

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Promote Policy and
Program Coordination and Integration in Electric
Utility Resource Planning.) R.04-04-003

**OPENING COMMENTS OF SAN DIEGO GAS & ELECTRIC COMPANY
(U 902 E) ON THE CAPACITY MARKETS WHITE PAPER**

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I. INTRODUCTION

Pursuant to notice issued by Chief Administrative Law Judge Minkin on August 25, 2005, San Diego Gas & Electric Company (SDG&E) hereby offers its comments on the *Capacity Markets White Paper* prepared by the Commission's Energy Division. The White Paper is the first step in responding to President Peevey's February 28, 2005 ruling directing the staff to move forward with evaluating a capacity market approach designed to ensure resource adequacy in the California wholesale electric markets. SDG&E believes the White Paper has provided a valuable service in outlining for California stakeholders many of the innovations that have recently surfaced in the eastern capacity market proposals. SDG&E welcomes the opportunity now presented to commence the "second generation" resource adequacy conversation in earnest.

SDG&E argued in Phase 1 of this proceeding that resource adequacy could not be effectively maintained without a centralized resource adequacy mechanism to complement the California Independent System Operator's (CAISO) re-designed energy and ancillary services

markets scheduled for implementation by February 2007. SDG&E's position was crafted to secure the following objectives:

- Creation of price signals to facilitate retention and entry of capacity and infrastructure sufficient to ensure physical, grid-wide adequacy;
- Centralization to ease implementation and promote universal applicability;
- Migration of retail customers from one load-serving entity (LSE) to another without creating stranded costs;
- Elimination of cross-subsidies and free ridership;
- Forward commitment to promote competition between new entrants and incumbents; and
- Substitution of market-based mechanisms for the must-offer requirement and low offer caps imposed by FERC during the energy crisis.

Thus far, the Commission has pursued a resource adequacy approach that relies upon each LSE to procure, through bilateral contracting mechanisms, adequate resources to serve its forecasted load for the following year. Progress in the resource adequacy proceeding has been relatively slow, producing some skepticism about whether California is moving fast enough to shore up its resource base before another supply shortage occurs. While the Commission has been exploring the bilateral contracting model, presumably for implementation on June 1, 2006 as a one or two-year transition to a second generation resource adequacy arrangement, the eastern installed capacity markets have been a hotbed of reform, with market designers addressing many of the chronic problems that have been associated with capacity markets. The Commission is now positioned to benefit from what has been produced by the reform efforts elsewhere, allowing California to adopt a second generation resource adequacy construct that will be more effective than the first generation capacity markets that have been implemented in the eastern ISOs.

SDG&E has been reviewing and continuously learning from all of these developments, and is ready to participate immediately in a formal proceeding designed to sort through the competing market theories and designs to reach closure on a resource adequacy

mechanism that is best-suited to the needs of California. Now is the time for all California stakeholders to rise to the occasion and work cooperatively to implement a California resource adequacy solution containing the best design elements that have been distilled from resource adequacy efforts throughout the country.

II. SDG&E APPLAUDS THE ENERGY DIVISION FOR PREPARING A HELPFUL WHITE PAPER TO LAUNCH THE COMMISSION'S INVESTIGATION OF CAPACITY MARKETS.

Phases 1 and 2 of this proceeding have provided an extended opportunity for documenting the many difficulties that arise when the Commission seeks to implement a resource adequacy solution that is supported primarily by its own jurisdictional platform. Resource adequacy is a multi-dimensional undertaking that requires close collaboration between the Commission (and other state agencies), the FERC, the CAISO, and all market participants. President Peevey's February 28 ruling and the publication of this White Paper have gone a long way in promoting a constructive regulatory environment that recognizes the need for inter-agency cooperation so that all possible resource adequacy solutions can be considered, including those solutions that depend vitally upon the CAISO and the FERC for success.

This regulatory *rapprochement* is timely because California urgently needs a more comprehensive resource adequacy solution to confront the problem of inordinate reliance upon generation resources that are not dedicated to the needs of California consumers. California's dependency upon non-dedicated imports for capacity is especially problematic because much of this supply is hydro, and thus subject to periodic shortage that is capable of producing significant west-wide scarcity. Further, fall-out from the energy crisis has greatly aggravated the financial risks associated with investment of capital in new California power

plants. Suppliers that might be expected to sell surplus energy to California in the future are likely to treat California as a market of last resort, thus increasing the chances that the effects of future scarcity will be felt disproportionately in California.

