

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

Order Instituting Rulemaking to Integrate and
Refine Procurement Policies and Consider
Long-Term Procurement Plans.

Rulemaking 13-12-010
(Filed December 30, 2013)

**SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E)
DRAFT 2014 LONG-TERM PROCUREMENT PLAN**

(PUBLIC VERSION)

AIMEE M. SMITH
101 Ash Street, HQ-12
San Diego, California 92101
Telephone: (619) 699-5042
Facsimile: (619) 699-5027
amsmith@semprautilities.com

Attorney for
SAN DIEGO GAS & ELECTRIC COMPANY

October 3, 2014

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

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.

Rulemaking 13-12-010
(Filed December 30, 2013)

**SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E)
DRAFT 2014 LONG-TERM PROCUREMENT PLAN**

**I.
INTRODUCTION AND BACKGROUND**

In accordance with the Rules of Practice and Procedure of the California Public Utilities Commission (the “Commission”), the procedural schedule set forth in the *Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge* issued May 6, 2014 in the above-captioned docket (the “Scoping Memo”) and the direction provided by Administrative Law Judge (“ALJ”) David M. Gamson in his September 16, 2014 ruling, San Diego Gas & Electric Company (“SDG&E”) hereby submits its draft 2014 long-term procurement plan (“LTPP” or “Bundled Plan”).

The purpose of the LTPP proceeding is to “ensure a reliable and cost-effective electricity supply in California through integration and refinement of a comprehensive set of procurement policies, practices and procedures underlying long-term procurement plans.”^{1/} As the Commission has explained, “[e]ach LTPP proceeding serves as the umbrella proceeding for the Commission to consider, in an integrated fashion, all of the Commission’s electric resource procurement policies and programs, including implementation and directives from other procurement-related proceedings.”^{2/} The Commission has observed that as the umbrella

^{1/} Scoping Memo, p. 1.

^{2/} D.07-12-052, *mimeo*, pp. 8-9.

procurement proceeding, the LTPP proceeding “may attract ‘forum-shopping’ proposals from parties that have had their ideas rejected, or have yet to be considered, in other proceedings.”^{3/} The Order Instituting Rulemaking (“OIR”) adopted in this proceeding seeks to discourage such forum-shopping by establishing specific parameters for what constitutes an issue that is legitimately within the scope of this proceeding. Thus, while there exists an inherent connection between the LTPP proceeding and other procurement-related proceedings, parties may not seek to litigate in the instant proceeding issues that are within the scope of other Commission proceedings.

The Scoping Memo establishes two major phases in this LTPP proceeding:

- (i) System Reliability Needs (Phase 1a/1b)
- (ii) Procurement Rules and Bundled Procurement (Phase 2)

With regard to Phase 2 (Procurement Rules and Bundled Procurement Plans), the Scoping Memo notes that the LTPP proceedings generally operate on a two-year cycle that involves submission by the investor-owned utilities (“IOUs”) of procurement plans in accordance with Assembly Bill (“AB”) 57.^{4/} Commission approval of IOU procurement plans eliminates the need for after-the-fact reasonableness review of utility procurement. The IOUs’ individual procurement plans “project their need, and their action plan for meeting that need, over a ten-year horizon.”^{5/}

The Scoping Memo directed that procurement plans filed in the instant proceeding be based on the Trajectory Scenario of the Assumptions, Scenarios and Renewable Portfolio Standard Portfolios prepared by Commission staff and provided further that parties may present

^{3/} *Order Instituting Rulemaking*, issued December 30, 2013 in R.13-12-010 (“OIR”), pp. 12-13.

^{4/} Scoping Memo, p. 9; Assembly Bill (AB) 57, Sec. 2, §§ 454.5(c)(3) and 454.5(d)(2) (Stats. 2002, Ch. 835).

^{5/} Scoping Memo, p. 9.

analysis on alternative assumptions in addition to those contained in the adopted Trajectory scenario.^{6/}

SDG&E's draft 2014 Bundled Plan is attached hereto as Attachment 1. The Bundled Plan (i) presents SDG&E's integrated plan for complying with State policies, including the Loading Order; (ii) projects SDG&E's need while recognizing the possibility that the underlying assumptions, and therefore SDG&E's resulting need, will likely change from what is reflected in the Bundled Plan; and (iii) identifies SDG&E's action plan for meeting that need during the period covered by the Bundled Plan. While SDG&E's 2014 Bundled Plan does not reflect significant changes in overall policy or procurement practices from what is described in SDG&E's 2012 Bundled Plan, certain sections in the 2014 Bundled Plan have been substantively revised from the 2012 Bundled Plan in order to reflect, for example, new product additions and recent changes in the electric and gas markets. SDG&E is also recommending changes to the company's current 5-year hedge plan described in Appendix B of the Bundled Plan; the proposed revisions to the 5-year hedge plan are discussed in Section H below.

The draft 2014 Bundled Plan also includes non-substantive edits intended to clarify and update the discussion where appropriate (*e.g.*, references to CAISO's "new Market" has been revised to reflect the fact that it is no longer "new"). In addition, certain sections of the Bundled Plan have been moved to improve organizational flow. Substantive revisions to SDG&E's Bundled Plan are summarized below.

