

PROJECT NO. 40268

PUC RULEMAKING TO AMEND PUC	§	
SUBST. R. 25.505, RELATING TO	§	PUBLIC UTILITY COMMISSION
RESOURCE ADEQUACY IN THE	§	
ELECTRIC RELIABILITY COUNCIL	§	OF TEXAS
OF TEXAS POWER REGION	§	

**ORDER ADOPTING AMENDMENTS TO §25.505
AS APPROVED AT THE OCTOBER 25, 2012 OPEN MEETING**

The Public Utility Commission of Texas (commission) adopts amendments to §25.505, relating to Resource Adequacy in the Electric Reliability Council of Texas Power Region, with changes to the proposed text as published in the April 27, 2012 issue of the *Texas Register* (37 TexReg 2953). The proposed amendments amend §25.505(g), relating to the scarcity pricing mechanism, by increasing the high and low system-wide offer caps and the peaker net margin, and removing outdated portions of the rule. This amendment is adopted under Project Number 40268. These amendments are competition rules subject to judicial review as specified in Public Utility Regulatory Act (PURA) §39.001(e).

The commission received comments on the proposed amendments from Senator Wendy Davis; William Leek; Texas Power, LP; Consolidated Edison Solutions, Inc. (CES); Senator Rodney Ellis; Tony Caudill; Lone Star Chapter Sierra Club (Sierra Club); Blue & Silver Energy Consulting, LLC d/b/a Pro Star Energy Services (Pro-Star); Lower Colorado River Authority (LCRA); Odessa-Ector Power Partners, LP (Odessa); Environmental Defense Fund, Inc. (EDF); CPS Energy; Texas Demand Response Coalition; the Steering Committee of Cities Served by Oncor and the Texas Coalition for Affordable Power (collectively, Cities); Luminant Energy Company, LLC and Luminant Generation Company, LLC (Luminant); NRG Energy, Inc.

(NRG); Panda Power Funds, LLC (Panda); IPR-GDF SUEZ Energy North America, Inc. (IPR-GDF SUEZ); Calpine Corporation, Exelon Corporation, IPR-GDF SUEZ Energy North America, Inc., Luminant Energy Company LLC, Luminant Generation Company LLC, and NextEra Energy Resources, LLC (collectively, the Group of Competitive Texas Power Suppliers); Texas Competitive Power Advocates (TCPA); Tenaska, Inc. (Tenaska); Calpine Corporation (Calpine); Public Citizen; The Solar Energy Industries Association (SEIA); The Texas Renewable Energy Industry Association (TREIA); Exelon Corporation (Exelon); Brazos Electric Power Cooperative, Inc. (Brazos Electric); Topaz Power Group (Topaz); Texas Energy Association for Marketers (TEAM); Texas Industrial Energy Consumers (TIEC); DC Energy Texas, LLC (DC Energy); Direct Energy; The Sustainable Energy and Economic Development Coalition (SEED); Viridity Energy, Inc. (Viridity); South Texas Electric Cooperative, Inc. (STEC); City of Houston; Representative Sylvester Turner; NextEra Energy Resources, LLC (NEER); AARP; and the Butler Firm.

General Comments and Comments on the Brattle Report

Several interested parties specifically commented on the Brattle Report, filed on June 1, 2012 in this project, and on policy options contained in the report. Pro-Star pointed to the Brattle Report to emphasize the need for regulatory certainty and to set the appropriate reserve margin targets going forward. Pro-Star recommended against a capacity market as set out in the Brattle Report. CPS Energy believed that once the commission defines the appropriate resource adequacy objective, the best policy path can be set. A reserve target, which may be variable or a minimum requirement, would necessitate different policy options. If the reserve margin is a target, then an

energy-only market is appropriate, while the Brattle Report recommended a capacity market to meet a minimum requirement.

Cities, Luminant, TCPA, Calpine, Exelon, Topaz, TEAM, Direct Energy, and NRG agreed that the commission should evaluate the appropriate reserve margin objective. Luminant agreed with the conclusions of the Brattle Report that the commission should continue to evaluate and define resource adequacy objectives at the outset of the process and clarify the direction regarding the type and level of desired reserve margin. Exelon recommended that the reserve margin target be mandated. TEAM recommended maintaining the “1-in-10” resource adequacy standard. Direct Energy argued that the commission should determine the reliability objectives before determining the appropriate system-wide offer cap (SWOC) (also described as the high system-wide offer cap (HCAP)), and that this decision would determine the appropriate SWOC.

Luminant, NRG, TCPA, Tenaska, NEER, TIEC, City of Houston, and IPR-GDF Suez recommended that additional measures also be examined. Luminant and NRG believed that additional measures are needed, as the Brattle Report noted that increasing the offer cap to \$9,000 would still not achieve the current reserve margin target, and urged the commission to continue the broader analysis of the Brattle Report recommendations. IPR-GDF Suez believed that alternatives such as adjustments to the operating reserve requirement, demand response, forward load obligations, or a reliability adequacy factor should be considered. IPR-GDF Suez recommended against the idea of state-sponsored financing or contracting to new generation. TCPA recommended that the commission refrain from considering any option that relies on a backstop mechanism involving regulated contracts for new generation supply. Tenaska and the

City of Houston asked that the commission refrain from adopting any changes to the scarcity pricing mechanism before full consideration of the Brattle Report's recommendations. The City of Houston recommended that the commission implement a short-term resource adequacy "back-stop" as described in the Brattle Report to ensure that there is sufficient reliability. TIEC noted that if the \$4,500 offer cap was in place in 2010 and 2011, it would have added approximately \$4.5 and \$4.7 billion per year to wholesale costs, and if the \$9,000 offer cap was in place in 2011, it would have added \$13.3 to \$14 billion to wholesale costs. TIEC recommended that the other recommendations from the Brattle Report should not be adopted in a piecemeal fashion. Rather, issues such as the appropriate price cap, scarcity pricing curve, and the value of lost load should be considered simultaneously before considering prices above \$4,500. TIEC recommended that the recommendations from the Brattle Report should be adopted in a subsequent rulemaking. NRG and IPR-GDF Suez disagreed with TIEC's cost estimations, and stated that the estimation is exaggerated and based on faulty premises. Luminant cautioned the commission from placing any weight on TIEC's cost analysis, arguing that the methodology is problematic because it does not account for probable behavioral changes that would accompany recent changes to the ERCOT protocols and an increase in the SWOC.

Panda Power stated that the current market design does not create the incentive to meet the resource adequacy needs of the commission. Panda Power believed that the surest way to achieve the target reserve margin is either to implement a capacity market or require that the reserve margin be carried by load serving entities and passed through to consumers. Brazos Electric recommended that the commission adopt and implement a market design mandating resource adequacy for all load serving entities, largely in the form of the Brattle Report's Option

4. Brazos Electric and Topaz believed that Options 1, 2, and 3 do not provide a viable long-term solution to ERCOT's resource deficit, while Options 4 and 5 do. Brazos Electric supports Option 4 because it believes that Option 4 will be easier to implement than Option 5. Option 4 avoids some of the problems experienced in other centralized capacity markets, and will be dependent on bilateral market activity, allowing ERCOT to benefit from innovation and economic efficiency. TEAM recommended Option 3 only as an intermediate solution towards Option 1, as demand response penetration in the market allows or as further study of alternatives such as Option 5. STEC recommended that all load serving entities be required to show that they have acquired firm resources for their firm load. STEC believed that the Brattle Report showed that Option 4 results in increased reliability with more economic efficiency while lowering investor risk and allowing the market to solve the resource adequacy concerns. NEER believed that the most efficient means to ensure long-term generation adequacy is through a centralized capacity market.

Senator Wendy Davis urged the commission to deliberate carefully on increasing the SWOC and refrain from taking steps without considering the cost to Texas homes and businesses. Senator Ellis also asked if the effect of increasing the price cap was evaluated on residential rates. EDF stated it was important to recognize and quantify the effect that commission actions will have on customers. Cities believed that any increase to the SWOC can fairly be expected to increase wholesale prices – otherwise, the proposed proceeding has no point – and the resulting increased revenue to generators must be obtained from somewhere. Cities argued that there is no analysis on what the proposal or the Brattle Report recommendations would cost load and retail

customers in the ERCOT market. Cities believed that declining to adopt the rule at this time is a reasonable course of action.

William Leek opposed the proposal and did not see how increasing the SWOC guarantees that the generators will build new generation facilities. Senator Ellis also asked what guarantees that raising the cap will actually result in new generation. Tony Caudill stated that the proposed rule will lead to the loss of manufacturing in the deregulated areas.