III. THE COMMISSION SHOULD QUICKLY FINALIZE A STREAMLINED FIRST GENERATION SOLUTION.

The Commission should retain its focus on the near-term even as it lays the foundation for a successful conversation on the longer-term resource adequacy solution. Much work remains to be done if LSEs are to be in compliance with the first generation requirements by June 2006. SDG&E envisions that the first generation resource adequacy requirements need only serve to bridge the gap between June 2006 and the implementation date for a second generation mechanism that could be in place no later than 2008. This relatively short transition period relieves the Commission of the need to strive for perfect answers to every implementation dilemma that has been raised in the Phase 2 workshops.

SDG&E urges the Commission to issue its Phase 2 decision as soon as possible so that each LSE can discharge its June 2006 resource adequacy obligation in an orderly fashion. If the Commission adopts the "bottom up" approach advocated by the three investor-owned utilities, then further work may be required to specify how the resources that qualify for inclusion in each LSE's resource adequacy portfolio will be made available to the CAISO in the day-ahead time frame prior to implementation of the MRTU day-ahead energy market and its residual unit commitment mechanism. Completing any remaining work toward establishing the transitional pre-MRTU availability requirements should be given top priority. There appears to be a natural division of labor at this point between completing the remaining work on the first generation solution and commencing work on the second generation solution, so constructive engagement on both appears to be feasible in this instance.

IV. THE WHITE PAPER IS A GOOD START AT ORGANIZING THE INVESTIGATION OF CAPACITY MARKETS.

The White Paper has captured and explained much of the learning on capacity markets that has emanated from the eastern ISOs over the past couple of years. Further, the White Paper has provided needed context, identified many of the lessons learned, and posed many of the questions that must be addressed if California is to deploy an organized capacity market in order to promote resource adequacy objectives. In addition to the good work already accomplished in the White Paper, SDG&E believes more needs to be done to complete the survey and establish the full range of feasible resource adequacy options.

First, SDG&E's Phase 1 proposal for an organized capacity market featuring a four-year forward commitment of call options with a set strike price for energy should be considered for adoption in California. SDG&E also envisions that if the call option market fails to clear sufficient capacity to meet expected system demand plus reserves, then the capacity market operator would request proposals for projects to provide capacity under ten-year contracts. SDG&E's resource adequacy proposal has been pending at the Commission for almost two years, so fairness dictates that it be fully heard in the upcoming debate. As mentioned above, SDG&E is reviewing the many developments in how to think about the resource adequacy problem and will be incorporating into its resource adequacy concept those additional features that would likely enhance the overall result.

Second, the Coalition of California Energy Policy Reform has published its principles for a California capacity market design, calling for a centrally-administered market that features: (1) a single transparent clearing price within procurement regions that have few internal constraints, (2) comprehensive applicability to prevent free-riding, (3) bilateral contracts between LSEs and suppliers to assist in financing of new physical capacity, (4)

three-year forward commitment to increase liquidity and attract additional supply alternatives, (5) a sloping demand curve to moderate price swings, (6) a standard, physical product that is deliverable to a defined location, and (7) compatibility with retail competition. Among others, this coalition involves the two largest investor-owned utilities in California and several national merchant generation companies, so the Commission might expect that a detailed proposal from this group will be particularly cogent in balancing the wants and needs of wholesale buyers and suppliers.

Third, since the publication of the White Paper, PJM has submitted its Reliability Pricing Model (RPM) for FERC approval. PJM says that its existing “unforced” capacity markets have failed to promote construction of adequate resources in the right places and prevent retirement of resources that are needed to preserve system reliability. PJM proposes to replace its capacity market with the RPM, which features a four-year forward commitment of locationally-priced capacity procured through PJM-administered auctions that deploy econometrically-modeled, downward-sloping demand curves to clear the market at targeted levels of reserves. As if that were not ambitious enough, PJM proposes to allow merchant generation projects and demand-side management projects to compete with new and existing generators for capacity revenues, and allow generators that can offer load-following and 30-minute start-up capabilities to compete for additional capacity payments.

The PJM proposal comes fully dressed in section 205 finery with a proposed effective date of June 2006. *See* ER05-1410-000. The RPM appears to be the most comprehensive (and complicated) second generation capacity market yet attempted and is thus worthy of consideration. Regardless of its ultimate fate at FERC, there are lessons to be learned from the PJM experience that motivated this filing.

Fourth, the Midwest ISO (MISO) appears to be taking a much different approach to resource adequacy than PJM and the other eastern ISOs. A draft White Paper under discussion touts an energy-only market built on long-term forward contracts tied to long-term financial transmission rights. The MISO is concerned that PJM's RPM proposal and the New England ISO's LICAP proposal will be too costly, unduly influence long-term consumption, generation, and investment decisions, and dramatically change MISO's current role of maintaining reliability by dispatching resources in the short-term markets.

