost (Shadow Price of the CSC constraint) to solve a CSC constraint defines the Congestion price of the CSC constraint.¶

(c) The bidder of RPRS shall be paid the higher of RPRS bid price (as defined in Section 6.8.1.10, Zonal or System ... [1]

Deleted: Resources taken to solve Local Congestion shall be paid in accordance with the Local Conges... [2]

Deleted: (7) QSEs whose schedules have impacts on CSCs according to the Commercial Model (using zonal S... [3]

Deleted: (8) The costs of resolving Local Congestion are based on the amount of capacity required to sol... [4]

Deleted: (9) If all of the cost of RPRS is not allocated by one of the above methods, then the allocation will b... [5]

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Deleted: in resolving Local Congestion in the RPRS procurement process

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Deleted: (11) In the case of tied bids for the selection of RPRS, ERCOT will select the bid that meets the requir... [7]

Deleted: (3) A QSE whose bid to provide a RPRS Resource to ERCOT is accepted for capacity insufficiency... [8]

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Deleted: A QSE whose bid to provide a RPRS Resource to ERCOT is accepted for the purpose of Local Congesti... [9]