CES, Sierra Club, EDF, Texas Demand Response Coalition, NRG, IPR-GDF Suez, Brazos Electric, Public Citizen, Luminant, TEAM, Viridity, STEC, CPS, and Pro-Star supported expanding demand response programs to address resource adequacy needs. CES stated that energy efficiency and demand response can address near-term resource adequacy far more quickly and economically than building new generation. Sierra Club supported alternatives to raising the SWOC, such as increased energy efficiency and demand response, changes relating to third-party ownership of solar facilities, and implementation of a 500 megawatt (MW) non-wind rule. EDF recommended that expansion of demand response should emphasize participation by residential and small business customers, and that the commission should expedite more effective market-based demand response programs, such as “load participation in SCED [security constrained economic dispatch]” for all customer classes. EDF also recommended greater resource diversity, such as solar, to meet peaking energy needs. Public Citizen and SEED also pointed to other alternatives such as energy efficiency, the 500 MW non-wind renewable energy portfolio standard (RPS), and “load in SCED” as alternatives to address resource adequacy. Viridity remarked that demand resources have extremely short lead times

and require small capital investment, and Texas has enormous untapped potential to deploy demand resources to support resource adequacy. Viridity also noted that integrating demand response will help to mitigate market power and deter gaming behavior. Luminant emphasized that demand response as referenced in the Brattle Report should not dampen prices, but should appropriately reflect the scarcity conditions that prompted the demand response.

Texas Demand Response Coalition pointed out that the Brattle Report states that the energy-only market will not be realized without significant levels of demand response. The Texas Demand Response Coalition requested that the commission take the following actions either in this docket or subsequent dockets: develop a reliability demand response procurement mechanism to address the expected 2014 shortfall in ERCOT's reserve margin; in addressing the policy options discussion in the Brattle Report, focus on the role that demand response can play in ensuring resource adequacy in the ERCOT market; and beyond the Brattle Report, open a proceeding to consider the full range of opportunities for demand response to participate in the Texas markets. The Texas Demand Response Coalition also described how demand response would play a role in any other policy options set out in the Brattle Report. CPS Energy and TIEC supported the expansion of demand response, but disagreed with the recommendation to expand the Emergency Response Service framework, arguing that capacity payments for the interruption of load actually have a depressing effect on market prices and should not be relied upon to facilitate long-term resource adequacy.

The Sierra Club supported a smoother and more predictable power balance penalty curve as suggested by Commissioner Anderson. Public Citizen also suggested a similar proposal to the

power balance penalty curve, with a low value of \$200 and a cap of \$3,000. LCRA also supported a gradual scarcity pricing curve as suggested in the Brattle Report.

SEIA stated that solar power could provide important reliability service, and described how solar has a high effective peak capacity value, is quick to market, is modular, is scalable, has minimal operating and maintenance costs, and has no fuel costs. SEIA recommended that the commission consider additional pricing mechanisms to facilitate the deployment of reliable resources, including solar. TREIA urged that care must be taken to ensure that renewable energy resources can fully participate in any additional market design changes. The Butler Firm stated that the greatest deficiency in the debate about resource adequacy is the failure to address the role solar energy and coastal wind can play in maintaining reserves, and that the commission should seek to encourage renewable generation at time of system peaks.

CPS Energy agreed that any market enhancements should allow for renewable energy participation, but disagreed with TREIA and SEIA that there should be specific measures directed at encouraging development of renewable resources. CPS Energy argued that there should not be special provisions in the context of resource adequacy. TIEC agreed with this position, arguing that the commission should dismiss requests to obtain subsidies, mandates, or other favorable treatment for particular products.

Commission Response

The commission appreciates the comments on the various options set out in The Brattle Group's report, ERCOT Investment Incentives and Resource Adequacy dated June 1, 2012

(Brattle Report). Following the request for comments in this proceeding, the commission initiated Project Number 40000, *Commission Proceeding to Ensure Resource Adequacy in Texas*, in which the commission will evaluate the various options and recommendations set out in the Brattle Report and by stakeholders. However, the commission concludes that it needs to take action now in this rulemaking to continue to increase the incentives for resource adequacy. Earlier this year, in Project Number 37897, *PUC Proceeding Relating to Resource Adequacy and Reserve Adequacy and Shortage Pricing*, the commission raised the HCAP from \$3,000 to \$4,500 by adopting new §25.508. New §25.508 raises the HCAP from \$3,000 to \$4,500 beginning on August 1, 2012 and ending on the effective date of any amendment to the high system-wide offer cap in §25.505. The commission adopted §25.508 as the first step of a plan to raise both the HCAP and the low system-wide offer cap (LCAP) over time. By further raising the HCAP and LCAP over time in this rulemaking, the commission will be providing for an economically efficient means of supporting resource adequacy, by increasing the incentives for demand response and increasing the incentives for the construction of new generation and for generation to be available and producing electricity when it is needed most. Therefore raising the HCAP and LCAP should be done regardless of any additional measures the commission takes to support resource adequacy. The Brattle Report concludes that raising the HCAP to \$9,000 as adopted in this rulemaking, absent additional measures, will produce an estimated equilibrium reserve margin of only 10%, well below ERCOT's target reserve margin of 13.75%. However, increasing the HCAP and LCAP in this rule will not be the only action that the commission will take. The commission is contemplating additional changes to the market in Project Number 40000, to study options for maintaining resource adequacy at

appropriate levels. By adopting economically efficient measures to support resource adequacy, the commission is minimizing the cost of resource adequacy measures to electric customers in ERCOT.

The commission requested comments on the following questions:

1. *Should the sequence of changing the high system-wide offer cap (HCAP) increase at a different rate and over a different period? For example, are any of the following cases preferable to that proposed in the rule?*

	Raise the HCAP to:	Effective before the summer of:
Proposed Rule	\$5,000	2013
	\$7,000	2014
	\$9,000	2015
Case 1	\$4,000	2013
	\$5,000	2014
	\$6,000	2015
Case 2	\$4,500	2013
	\$6,000	2014
	\$7,500	2015

Sierra Club, Cities, Tenaska, Topaz, Public Citizen, Luminant, NEER, TIEC, SEED, City of Houston, Group of Competitive Texas Power Suppliers, and TEAM opposed raising the HCAP from \$4,500.

State Representative Sylvester Turner urged the commission to slow down and fully consider the impact to consumers and businesses by raising the offer cap to \$4,500. Representative Turner did not believe all stakeholders and affected parties have had an adequate opportunity to assess the true effects of raising the offer cap by 50%.

LCRA and Cities expressed concern that increasing the SWOC at the levels proposed may lead to increased costs for market participants. LCRA stated this would be due to excessive price volatility and risk in the market. Cities and Public Citizen recommended that the commission should wait to determine the effects of the changes that the commission and ERCOT have already made, and then ERCOT, the commission, and stakeholders can more accurately determine what action, if any, should be taken next. Cities opposed any increase to the SWOC, but to the extent that the commission does increase the offer cap, the SWOC should only rise to \$9,000 in periods of extreme scarcity, when load shedding is occurring.

Luminant supported implementation of the \$4,500 HCAP effective August 1, 2012. Luminant disagreed that a \$4,500 HCAP alone will solve the resource adequacy problem and urged the commission to continue its broader analysis of the ERCOT market and the Brattle Report recommendations. Luminant supported an approach that avoids volatile prices and additional financial risks for market participants by adopting a \$4,500 increase to the HCAP now, while continuing to quickly explore other market design improvement opportunities such as those presented in the Brattle Report and examine whether the HCAP should be increased above \$4,500 in conjunction with those improvements.

Tenaska, Topaz, TIEC, and City of Houston believed that any further increases to the cap are premature in light of the findings of the Brattle Report and do not allow for thorough consideration and proper implementation of those recommendations. NEER supported raising the SWOC to \$4,500 but not any higher without additional market modifications.

SEED opposed raising the HCAP and peaker net margin (PNM) and any modifications to the power balance penalty curve in the short period of time after the commission and ERCOT have made many changes to the market that will affect future prices. Sierra Club disagreed with raising the SWOC in 2013 and suggested that the commission wait and assess the impacts of raising the SWOC on adequacy approximately a year from now. Sierra Club suggested that the commission prepare the market for the entrance of demand response before any scarcity prices are raised. If the commission does raise the caps, Sierra Club would be supportive of a slight rise in the HCAP.

TEAM stated that the market should have time to adapt to the changes and review the changes with actual pricing data that result from them before instituting significant increases to the HCAP that will create market volatility but not necessarily change bidding behavior. If the HCAP is raised, it should only be to a price that has been analyzed to be the value of lost load (VOLL) for ERCOT customers, and then only if VOLL prices are analyzed to be sufficient to draw generation investment commitments. If the HCAP is increased, a more measured progression is preferable so that the results of each increase can be observed and the market can better prevent over-corrections to generator price signals. TEAM does not think the commission should consider additional increases in the HCAP unless and until the market achieves more price sensitive demand response.