Instead of a forward-looking capacity construct, the MISO White Paper envisions a bilateral forward energy market to create a robust forward price curve that would then facilitate construction of generation in the right places. MISO proposes to implement this approach by promoting a standardized forward energy contract and by creating the incentives for market participants to engage in such contracts by increasing the current offer caps, relaxing market power mitigation protocols, and offering long-term financial transmission rights.

Fifth, the staff at the Public Utility Commission of Texas has concluded its four-year resource adequacy investigation by seeking permission from its commission to draft a rule that would achieve resource adequacy in Texas through an energy-only market. The following points drove the staff recommendation: avoidance of significant changes in the Texas Nodal energy markets; the desire to send clearer price signals for investment in new generation, including peaking units; unique ERCOT characteristics; and avoidance of complex mechanisms such as administratively-determined sloping demand curves, locational capacity markets, and capacity pricing based on reliability optimization.

The Texas staff noted that the most common argument against an energy-only market holds that regulators and politicians will not tolerate high prices that truly reflect scarcity. The staff argued that this obstacle could be successfully hurdled by implementing three key market design elements that are needed to ensure resource adequacy success in an energy-only market: (1) scarcity pricing with proper customer protection safeguards and comprehensive information disclosure so that market participants can see and react to market events, (2) maximum utilization of demand response so that there can be an elastic response to high prices, and (3) credit standards that support forward contracting.

Sixth, any comprehensive effort by the Commission to survey and then reach closure on the available resource adequacy options must encourage the CAISO and its Market Surveillance Committee (MSC) to offer thoughtful advice about how best to ensure resource adequacy in the California wholesale markets. Any centralized California resource adequacy mechanism is likely to be implemented with substantial CAISO involvement, so participation of the CAISO in the resource adequacy discussion is essential. Moreover, the CAISO has highly-successful market designers working with it to complete implementation of the MRTU project, so the CAISO is well-positioned to help the Commission explore additional options that might be available. Further, members of the MSC have recently published interesting papers on this subject, demonstrating that the MSC could play a useful and constructive role in helping policy makers come to a decision on how best to proceed. *See Electricity Resource Adequacy: Matching Policies and Goals*, James Bushnell, Center for the Study of Energy Markets Working Paper Series (August 2005.)

V. ANY RESOURCE ADEQUACY MECHANISM ADOPTED SHOULD COMPLEMENT THE MRTU ENERGY AND ANCILLARY SERVICES MARKETS.

Forward hedging of energy prices was largely absent from the original California market design. When the market prices produced by scarcity and a dysfunctional market design no longer conformed to a zone of reasonableness during the summer of 2000, FERC had few remedial options other than trying to staunch the flow of consumer red ink by suppressing spot energy prices. The FERC remedy worked imperfectly in containing the short-run supply crisis and even less well over the long-term, as the suppression of spot energy prices below long-run marginal costs has driven existing generators into premature retirement and caused new entrants to place their construction plans on hold.

It should surprise no one that suppression of wholesale energy prices below long-run marginal costs will produce under-commitment of capital in the electric generation sector. The resulting imbalance must be corrected quickly lest serious harm befall consumers and the California economy. SDG&E believes that an efficient spot energy and ancillary services market is a desirable component of any second generation resource adequacy solution.

SDG&E urges the Commission to refrain from predicating its resource adequacy decisions upon any impulse to suppress short-run wholesale prices, distort the spatial and temporal dispersion of these prices, or obscure the transparency of these prices. Prices are valuable signals that serve the communication role formerly played by vertical integration of the electric industry. Sharp prices reflecting opportunity and scarcity costs promote efficient market coordination, enhance demand-side clearing of the market, and optimize the investment of new capital. Dulling the short-run price signals undermines the integrity of wholesale electricity markets and is unnecessary to protect consumers if the resource

adequacy mechanism selected is successful in fostering commercial activity in the long forward markets.

VI. THE ADVANTAGES OF A CAPACITY MARKET INCORPORATING A DOWNWARD-SLOPING DEMAND CURVE MAY DEPEND ON HOW THE CURVE IS DRAWN.

If the Commission determines that resource adequacy should be implemented by adopting an organized capacity market featuring a market clearing price for all similarly-situated capacity products, then some form of a downward-sloping demand curve may be useful. The RPM proposal provides a helpful description of PJM's efforts to draw the demand curve in a fashion that that tries to promote competitive and reliable outcomes at reasonable costs.

PJM tested several different shapes and placement of the curve, all of which would produce higher capacity prices during times of shortage and lower prices when the capacity market clears above the resource adequacy target. PJM contends that these economic simulations demonstrate that any excess capacity cleared above the resource adequacy target results in lower total capacity and energy costs, reduces loss-of-load probabilities, and promotes competitive behavior by market participants. PJM recognizes that its work thus far represents but a point of departure for further analysis and periodic true-up based on the results actually produced by RPM.

The eastern ISOs are also experimenting with various methods for shaping the capacity demand curve to reflect the degree to which energy and ancillary services prices are making contributions toward the return of fixed-cost capital. PJM argues that capacity markets should not inhibit evolution of the energy market to a greater role in ensuring reliability, so it proposes to shape the capacity demand curves to de-emphasize the capacity

market as the energy market proves to be more effective at incenting adequate capacity resources. Consequently, PJM argues that the RPM proposal will automatically track any transition towards greater emphasis on energy market prices.

Similarly, the staff's White Paper discusses the possibility of subtracting peak energy rents from the capacity payment, noting that the New England and New York ISOs shape their capacity demand curves with variations on this concept. Whereas PJM stresses the importance of the capacity market not being allowed to intrude upon the proper role of the energy market, the White Paper argues that shaping the demand curve to link capacity prices to energy prices is warranted because it will play an important role in reducing market power and risk in the energy market.

The recent PJM experience illustrates that this business of drawing capacity demand curves is a complicated exercise that should not be taken lightly. To avoid even the appearance of bias, the objective should be to bring as much quantitative analysis to bear as possible, so that the drawing of the curve can be objectively defended as producing competitive and reliable outcomes at just and reasonable prices. As the putative operator of a California capacity market, and given the CAISO's mandate to be both independent and expert in all matters pertaining to operation of wholesale electricity markets, SDG&E believes that the CAISO should be asked to perform capacity demand curve analyses similar to those prepared by PJM for the RPM proposal, so that the Commission will have several feasible options to consider as part of the overall decision to adopt – or not – a downward-sloping demand curve.

VII. THE COMMISSION NEEDS TO DEVELOP AN ACCURATE MEASUREMENT OF CAPACITY CONTENT.

The technical aspects of determining the capacity content of a specific resource are not straightforward. Unlike energy, capacity is an artificial product that cannot be metered. Capacity is commonly considered to be the ability to generate energy at a certain time or place, but it does not produce hot showers or cold beer. Thus, measuring capacity can never be as simple and accurate as measuring the energy output of a specific resource.

The current approach for measuring capacity in California remains somewhat obscured by the unresolved “bottom-up” versus “top-down” controversy, but it can be fairly said that nominal nameplate rating is the primary determinate. If California moves to an organized capacity market, then it will surely need to adopt a capacity product definition that is much more precise than mere nameplate rating. Payment of a market clearing price for capacity would not be just and reasonable unless the product is first commoditized by measuring the actual capacity content, not the nominal content. Thus, it will be necessary to normalize all competing capacity resources by reducing the nominal capacity content to reflect accurate expected outage rates, operational limits, and fuel limitations. None of these assessments is without technical imprecision, but each must be competently assessed if California is to pay a market clearing price for an unbundled capacity product.

Another dimension to this problem of defining the capacity product is California's dependence upon imported power to meet its peak needs. The eastern ISOs insist that capacity be traced to steel in the ground – steel that is available to serve the ISO loads that are making the capacity payments. But many of the suppliers that have traditionally helped to meet California's peak energy needs have legal and regulatory impediments that prevent them from specifying particular generating units as being dedicated and available to California because

these units have obligations to be available to serve the needs of native load. Related issues concern the need for dedicated transmission to get the capacity to the CAISO and whether the CAISO has sufficient import capability to take delivery of the capacity. Consequently, a survey of installed capacity resources to determine whether, as a threshold matter, sufficient amounts of physical, deliverable capacity are available for dedication to the California market might be a useful exercise as part of the Commission's investigation of capacity markets.

California has strong policy preferences for renewable resources, primarily wind, solar, and demand-side management. Measuring capacity accurately may cause these resources to show poorly in the capacity market. Because payment of a market clearing price for capacity must be non-discriminatory in order to be just and reasonable, there is a limit on how generous the capacity ratings can be before triggering attack by those competitors being disadvantaged. The point here is not to argue that renewable resources are not a good addition to the resource base serving California load. Rather, policymakers must simply be aware that the use of market clearing pricing requires the market operator to act without undue discrimination in valuing competing products.