TIEC opposed increasing the SWOC higher than \$4,500 at this time. Increasing the SWOC to \$4,500 should not take effect until a full year after the commission makes a final decision on that increase. Further, if the commission adopted a \$4,500 SWOC, TIEC suggested that the PNM

trigger and LCAP should be eliminated. If the commission seeks to adopt a long-term SWOC without any of the more comprehensive changes that the Brattle Report recommends in conjunction with a VOLL price cap, then TIEC's analysis showed that \$4,500/MWh is the appropriate SWOC. If the commission considers increasing the SWOC above \$4,500 or implementing a VOLL price cap, TIEC suggested the commission needs to concurrently implement a number of other market changes recommended by the Brattle Report.

The City of Houston suggested that the commission review the entirety of the Brattle Group's recommendations before adopting an increase in the price cap. The City of Houston also stated that the commission should consider in this project the issue of whether any action to raise the SWOC constitutes a change in law so as to allow REPs to pass along electricity price increases to end-use customers under §25.475. The City of Houston suggested that such an increase in the offer cap would not trigger the right to pass on such costs.

If the commission recommended a reserve margin target, CPS Energy recommended a SWOC of \$4,500, with a demand curve that may administratively set the price at \$9,000. In this situation, CPS Energy also recommended that the commission make load participation in SCED the highest priority. CPS Energy believed that price responsive demand must offer in at the VOLL, and since some demand offers may be over the \$4,500 SWOC, there needs to be an exemption for demand offers or alternatively a different SWOC for demand resources.

AARP believed the commission should take an appropriately deliberate approach to modifying the current market rules. AARP stated that no changes should be made without an analysis of

the costs to consumers and no changes should be made without reasonable assurance that the policy chosen will achieve reliability goals. AARP suggested the long-term policy options considered in the Brattle Report should be analyzed for their expected and worst-case impacts on Texas electricity customers. Similarly, AARP recommended that any short-term adjustments should be evaluated in terms of their expected and potential impacts on Texas consumers. AARP does not want the commission to make short-term changes to the market rules.

Odessa, Texas Demand Response Coalition, Calpine, SEIA, Direct Energy, Brazos Electric, DC Energy, Viridity, Luminant, and TREIA supported raising the SWOC. Odessa supported the increases in the HCAP as set out in the proposal, stating the \$9,000/megawatt-hour (MWh) SWOC is needed and suggested that the phase-in dates are a reasonable implementation and should not be done faster.

NRG agreed with the Brattle Group's conclusion that the ERCOT SWOC should ultimately be increased \$3,000 to \$9,000 or a similarly high level consistent with the average VOLL. As implementation steps, NRG supported raising the offer cap to \$5,000 in 2013, \$7,000 in 2014, and \$9,000 in 2015, or an alternative aggressive increase to achieve \$9,000 cap as early as 2014. NRG believed that increasing the offer cap beyond the \$4,500 level must be contingent upon reforming the credit requirements and processes at ERCOT to ensure the higher caps do not unduly harm market liquidity. While NRG supported the commission's exploration of the broader recommendations of the Brattle Report in a separate project, it urges the commission to move expeditiously to raise offer caps for future years. NRG disagreed with parties that urged the commission to take a slow approach. NRG recognized that increasing the cap is only part of

the solution, but will serve as the foundation for making additional market improvements and will provide certainty to investors considering additional generation investment in ERCOT. NRG noted that the \$9,000 cap is not inconsistent with other potential market designs.

Panda recommended increasing the caps by April 2013 and suggested that the HCAP should be set at the \$9,000/MWh level. TREIA agreed with the recommendation of the Brattle Group report that the offer cap should be set to \$9,000/MWh. Viridity did not disagree with the commission's proposal to raise the SWOC and believed that allowing prices to rise to the proposed levels during times of scarcity will eventually help to encourage the development of new generation and the deployment of other resources. Viridity requested that the commission's resource adequacy efforts evaluate the contribution that demand resources can make.

Direct Energy believed that the HCAP may need to increase above \$4,500/MWh in order to incentivize generation investment and demand response that will consistently meet the reliability target. Direct Energy recommended that the commission direct ERCOT to examine the level of capital necessary to participate in a market design with a significantly higher HCAP and determine whether or not ERCOT's current credit policies adequately collateralize the risk due to a significantly higher HCAP.

STEC recommended a more gradual rising of the HCAP to a more moderate amount that should be coupled with a requirement that all load serving entities, including retail electric providers (REPs), be required to show that they have acquired firm resources for their firm load along with placing a high priority on demand response. STEC urged that the start date for each change in

the HCAP coincide with the calendar year to prevent confusion. STEC proposed that a \$4,500 HCAP become effective January 1, 2013; a \$5,250 HCAP become effective January 1, 2015; and an HCAP of \$6,000 become effective January 1, 2016.

IPR-GDF SUEZ supported measures that improve opportunities for return on generation investment and reduce risk to the system such as increasing the SWOC in graduated steps in tandem with changes to credit support requirements and examining other alternatives to augment the SWOC. IPR-GDF SUEZ stated that it is critical to implement credit and collateral requirement reforms prior to any additional increase in SWOC. IPR-GDF SUEZ suggested that the SWOC be set to \$6,000/MWh for 2013 and to \$7,500/MWh for 2014.

TCPA did not have a recommendation on the specific HCAP levels, but suggested that the commission begin evaluating additional measures that may need to be employed to bridge the gap between the economic equilibrium reserve margins of the energy-only market and those reserve margin levels deemed acceptable to electricity consumers and policy-makers. TCPA urged the commission to finalize its decision on HCAP levels as soon as is reasonably practical.

Brazos recommended a gradual increase in the HCAP as set out in Case 1 in the proposed rule, going to \$6,000/MWh in 2016, that is coordinated with implementation of Option 4 in the Brattle Group report. Brazos stated that a more rapid increase in the HCAP is inconsistent with the lead time to develop new capacity for ERCOT. Brazos recommended that the Brattle Group's Market Enhancements 5, 6, and 7 that should be addressed by ERCOT to improve price signals to

generators and develop demand response that can respond to high prices, and that these enhancements should be implemented in parallel with raising the HCAP.

DC Energy supported a phased-in approach of the proposed increase and requested that the commission provide as much notification as possible prior to the first scheduled HCAP increase. DC Energy believed that a final rulemaking setting out the increase that is issued in the third quarter of 2012 and effective on June 1, 2013 would be appropriate. DC Energy believed that the proposed increases to the HCAP, along with enabling demand response resources to participate in the SCED and addressing the price suppression issues as outlined in the Brattle report, would be an appropriate starting point in order to achieve ERCOT's resource adequacy targets.

Direct Energy stated that the commission should determine the reliability objectives of the market design before determining the appropriate HCAP. If the commission determines that the reserve margin level is a requirement, then Direct Energy believed additional market features are needed to meet the reliability requirement. Direct Energy believed that the HCAP likely needs to increase above \$4,500 per MWh to incentivize generation investment and demand response that will provide adequate reliability, but only if the commission determines the reserve margin level will be a targeted amount determined by market forces. Direct Energy believed that the commission should decide the appropriate HCAP level by the end of this year. Direct Energy requested that the commission phase-in the increase over two years if the commission chooses an HCAP higher than \$6,000/MWh.

Texas Demand Response Coalition did not disagree with the proposal to increase the SWOC to \$9,000. The Texas Demand Response Coalition agreed that allowing prices to rise to the proposed levels during times of scarcity will encourage the development of new generation and other resources, but that demand response will play a key role in addressing the resource adequacy issue.

Pro-Star recognized that increasing the SWOC to \$9,000 would not meet the current ERCOT reserve target. Instead, Pro-Star agreed that addressing the issue will require a multi-prong approach. Pro-Star also recommended that the start date of any increase begin on July 1st instead of June 1st, because the summer strip for energy pricing is defined as the July-August period rather than June-September for calculating the 4CP. Pro-Star believes that this would better match the change in price caps with how power is traded in the wholesale market and should reduce concerns about the effects of raising the price cap on liquidity.

Commission Response

The commission concludes that the HCAP and LCAP should be raised in the manner provided for in the proposed rule. As discussed previously, the Brattle Report concludes that raising the HCAP to \$9,000 as proposed in this rulemaking, absent additional measures, will produce an estimated equilibrium reserve margin of only 10%, well below ERCOT's target reserve margin of 13.75%. Raising the HCAP and LCAP in the manner provided for in the proposed rule is an economically efficient means of supporting resource adequacy and should therefore be done regardless of any additional measures the commission takes to support resource adequacy. The Brattle Report notes that other

energy-only markets have determined that the VOLL is from \$3,000 to \$12,000 and that a “high VOLL-based price cap is a theoretically efficient market price during load-shed events because it reflects the price that customers would have been willing to pay to avoid curtailment.”