VIII. ANY CAPACITY MARKET ADOPTED FOR CALIFORNIA SHOULD REFLECT THE SPATIAL LIMITATIONS OF THE CAISO-OPERATED GRID.

The first generation eastern capacity markets have dealt with spatial effects much like transmission service providers did prior to the emergence of organized energy markets with locational marginal pricing. To be able to offer capacity from a specific plant into the capacity market, the owner would have to show that energy from the plant was "deliverable" to some defined load area. To obtain the coveted status of being deliverable, the new generator was sometimes required to pay for certain grid improvements. The deliverability concept implies

that the capacity can be physically delivered, and also carries other simplifying assumptions, such as “once deliverable, always deliverable.” Of course, neither proposition may be true in any rigorous sense because specific performance of physical transmission is not always possible in a constrained electric grid.

Modern, organized energy markets, instead of trying to guarantee physical transmission service, ration access to the grid in accordance with the customer’s willingness to pay. Organized markets also use financial – instead of physical – property rights to hedge the locational differences that arise when the system is re-dispatched in accordance with the bids offered by market participants. SDG&E believes that second generation capacity markets should consider using a similar mechanism to reflect the value of specific capacity resources in the face of expected transmission constraints. Instead of a bipolar outcome – deliverable or not – the objective should be to capture a resource’s spatial virtues (or lack thereof) by awarding each offered resource a capacity price that is determined by its relative ability to provide capacity at various locations on the grid. Thus, similar to how day-ahead energy markets work, a generating unit that can serve electrically hard to reach locations should be awarded a higher capacity price than a unit that can only serve locations that have a surplus of capacity.

The number of locations that would be needed to capture spatial effects in a California capacity market is an empirical question best left to the CAISO to study. The current price dispersion studies being used to establish load aggregation areas and to allocate congestion revenue rights should serve as a useful point of departure. The granularity and precision required to clear efficiently a long-forward capacity market would certainly be less than what has become standard for the day-ahead energy market.

IX. CAPACITY MARKETS SHOULD BE DESIGNED TO FACILITATE COMPETITION BETWEEN NEW AND EXISTING RESOURCES.

If California decides to implement an organized capacity market, then it must give serious consideration to building in a forward commitment of sufficient length to permit generating plants yet to be constructed to compete with existing capacity resources. The White Paper agrees that such a forward commitment might have advantages, such as increasing competition, but concludes that these advantages appear to be offset by additional design complexity and lack of experience with these markets.

SDG&E acknowledges that no capacity market with a lengthy forward commitment has yet been implemented, but PJM has filed for FERC approval to implement by June 2006 the RPM model with a four-year forward commitment. The advantages of forward commitment appear to be substantial, especially in California where concerns about market power frequently dominate market design discussions. A capacity auction that has new entrants competing directly against incumbent suppliers would likely enjoy more confidence than an auction among incumbents only.

X. CONCLUSION

The White Paper properly notes that regulatory credibility is important to the overall health of electricity markets. SDG&E believes that a well-designed marketplace, with efficient and balanced rules implemented by an independent entity, is the best way to enhance the credibility of the California wholesale electricity market. Conversely, the investment climate in California will not be well-served if the if the best that can be done in California is to adopt capacity market designs that the eastern ISOs have already recognized as working neither in theory nor practice.

Markets and prices are powerful tools to rationalize investments and effectuate economic policy. California has a second chance to get it right. The MRTU energy and ancillary services markets have an excellent chance of functioning properly because they reflect a workable combination of market theory, information technology, and the physical reality of a constrained electrical network. What remains to be done is selection of an efficient mix of complementary resource adequacy policies and mechanisms designed to intensify competition for new investments and stabilize prices in accordance with the real risk appetite of each class of consumer.

Respectfully submitted,



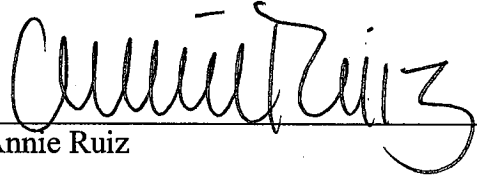
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CERTIFICATE OF SERVICE

I hereby certify that on this day I served a copy of the **OPENING COMMENTS OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E) ON THE CAPACITY MARKETS WHITE PAPER** on all known interested parties of record in R.04-04-003 by electronic service to the entire service list and by U.S. Mail to those parties on the Appearance and State portion of the service list who have not provided the Commission an email address. Pursuant to the ruling of Chief Administrative Law Judge, Angela K. Minkin, I have sent five hard copies by overnight mail to Jack Fulcher. I have also sent a copy by overnight mail to the assigned Administrative Law Judge and the assigned Commissioner.

Dated at San Diego, California, this 23rd day of September 2005.


Annie Ruiz