The commission disagrees that it should wait to make a decision to further increase the HCAP and LCAP. As stated in Project Number 37897, the commission must act quickly and decisively to address resource adequacy issues. Most generation facilities take several years to be developed. By setting the SWOC increases in this rule well in advance of when they take effect, the commission is promoting regulatory certainty and encouraging generation developers to begin taking the steps necessary to develop additional generation. Acting now also encourages the development of demand-side resources, which can also have significant lead times. Pro-Star made a recommendation to change the start date of any increase in the offer cap to July 1 instead of June 1, because according to Pro-Star this change would better match the offer cap changes with how power is traded in the wholesale market. The commission declines to make this change. No other commenter expressed this concern. The commission is adopting the changes in offer caps many months before the changes take effect, which will provide sufficient time for any adjustments in wholesale power trading.

2. *Is the use of the peaker net margin (PNM) method described in the rule the appropriate mechanism to measure resource adequacy in an energy-only market? If not, what should replace it? Should the PNM trigger amount be the cost of new entry (CONE) or a*

multiple of the CONE as determined by ERCOT? Should the trigger causing the system-wide offer cap to be reset to the low system offer cap be based on a calendar year or a rolling 12-month period, or should the use of the mechanism be based on hitting the trigger for a single year, or for multiple years? Should variability in the weather be taken into consideration in determining whether the PNM trigger is met?

Odessa and NRG supported the elimination of the PNM trigger. Odessa did not believe the PNM is a useful mechanism for measuring resource adequacy. Odessa opined that in a truly competitive market, there would be a mechanism that limits the amount of revenue that a peaking unit can earn only if it was accompanied by a floor mechanism that guaranteed the peaking unit with a minimum level of revenue. Since a peaking generator is not supported by such floor payment mechanism in ERCOT, it needs the opportunity to average the high revenue years with the low revenue years over the long term. NRG believed that the existence of the PNM and unpredictable drop in offer caps could be a reason for the financial community to hesitate when financing ERCOT projects. However, as discussed below, NRG also supported the recommendation in the Brattle Report to increase the PNM to approximately three times the CONE.

TIEC advocated for the elimination of the PNM trigger and the LCAP if the commission adopts a \$4,500 SWOC. TIEC asserted that the PNM levels that are being considered in the rule are unlikely to come into play and the LCAP would likely be unworkable in practice. As an example, TIEC stated that if the PNM threshold were hit before the end of the summer peak season, a reduction in the SWOC to the LCAP could eliminate certain high-cost resources from

the market and cause certain price-responsive loads to choose to take power, which could degrade reliability regardless of whether generation revenues have been sufficient to incentivize future generation development.

In reply comments, Luminant disagreed with TIEC and Odessa Ector that the PNM trigger and the LCAP should be eliminated, arguing that if the PNM trigger and LCAP are set at the right level and the PNM is measured in a way that accurately reflects revenues actually earned by generators, then the PNM trigger and LCAP should operate to protect against extreme market outcomes, while still allowing generators to earn sufficient revenues over the life of their investment.

In reply comments, Cities rejected Odessa's claims that the PNM fails to recognize that a generator needs to earn additional revenue in some years to make up for insufficient revenue in other years. Cities noted that the current PNM threshold has never been met and contended that it is, therefore, unlikely that the existence of the PNM/LCAP has played a role in the investment decisions of generators in Texas. Furthermore, by setting the PNM threshold at substantially more than the annualized revenue requirement of a peaker unit, the commission has already appropriately considered the fact that generators experience both low revenues and high revenues years.

While not advocating for the elimination of the PNM, TCPA, Exelon, and Topaz argued that the PNM is not an appropriate method to measure resource adequacy in an energy-only market; rather, it is designed to be only a trigger for the LCAP. TCPA, Topaz, and Direct Energy stated

that the PNM should be set at a level that does not interfere with the natural boom and bust cycle of revenue returns, and investors must have an expectation that recovering revenues from lean years is possible without hitting the PNM trigger. The PNM trigger should only serve as a protection from major market failures. Calpine and Exelon argued that the PNM does not promote or ensure resource adequacy. Calpine stated that the PNM also serves as a signal that something could be amiss in the market that requires a review of current market conditions and market design. Exelon and Topaz pointed out that the PNM is a historical look-back that merely calculates possible margins in a given year for an ERCOT unit and therefore provides no investment signal. Exelon argued that in the energy-only construct in ERCOT, the PNM should reflect revenues needed over a number of years to attract investment. Topaz contended that the current PNM assumes that peakers are available for every price spike and does not properly account for maintenance and related outages that might remove a unit from the market when prices unexpectedly rise. Topaz, therefore, supported the proposed increases to the LCAP and the PNM because the current LCAP and PNM trigger increase the risk to investors that ERCOT prices could be depressed after just a single extreme year and advocated for a third party review to determine the appropriate measure for the margins required to incent new entry.

IPR-GDF Suez stated that increasing the PNM threshold and LCAP are important steps in the right direction while the Group of Competitive Texas Power Suppliers supported the concept of a properly set PNM as a guardrail to protect consumers from extreme market conditions or periods of sustained scarcity. The Group of Competitive Texas Power Suppliers believed that the PNM trigger, as currently set, serves as a threat to stable price signals and further delays potential investment.

While Luminant supported the PNM mechanism, it contended that the current PNM trigger is not high enough to allow recovery of sufficient revenues in the rare years when revenues reach high enough levels to justify long-term investment and is not reflective of actual generator revenues given that actual peaking generators are able to earn only 60 to 85% of the theoretical PNM due to imperfect dispatch and various operating costs. Furthermore, should the PNM trigger be reached, the current LCAP is set too low to ensure resource adequacy because it may impede investment decisions at its current level.

Brazos Electric also considered the PNM to be an appropriate measure for the economic incentives available to new resources in the current energy-only market design. However, according to Brazos Electric, the adoption of the Brattle Report's Option 4 (Mandatory Resource Adequacy Requirement for load serving entities (LSEs)) is a more certain means to economically motivate the market to build sufficient reserves.

TEAM, Cities, and STEC noted that when the PNM was originally adopted by the commission, it was intended as a protective mechanism for consumers that were put in place to prevent excessive wealth transfer from load to generators rather than as a measure of resource adequacy. Arguing that the PNM was designed as a protective measure for consumers from sustained high prices by providing a "circuit breaker" effect and resetting the HCAP to a LCAP if the market "over heats," TEAM suggested that the PNM should continue to be set at a high enough level such that it is not likely to be reached when the market is properly functioning. Cities urged that the PNM/LCAP mechanism be retained in the rule.

SEIA supported increasing the PNM threshold to catalyze investment in new capacity while the commission considers additional pricing mechanisms to facilitate deployment of reliable resources, including solar.

Several parties addressed the question of whether the PNM trigger amount should be the CONE or a multiple of the CONE as determined by ERCOT. Pro-Star, Odessa, CPS Energy, Cities, Luminant, NRG, IPR-GDF Suez, Group of Competitive Texas Power Suppliers, TCPA, Calpine, Exelon, Brazos Electric, and DC Energy recommended setting the PNM trigger amount to be a multiple of the CONE.

Odessa and Cities would apply a multiplier of two to the CONE in establishing the PNM trigger amount if the commission decides to continue with the PNM mechanism. If the commission decides to continue with the PNM mechanism, Odessa suggested that setting the PNM equal to two times the CONE is reasonable as is the suggestion of \$300/kilowatt (kW)-year contained in the Brattle Group Study. Odessa recommended a PNM trigger amount that is higher than the CONE to allow returns on investment in above average years to offset below average years. Odessa also supported the proposed increase in the PNM from the current \$175,000 to at least \$262,500 to ensure that generation developers would not discount the increases in the SWOC in the proposed rule due to the probability that the proposed higher SWOC levels increase the likelihood that the current PNM amount of \$175,000 would be reached. Cities noted that its recommendation to apply a multiplier of two to the CONE is similar to the multiplier applied by the commission in 2006 in reaching the current PNM trigger amount. Cities strongly recommended that the CONE amount should be arrived at in a transparent manner either in a

commission project or an ERCOT stakeholder process. In its reply comments, IPR –GDF Suez disagreed with the Cities’ suggestion that only a multiplier of two be applied to the CONE, arguing that if the PNM were triggered at a level that fails to appreciate the inherent mismatch between any short-term PNM and the 25 to 40 year horizon on generation investment, it could send erratic price signals.

CPS Energy, Luminant, NRG Energy, IPR-GDF Suez, Group of Competitive Texas Power Suppliers, TCPA, Calpine, Exelon, Odessa, and Brazos Electric supported increasing the current PNM trigger amount to three times the CONE or approximately \$300,000/MW-year as suggested in the Brattle Report. CPS Energy opined that its recommended PNM trigger amount would protect the broader Texas market without impeding the revenue needed for new entry because it could reduce some of the swings of entry and exit that an energy-only market will experience. Calpine also agreed with the Brattle study recommendation to undertake a study of the methodology for calculating the PNM and the appropriate PNM level. NRG suggested periodic analysis should be conducted to ensure that the PNM remains at the same multiple of CONE. IPR-GDF Suez, Group of Competitive Texas Power Suppliers, and Calpine would adjust the PNM trigger amount annually according to the Handy-Whitman Index while TCPA recommends that the PNM be re-evaluated by an outside third party and updated regularly as appropriate. In addition to increasing the PNM trigger to three times the CONE for a new gas-fired combustion turbine, Luminant recommended that the PNM trigger amount should be initially set at three times the CONE of \$105,000 per MW per year for a new gas-fired combustion turbine as estimated in the Brattle report; the PNM calculation should be discounted to 72.5 percent to appropriately compensate for imperfect dispatch and various operating costs;

and the CONE, PNM discount factor, and PNM trigger should be revised on a regular basis, using updated calculations published by an independent third party.

STEC advocated a Zonal PNM implementation option to account for regional differences such as the Valley import constraint that was active in February 2011. Alternatively, STEC recommended a PNM that is based on an ERCOT-wide load-weighted settlement point price rather than the currently used ERCOT-wide hub average price methodology. STEC recommended the PNM trigger amount be set equivalent to the CONE.

Direct Energy supported an increase in the PNM trigger and the LCAP but does not have a final opinion as to the appropriate level. Similarly, Topaz supported the proposed increases to the LCAP and PNM. Brazos Electric suggested that if Option 4 in the Brattle report (Mandatory Resource Adequacy Requirement for load serving entities (LSEs)) is implemented, penalties for LSEs who fail to meet their resource adequacy mandates should be set above CONE levels in order to maintain alignment of incentives.

With respect to increases in the LCAP amount, Odessa supported the increase in the LCAP value in the proposed rule to \$2,000/MWh from the current level of \$500/MWh, because it believes that the LCAP value should not be discounted so significantly that generation developers will discount the proposed SWOC. Luminant recommended increasing the LCAP to 50 percent of the HCAP, or \$2,250, thereby restoring the original relationship between the LCAP and HCAP. Luminant also suggested excluding load resources from the application of the LCAP so that load resources will not be unnecessarily hindered from continued participation in SCED and may

continue to set market clearing prices up to the HCAP based on their own VOLL. NRG supported the proposed increase to \$2,000 if the PNM mechanism is maintained by the commission. Arguing that the current LCAP of \$500/MWh is too low, Group of Competitive Texas Power Suppliers recommended that it should be set at 50% of the SWOC (the same ratio of LCAP to HCAP that was established in 2007) to ensure that any policy efforts to alter mitigation mechanisms intended to encourage new generation investment are not harmed and the incentive for load to participate as demand response is not inhibited by an LCAP set too low. TCPA recommended that LCAP should be raised significantly above \$500 because at the current level, it would collapse prices immediately after the PNM threshold is reached, thereby removing any incentive for load to contract forward, not incent load response, and threaten the economic viability of new investments in the market. Calpine supported the proposed increase in the LCAP from \$500 per MWh or per MW per hour to \$2,000 and maintaining the LCAP at 50% of the SWOC. According to Calpine, increasing the LCAP to \$2,000 accomplishes the policy objective of keeping in place an administrative guardrail against excessive wealth transfer from load to generators for an extended period while continuing the policy of supporting levels of investment that create a resource-adequate system. Topaz contended that any market guardrail, such as the LCAP, deemed necessary by policymakers and intended to protect consumers, should enhance resource adequacy, not deter it.

TIEC recommended maintaining the LCAP and PNM triggers despite their drawbacks if the SWOC is set higher than \$4,500, arguing that a SWOC higher than \$4,500 would create significant risk of inappropriate wealth transfers from load to generators.

TEAM believed that raising the PNM along with the HCAP to ensure that the LCAP will not be triggered as a generator's revenue increases with ever-higher prices to consumers defeats the purpose of the PNM, which was designed as a protective measure for consumers from sustained high prices. TEAM also noted the Battle study's conclusion that increases in HCAP and PNM would not ensure that ERCOT would achieve its resource adequacy target. TEAM suggested that if the annual PNM is increased to reflect a greater earning potential for new peaking generation units, a short-term mechanism should be put into place to limit windfall profits by generators during periods of high demand due to extreme weather events or similar conditions so that consumers can be protected from sustained high prices in such conditions.

With respect to the length of time over which the PNM trigger amount should be considered before the SWOC is reset to the LCAP, Pro-Star advocated a multi-year period rather than a single year approach, because adopting a longer term approach would minimize the impact of weather anomalies and provide a positive climate for generation investment. TCPA made a similar recommendation. Odessa recommended a three-year time period while NRG Energy recommended a 12-month or multi-year rolling calculation as a basis for the triggering event for imposition of the LCAP. Topaz suggested that, at a minimum, the PNM trigger mechanism should be based a three-to-five year rolling average, not a single year metric, to smooth generator margins. STEC opined that the trigger causing the SWOC to be reset to LCAP should be based on a rolling 12-month period with the Valley Import constraint. Brazos Electric supported leaving the current 12-month measurement period for the trigger amount intact. Calpine recommended a study to determine whether to adopt a PNM that is accumulated over a period longer than a year, e.g. three years.

Odessa and STEC did not support taking the variability in the weather into consideration in determining whether the PNM trigger is met. Arguing that it would introduce great complexity to the process of determining whether the PNM trigger is met, STEC suggested that the use of the 12-month rolling average sufficiently addresses the issue.

While not directly addressing Question 2, Panda expressed support for the proposed amendments and The Lone Star Chapter of Sierra Club suggested that if the commission decides to make any changes to PNM, those changes should not be made until 2014. LCRA did not propose particular levels for the SWOC or PNM and instead recommended a cautious approach that will allow the Commissioners and market participants to observe the results of Project Number 37897. On the other hand, Public Citizen, City of Houston, Tenaska, and SEED opposed the implementation of the proposed rule.

Commission Response

The commission concludes that the PNM and LCAP should be kept and increases the PNM amount to \$300/kW-year and raises the LCAP to the amount recommended in the proposal. Sustained high prices, or the potential for sustained high prices, are intended to serve as a signal that more resources are needed in ERCOT. The PNM threshold and LCAP together seek to balance two competing concerns: providing the opportunity for sufficient revenues to generation and load resources to cover their costs and earn a reasonable return and protecting loads from excessively high prices during periods of low reserve margins. The PNM measures the revenues of a hypothetical peaking unit. If the PNM revenue amount is met, then the system-wide offer cap is reduced from the HCAP to the LCAP. The Brattle Report notes that the PNM threshold amount should be set at a

multiple of the CONE of a new peaking plant. The CONE is seen as the average amount of revenue that is needed over many years to attract new investments and is considered along with the frequency and magnitude of price spikes. If there is scarcity and the PNM is met only once in a number of years, then the PNM should be set at a level to take into account the years when the CONE is not met.

The ERCOT Independent Market Monitor (IMM) estimates that the CONE was met in three of the past seven years (2005, 2008, and 2011), although the total revenues were below the PNM threshold. The Brattle Report stressed that there is no correct level for the PNM threshold; however, the Brattle Report ultimately recommends a PNM threshold in the range of \$250-\$350/kW-year that increases in some predictable way over time, commensurate with the increasing cost of construction. Consistent with this recommendation, the amended PNM threshold amount of \$300/kW-year is within the range recommended by the Brattle Report. This PNM threshold amount would allow recovery of approximately three times the annualized fixed costs of a new gas-fired peaking unit, determined to be in the \$80-\$105/kW-year range in the IMM's 2011 State of the Market Report.

Furthermore, the commission concludes that the PNM should be increased periodically to reflect any increases in costs of construction. The Brattle Report recommends the PNM threshold be annually increased according to a standard index such as Handy-Whitman Index of Public Utility Construction Costs. The commission agrees that adjusting the PNM threshold annually to reflect any changes in the costs of construction is appropriate

because increasing the PNM threshold in a predictable manner would send a positive signal to investors in the generation community. The commission directs ERCOT to annually determine the CONE and each year set the PNM at three times this amount, and amends the rule language accordingly. The LCAP should be set at a level that limits excessive generator revenue in scarcity years, but also at a high enough level to allow a generator to recover fixed costs during a period when the reserve margin is thin and the PNM trigger has been reached.

The Brattle Report recommends that the LCAP be set at an amount over the current level of \$500 if generation resources have a marginal cost higher than the LCAP and to ensure that demand response in the form of load reductions would be achieved before the LCAP amount is reached. The commission believes that the LCAP as proposed is set at an amount that would allow for the recovery of marginal costs and for loads to respond to the price. The commission does not see sufficient justification in the comments to change the annual calendar year resource adequacy cycle. The commission agrees with Odessa and STEC that variability in weather should not be taken into account because it introduces greater complexity in the process of determining whether the PNM trigger is met. Furthermore, by setting the PNM to allow recovery of three times the CONE, the commission has adequately addressed the impact of weather anomalies on scarcity pricing over time and consequently, the returns needed to attract investment. Taken as a whole, the amended PNM and LCAP provide generators with a reasonable opportunity to earn a reasonable return on their investments while protecting loads from excessively high prices.

3. *How long would it take market participants to adjust their financial exposure to the proposed amendments? Will these changes affect liquidity in the ERCOT market? Will financial counterparties in hedging arrangements continue to be willing to participate, and if so, at what cost, if the HCAP is increased significantly? Would there be any difference if changes were made over a shorter or longer period of time?*

TEAM, Topaz, TCPA, and Calpine stated that higher caps will cause the cost of credit to rise. They urged the commission to be mindful of this when making its decision. Brazos and TCPA added that with higher price caps the liquidity will also decrease. TEAM commented that increased market volatility at the wholesale level will increase costs on REPs and other LSEs whether they ever purchase in the day-ahead or real time markets or hedge for all intervals where there is any likelihood of scarcity, as the risk premiums associated with such hedges will increase along with the magnitude of shortage pricing. TEAM stated that generators will also be exposed to significant risk in a volatile market and the costs of being unable to provide power as scheduled will escalate. TEAM asserted that all of these increased costs will necessitate an increase in retail prices and therefore it might be prudent to wait until advanced metering systems (AMS) are fully deployed with functions adequate for effective demand response. Calpine stated that different classes of market participants will be affected differently by the consequences of the increased credit requirements. CES expressed concern about the lack of information on the likely price impacts of the proposal and did not understand the impact to existing contracts or the appropriate steps to mitigate risks. CES was also concerned that the proposed changes may negatively impact the credit or collateral obligations of some retailers.

TEAM stated that hedging arrangements will demand a higher avoidance premium. CES, TEAM, CPS, and TIEC asked the commission to allow the increase to gradually take effect as contracts expire. CES recommended that the commission delay the effective date to at least 2015 to reduce the impact on existing contracts. TIEC advocated for at least one year after the decision and TEAM stated that two-year contracts were not unusual and the commission should allow two years to transition after making its decision. TIEC stated that for industrial customers whose energy costs may account for up to 70% of production costs, renegotiating a retail supply agreement can be a time consuming and resource intensive process. CPS Energy recommended the commission consider moderate steps upward as this would allow a more orderly adjustment and would allow insurance-type products to catch up but stated that it understands that the commission must weigh that delay against the immediacy of the need for change from the resource adequacy perspective. IPR-GDF SUEZ agreed that the commission should raise the HCAP in graduated steps to limit inordinate risks. Direct Energy and Exelon agreed that the most important aspect is regulatory certainty. Exelon stated that if the threat of state-backed generation lingers, that could thwart liquidity. Direct Energy stated that if the ERCOT market knows the regulatory environment with certainty, then liquidity will likely follow.

LCRA was concerned that the increased price volatility due to increased offer caps may impact generators' credit exposure. Higher prices and increased exposure could increase ERCOT credit utilization and the potential for market participants to exhaust their credit capacity, resulting in the need to secure additional credit, resulting in additional costs. LCRA is also concerned that resources may consider it too risky to participate in the Day Ahead Market or ask for a high

premium to compensate for the risk of experiencing a forced outage that would expose them to high real-time prices.

Luminant stated that if the commission maintains the \$4,500 HCAP while continuing to explore other market design improvements (including a potential future HCAP above \$4,500) the additional costs should not be unreasonable and market participants should be able to adjust without disruptive regulatory accommodations. NRG stated that the more financial resources a market participant must keep in reserve to meet the potential collateral outlay that can result from higher offer caps, the less these entities have for other business initiatives such as making investments in new resources because entities will have less working capital because that capital will be tied up at ERCOT. NRG opined that ERCOT is currently over collateralizing and any increase of the HCAP above \$4,500 should be contingent on modification of the credit requirements to prevent undue impact on market liquidity.

NRG suggested looking at portfolio level risks instead of transactional risks and proposed that credit policies be forward looking rather than based on historic prices. IPR-GDF SUEZ argued that the HCAP should be increased and the ERCOT credit requirements should be reduced. IPR-GDF SUEZ argued that the credit support requirements should be adjusted (1) to allow market participants to choose whether to settle bilateral transactions in either the day-ahead or real-time market; (2) to allow cross-affiliate netting of positions and exposures; (3) to avoid a double dip effect of requiring credit support for amounts higher than actual average clearing prices for day-ahead bidding plus collateralization for 40 days of future extrapolated real-time exposure based on a worst-case 60-day look-back; (4) to make a bank's credit rating part of the

selection and acceptance process rather than part of the standardized non-negotiable letter of credit language; and (5) to create certainty and predictability in the credit support process so that market participants can calculate their own forecasted exposures rather than having several items subject to ERCOT discretion. Cities disagreed and stated that these arguments are the equivalent of seeking to have one's cake and eat it too. A market with a higher HCAP is a more volatile market capable of producing higher price spikes. Having advocated for a riskier market environment, these parties would then seek to expose the market to a greater credit risk. Cities stated that they were not averse to continuing to evaluate credit standards at ERCOT, but urge the commission to keep in mind the relationship between risk and ERCOT collateral requirements. If the commission believes that an HCAP of \$9,000 per MWh would expose market participants to credit requirements that are too burdensome, Cities suggested that is an argument against raising the HCAP not an argument for weakening those credit requirements.

DC Energy felt the impact on market liquidity from a change to the HCAP could be mitigated by (1) ensuring that market participants have adequate time to adjust to the new costs and risks in the market; (2) adhering to an approved schedule for the HCAP increases; (3) continuing to enhance price formation during reliability interventions; and (4) developing more efficient credit requirements in the ERCOT markets.

Commission Response

The commission believes that market participants will be able to accommodate the credit issues resulting from the rule amendments without undue effects on liquidity. The rule amendments delay the implementation of the first step of the SWOC and PNM trigger

increases until June 1, 2013 and implement the subsequent increases in a scheduled manner over the subsequent two years. As a result, the rule provides market participants and ERCOT with sufficient time to make appropriate adjustments to contracts, the ERCOT protocols, and resource planning and acquisition before the increases are implemented. Although the increases will increase credit requirements for LSEs and make hedging more challenging, these downsides of implementing the rule amendments are outweighed by the need to further support resource adequacy in ERCOT in an economically efficient way.

4. *Should the HCAP ultimately go to \$12,000 or \$15,000, and if so, over what time period? If the HCAP is raised to these levels, should the energy from the various ancillary services deployed by ERCOT be priced at the same amount, should there be a slope for the prices for these services, or should ERCOT procure different amounts of these services?*

TIEC, STEC, Direct Energy, TEAM, Topaz, Brazos, Exelon, TCPA, Luminant, Cities, CPS, Odessa, and Pro-Star were all opposed to increasing the HCAP beyond \$9,000 per MWh. STEC did not believe such high prices could be justified. TIEC added that there was no empirical data to support the \$9,000 VOLL cap, much less these higher numbers. Direct Energy, Topaz, Brazos, Exelon, and Cities opposed the increases, as a very large increase poses significant credit risks for market participants and will have an adverse effect on investment. Luminant supported an approach that avoids these risks by smoothing out the recovery of generator revenues with less volatility. CPS saw little advantage in moving the HCAP beyond \$4,500 but believed that a

demand curve to administratively set the price as high as \$9,000, or to allow demand to set the price up to this amount, is needed.

Panda supported the commission's efforts to raise the HCAP and suggested that at a minimum it should be set at \$9,000 per MWh. DC Energy stated that the proposed increases to the HCAP along with enabling demand response resources to participate in SCED, and addressing the price suppression issues as outlined in the Brattle report, would be an appropriate starting point. DC Energy further stated that moving to an HCAP beyond \$9,000 per MWh might be necessary in the future but it seems prudent to implement the proposed cap now and then review the market outcomes before moving to higher levels.

In response to whether the energy from ancillary services deployed by ERCOT should be priced at the same amount, Odessa responded that operating reserves should receive the same compensation as units that are producing energy and the deployment of ancillary services should have minimal if any impact on energy prices. Brazos recommended that the Brattle report's market enhancements 5, 6, and 7 should be addressed by ERCOT to improve price signals to generators and to develop demand response that can respond to high prices. Exelon stated that if energy from ancillary services and also the power balance penalty curve do not rise in tandem with the HCAP, there is risk of price suppression when reserves deploy.

Exelon stated that increasing the HCAP increases the costs of doing business: as hedging costs increase, liquidity decreases. Exelon stated that this is true whether the HCAP rises over time or all at once.

Commission Response

The commission agrees with TIEC, STEC, Direct Energy, TEAM, Topaz, Exelon, TCPA, Luminant, Oncor Cities, CPS, Odessa, and Pro-Star that the cap should not be raised higher than \$9,000 at this time. The commission recently raised the HCAP from \$3,000 to \$4,500, and the amendments that the commission is adopting at this time raise the HCAP over the next three years to \$9,000. According to the Brattle report, increasing the HCAP above \$9,000 would provide diminishing returns, as the higher the increase to the HCAP, the less additional investment is expected. Although the commission currently has no intention to raise the HCAP above \$9,000, the commission is considering other steps to further support resource adequacy in Project Number 40000, *Commission Proceeding to Ensure Resource Adequacy in Texas*. If the HCAP is raised to the proposed levels, the various ancillary services deployment, slope of the prices and procurement process will be determined in partnership with ERCOT, stake holders and commission staff. The commission agrees that there should not be price suppression with the deployment of ancillary services.

All comments, including any not specifically referenced herein, were fully considered by the commission.

These amendments are adopted under the Public Utility Regulatory Act, Texas Utilities Code Annotated §14.002 (West 2007 and Supp. 2012) (PURA), which provides the commission with the authority to make and enforce rules reasonably required in the exercise of its powers and jurisdiction, and specifically, §35.004, which requires that the commission 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, PURA §39.001, which establishes the Legislative policy to protect the public interest during the transition to and in the establishment of a fully competitive electric power industry, §39.101, which establishes that customers are entitled to safe, reliable, and reasonably priced electricity, and gives the commission the authority to adopt and enforce rules to carry out these provisions; §39.151, which grants the commission oversight and review authority over independent organizations such as ERCOT.

Cross Reference to Statutes: PURA §§14.002, 35.004, 39.101, 39.151, and 39.151.

§25.505. Resource Adequacy in the Electric Reliability Council of Texas Power Region.

- (a) **General.** The purpose of this section is to prescribe mechanisms that the Electric Reliability Council of Texas (ERCOT) shall establish to provide for resource adequacy in the energy-only market design that applies to the ERCOT power region. The mechanisms are intended to encourage market participants to build and maintain a mix of resources that sustain adequate supply of electric service in the ERCOT power region, and to encourage market participants to take advantage of practices such as hedging, long-term contracting between market participants that supply power and market participants that serve load, and price responsiveness by end-use customers.
- (b) **Definitions.** The following terms, when used in this section, shall have the following meanings, unless the context indicates otherwise:
- (1) **Generation entity** -- an entity that owns or controls a generation resource.
 - (2) **Event trigger** -- a calculated value for each interval that is equal to 50 times the Houston Ship Channel natural gas price index for each operating day, expressed in dollars per megawatt-hour (MWh) or dollars per megawatt per hour (MW/h). The event trigger shall be applied solely for the purpose of establishing the timing of the publication of certain market data and shall not be construed to establish the legitimacy of any offer, whether such offer is less than, equal to, or higher than the event trigger.
 - (3) **Load entity** -- an entity that owns or controls a load resource, including, but not limited to, a load acting as a resource (LaaR) or a balancing up load (BUL), as those terms are defined in the ERCOT Protocols.

- (4) **Resource entity** -- an entity that is a generation entity or a load entity.
- (c) **Statement of opportunities (SOO).** ERCOT shall publish a SOO that provides market participants with a projection of the capability of existing and planned electric generation resources, load resources, and transmission facilities to reliably meet ERCOT's projected needs. A SOO published in even-numbered years shall use a ten-year study horizon and be published by December 31 of those years. A SOO published in odd-numbered years shall use a five-year study horizon and be published on or around October 1 of those years. ERCOT shall prescribe reporting requirements for generation entities and transmission service providers (TSPs) to report to ERCOT their plans for adding new facilities, upgrading existing facilities, and mothballing or retiring existing facilities. ERCOT also shall prescribe reporting requirements for load entities to report to ERCOT their plans for adding new load resources or retiring existing load resources.
- (d) **Projected assessment of system adequacy (PASA).** Beginning no later than October 1, 2006, unless otherwise specified below, ERCOT shall provide market participants with information to assess the adequacy of resources and transmission facilities to meet projected demand in the following two reports:
- (1) Each month, ERCOT shall publish a Medium-Term PASA for each week of the subsequent three years beginning with the week after the Medium-Term PASA is published. At a minimum, each Medium-Term PASA shall include the following information:
- (A) Load forecast by ERCOT zone or area;
 - (B) Ancillary service requirements;

- (C) Transmission constraints; and
 - (D) Aggregated information on the availability of resources, by ERCOT zone or area, including load resources.
- (2) Each day, ERCOT shall publish a Short-Term PASA for each hour for the seven days beginning with the day the Short-Term PASA is published.
- (A) At a minimum, each Short-Term PASA shall include the following information:
 - (i) Load forecast by ERCOT zone or area;
 - (ii) Ancillary service requirements;
 - (iii) Transmission constraints; and
 - (iv) Aggregated information on the availability of resources, by ERCOT zone or area, including load resources.
 - (B) By October 1, 2006, ERCOT shall file at the commission a plan to incorporate the impact of transmission constraints into its Short-Term PASA at a later date.
- (e) **Filing of resource and transmission information with ERCOT.** ERCOT shall prescribe reporting requirements for resource entities and TSPs for the preparation of PASAs. At a minimum, the following information shall be reported to ERCOT:
- (1) TSPs shall provide ERCOT with information on planned and existing transmission outages.
 - (2) Generation entities shall provide ERCOT with information on planned and existing generation outages.

- (3) Load entities shall provide ERCOT with information on planned and existing availability of LaaRs, specified by type of ancillary service, and BULs.
- (4) Generation entities shall provide ERCOT with a complete list of generation resource availability and performance capabilities, including, but not limited to:
 - (A) the net dependable capability of generation resources;
 - (B) projected output of non-dispatchable resources such as wind turbines, run-of-the-river hydro, and solar power; and
 - (C) output limitations on generation resources that result from fuel or environmental restrictions.
- (5) Load serving entities (LSEs) shall provide ERCOT with complete information on load response capabilities that are self-arranged or pursuant to bilateral agreements between LSEs and their customers.

- (f) **Publication of resource and load information in ERCOT markets.** To increase the transparency of the ERCOT-administered markets, ERCOT shall post at a publicly accessible location on its website, beginning no later than October 1, 2006, the information required pursuant to this subsection, unless a different date is specified by a paragraph of this subsection.
 - (1) The following information in aggregated form, for each settlement interval and for each area where available, shall be posted two calendar days after the day for which the information is accumulated.
 - (A) Quantities and prices of offers for energy and each type of ancillary capacity service, in the form of supply curves.

- (B) Self-arranged energy and ancillary capacity services, for each type of service.
 - (C) Actual resource output.
 - (D) Load and resource output for all entities that dynamically schedule their resources.
 - (E) During the operation of the market under a zonal market design, scheduled load and actual load. During the operation of the market under a nodal market design, firm scheduled load, scheduled load with “up to” limits on congestion charges, and actual load.
- (2) During the operation of the market under a nodal market design, the following day-ahead market information in aggregate form shall be posted two calendar days after the day for which the information is accumulated: load bids, including virtual loads, in the form of day-ahead bid curves, and cleared load.
- (3) The following information in entity-specific form, for each settlement interval, shall be posted as specified in subparagraphs (A) - (E) of this paragraph.
- (A) During the operation of the market under a zonal market design:
 - (i) Portfolio offer curves for balancing energy and for each type of ancillary service, for each area where available, shall be posted 60 days after the day for which the information is accumulated beginning September 1, 2007, except that, for the highest-priced offer selected or dispatched by ERCOT for each interval after January 12, 2007, ERCOT shall post the offer price and the name of the entity submitting the offer 48 hours after the day for which

the information is accumulated. In the event of interzonal congestion, ERCOT shall post, separately for each zone, the offer price and the name of the entity submitting the highest-priced offer selected or dispatched.

- (ii) If the market clearing price for energy (MCPE) or the market clearing price for capacity (MCPC) exceeds the event trigger during any interval, the portion of every market participant's price-quantity offer pair for balancing energy service and each other ancillary service that is at or above the event trigger for that service and that interval shall be posted seven (7) days after the day for which the offer is submitted. ERCOT shall implement the requirements of this clause by September 1, 2007.
- (iii) Other offer-specific information for each type of service and for each area where available shall be posted 90 days after the day for which the information is accumulated beginning March 1, 2007. Effective March 1, 2008, this information shall be posted 60 days after the day the information was accumulated. The information subject to this disclosure requirement is as follows:
 - (I) final energy schedules for each QSE;
 - (II) final ancillary services schedules for each QSE;
 - (III) resource plans for each QSE representing a resource;
 - (IV) actual output from each resource; and

- (V) all dispatch instructions from ERCOT for balancing energy and ancillary services.
- (iv) The information posted shall include the names of the resources in the portfolio that were committed, the name of the entity submitting the information, the name of the entity controlling each resource in the portfolio.
- (B) Two months after the start of operation of the market under a nodal market design:
 - (i) Offer curves (prices and quantities) for each type of ancillary service and for energy at each settlement point in the real time market, shall be posted 60 days after the day for which the information is accumulated except that, for the highest-priced offer selected or dispatched for each interval on an ERCOT-wide basis, ERCOT shall post the offer price and the name of the entity submitting the offer 48 hours after the day for which the information is accumulated.
 - (ii) If the MCPE or the MCPC exceeds the event trigger during any interval, the portion of every market participant's price-quantity offer pairs for balancing energy service and each other ancillary service that is at or above the event trigger for that service and that interval shall be posted seven (7) days after the day for which the offer is submitted.

- (iii) Other resource-specific information, as well as self-arranged energy and ancillary capacity services, and actual resource output, for each type of service and for each resource at each settlement point shall be posted 60 days after the day for which the information is accumulated.
 - (iv) The posted information shall be linked to the name of the resource (or identified as a virtual offer), the name of the entity submitting the information, and the name of the entity controlling the resource. If there are multiple offers for the resource, ERCOT shall post the specified information for each offer for the resource, including the name of the entity submitting the offer and the name of the entity controlling the resource.
- (C) The load and generation resource output for each zone, for each entity that dynamically schedules its resources, shall be posted 90 days after the day for which the information is accumulated beginning March 1, 2007. Effective March 1, 2008, the information required by this subparagraph shall be posted 60 days after the day for which the information is accumulated.
- (D) ERCOT shall use §25.502(d) of this title (relating to Pricing Safeguards in Markets Operated by the Electric Reliability Council of Texas) as a basis for determining the control of a resource and shall include this information in its market operations data system.

- (E) After the start of operation of the market under a nodal market design, ERCOT shall begin posting transmission flows, voltages, transformer flows, voltages and tap positions (i.e., State Estimator data) 60 days after the day for which the data were accumulated or other time interval as established in clause (ii) of this subparagraph. The data released shall be made available simultaneously to all market participants.
- (i) Notwithstanding the provisions of this subparagraph and the provisions of subparagraph (B) of this paragraph, ERCOT, in its sole discretion, shall release relevant State Estimator data earlier than 60 days after the day for which the information is accumulated if it determines the release is necessary to provide a complete and timely explanation and analysis of unexpected market operations and results or system events, including but not limited to pricing anomalies, recurring transmission congestion, and system disturbances. ERCOT's release of data under this clause shall be limited to intervals associated with the unexpected market or system event as determined by ERCOT. The data released shall be made available simultaneously to all market participants.
- (ii) Notwithstanding the provisions of this subparagraph and the other provisions of subparagraph (B) of this paragraph, ERCOT shall, by the start of the nodal market, develop and post a redacted version of State Estimator data, as soon as reasonably practicable after

collection of the data, so long as a redacted version excludes information (including but not limited to, voltages, transmission flows and transformer flows) from which resource-specific output levels or offer curves could continually and systematically be derived. Concurrently, in conjunction with the Independent Market Monitor and the commission Staff, ERCOT, through its stakeholder process, shall develop protocols that detail, at a minimum, the methodology, duration, and posting requirement of a redacted version of the State Estimator data. The redacted report methodology developed through the stakeholder process shall be completed within 90 days of the start of the nodal market. If ERCOT is unable to develop a cost effective protocol for the redaction process of the State Estimator data within 90 days of the start of the nodal market, then the following information shall be released as soon as reasonably practicable:

- (I) Current commercially significant constraints (CSCs) and closely related elements (CREs) line flows that are embodied in the competitive constraint list from the Competitive Constraint Test;
- (II) For phase shifting transformers, tap positions and line flows;
- (III) Voltages at all buses;

- (IV) Line flows on lines that make up interfaces (import, export, flow gate, or stability); and
 - (V) Line flows on DC ties.
 - (iii) In no event shall ERCOT disclose competitively sensitive consumption data.
- (g) **Scarcity pricing mechanism (SPM).** ERCOT shall administer the SPM. The SPM shall operate as follows:
 - (1) The SPM shall operate on an annual resource adequacy cycle, starting on January 1 and ending on December 31 of each year.
 - (2) For each day of the annual resource adequacy cycle, the peaking operating cost (POC) shall be 10 times the daily Houston Ship Channel gas price index for the previous business day. The POC is calculated in dollars per megawatt-hour (MWh).
 - (3) For the purpose of this section, the real-time energy price (RTEP) shall be measured as the price at an ERCOT-calculated ERCOT-wide hub.
 - (4) In the annual resource adequacy cycle, the peaker net margin (PNM) shall be calculated as: $\sum((RTEP - POC) * (\text{number of minutes in a settlement interval} / 60 \text{ minutes per hour}))$ for each settlement interval when $RTEP - POC > 0$.
 - (5) Each day ERCOT shall post at a publicly accessible location on its website the updated value of the PNM, in dollars per megawatt (MW).
 - (6) The system-wide offer caps shall be as follows:

- (A) The low system-wide offer cap (LCAP) shall be set on a daily basis at the higher of:
- (i) \$2,000 per MWh and \$2,000 per MW per hour; or
 - (ii) 50 times the daily Houston Ship Channel gas price index of the previous business day, expressed in dollars per MWh and dollars per MW per hour.
- (B) The high system-wide offer cap (HCAP) shall be set:
- (i) Beginning on June 1, 2013 at \$5,000 per MWh and \$5,000 per MW per hour.
 - (ii) Beginning on June 1, 2014 at \$7,000 per MWh and \$7,000 per MW per hour.
 - (iii) Beginning on June 1, 2015 at \$9,000 per MWh and \$9,000 per MW per hour.
- (C) At the beginning of the annual resource adequacy cycle, the system-wide offer cap shall be set equal to the HCAP and, except for increases authorized in this section, maintained at this level as long as the PNM during an annual resource adequacy cycle is less than or equal to a threshold of \$300,000 per MW in 2012 and 2013, or the threshold set by ERCOT for a subsequent year. For 2014 and each subsequent year, ERCOT shall set the PNM threshold at three times the cost of new entry of new generation plants. During an annual resource adequacy cycle, the system-wide offer cap shall be increased in accordance with the schedule authorized in this section unless the PNM threshold has been exceeded by

that date. If the PNM threshold has been exceeded during an annual resource adequacy schedule, the system-wide offer cap shall be reset at the LCAP for the remainder of that annual resource adequacy cycle.

- (D) The Independent Market Monitor, as part of its responsibilities pursuant to Public Utility Regulatory Act §39.1515(h), may conduct an annual review of the effectiveness of the SPM.

- (h) **Development and implementation.** ERCOT shall use a stakeholder process to develop protocols that comply with this section. Nothing in this section prevents the commission from taking actions necessary to protect the public interest, including actions that are otherwise inconsistent with the other provisions in this section.

This agency hereby certifies that the adoption has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority. It is therefore ordered by the Public Utility Commission of Texas that §25.505, relating to Resource Adequacy in the Electric Reliability Council of Texas Power Region, is hereby adopted with changes to the text as proposed.

SIGNED AT AUSTIN, TEXAS on the _____ day of OCTOBER 2012.

PUBLIC UTILITY COMMISSION OF TEXAS

DONNA L. NELSON, CHAIRMAN

KENNETH W. ANDERSON, JR., COMMISSIONER

ROLANDO PABLOS, COMMISSIONER