^{6/} *Id.*

II. SUMMARY OF REVISIONS TO BUNDLED PLAN

A. *Revisions to Section II.A (Procurement Process)*

Substantive revisions to Sections II.A are intended to align the 2014 LTPP with the current procurement environment. These changes include the following:

- *Federal Energy Regulatory Commission Order 764*: Revisions to include discussion of implementation by the California Independent System Operator (“CAISO”) of market changes in response to issuance of Federal Energy Regulatory Commission (FERC) Order 764.
- *New and Revised Products*: In light of the Commission’s Energy Storage Decision (D.13-10-040) and SDG&E’s Energy Storage Procurement Application (A.14-02-006), SDG&E has revised its product list to include energy storage products and has updated the product discussion set forth in Section II.A.3. Additionally, several non-substantive changes have been made to add clarity or to reflect changes in rules and markets.
- *Transactions Methods*: In the 2012 Bundled Plan, transaction methods were included in the discussion of energy market products set forth in Section II.A.4 (Overview of Energy Market Products). In order to provide more clarity to the discussion of (i) exchanges; (ii) inter-dealer (voice) brokers and exchanges; (iii) on-line auctions; and (iv) instant messaging, this discussion has been moved to section II.A.5 (SDG&E Procurement Contracting Methods and Practices). In addition, discussion regarding open season and bilateral transactions was added to Section II.A.5; open season and bilateral transactions were referenced in other sections of the 2012 Bundled Plan, but these transaction methods are addressed as separate sections in the 2014 Bundled Plan.

Also, within the discussion of the bilateral transactions, SDG&E has included a list of non-standard products that are not readily available through brokers or exchanges. SDG&E has historically understood the listed products to be non-standard and has expressly listed these products in the 2014 Bundled Plan for the sake of clarity. This list identifies the products in which SDG&E would be able to transact bilaterally for terms longer than one calendar quarter and/or with delivery beginning longer than one calendar quarter forward without the need for an Advice Letter filing. This list of non-standard products includes: Electricity Transmission Products; Resource Adequacy (“RA”) Sales; RA Import Counting Rights; Park & Loan; Natural

Gas Storage; Natural Gas Transportation; Natural Gas Imbalance; Locational Physical and Financial Options; and Heat Rate Options.

- *Feed-in Tariffs*: SDG&E currently offers two Feed-in Tariffs: (a) the Renewable Market Adjusting Tariff (“Re-MAT”); and (b) the Combined Heat and Power (“CHP”) Feed-in Tariff. Subsection 4 has been updated to reference both of these programs.
- *Procurement Methods*: In accordance with D.14-03-004, SDG&E issued an All-Source Request for Offers (“RFO”) on September 5, 2014. Subsection 5, which explains procurement methods, was updated to include this type of solicitation.
- *Solicitation Process*: The discussion of SDG&E’s long-term procurement solicitation process in Subsection 5 has been revised to add more detail regarding bid evaluation and shortlist approval. This discussion replaces the discussion previously contained in Appendix G.
- *Renewable Portfolio Requirement Portfolio Optimization Strategy*: SDG&E constantly seeks to optimize its Renewables Portfolio Standard (“RPS”) portfolio and recently detailed this strategy in its RPS Procurement Plan. For consistency, SDG&E updated both Subsections 4 and 5 to provide an overview of its RPS portfolio optimization strategy, which includes sales when appropriate.
- *Procurement Review Group Processes*: The discussion of SDG&E’s Procurement Review Group (“PRG”) has been revised to clarify that when procuring or potentially procuring Cost Allocation Mechanism (“CAM”) resources pursuant to D.06-07-029, 07-09-044 and D.11-05-005 or a successor CAM that would allocate costs of new generation resources to both bundled and non-bundled customers in accordance with Public Utilities Code § 365.1(c), SDG&E will utilize an advisory CAM Group consistent with guidelines set forth in D.07-12-052, Attachment D.

B. Revisions to Section II.B (Risk Management Policy and Strategy)

SDG&E has updated portions of Section II.B to reflect changes that have occurred since the last Bundled Plan was filed. Specifically, the Bundled Plan eliminates discussion of (1) San Onofre Nuclear Generation Station (“SONGS”) and Boardman given the retirement of SONGS and expiration of the Boardman contract; and (2) the California Department of Water Resources (“CDWR”) portfolio and/or the CDWR hedging requirements, which are no longer relevant as all of SDG&E’s CDWR contracts have expired.

C. Revisions to Section III (Long-Term Procurement Resource Plan)

Section III has been updated to remove obsolete information and to improve the descriptiveness of the processes and sources of data that SDG&E will use to develop its long-term resource needs included in the LTPP. Revisions to this Section describe SDG&E’s reliance primarily upon the Commission’s adopted planning assumptions in developing the 2014 Bundled Plan, while adding relevant assumptions where available (*e.g.*, when Community Choice Aggregation [“CCA”] loads will be added, based upon the direction contained in D.12-03-014). Revisions were also made to address energy storage resources and the need to meet a flexible capacity obligation.

D. Revisions to Section IV (Procurement Strategy by Resource Type)

Similar to the revised Section III, this Section has been revised to remove obsolete information. This Section was further revised to address the possible use of all-source RFOs to acquire energy efficiency and demand response, and to include a new sub-section regarding energy storage.

E. Revisions to Section V (Evaluation of Resource Plan)

This Section has been updated to reflect that SDG&E’s portfolio includes no coal fuel resources and to add discussion regarding energy storage. In addition, the discussion of the State’s Loading Order has been updated to reflect recent Commission decisions.

F. Revisions to Section VI (Cost Recovery Issues)

The cost recovery section has been revised to remove references to CDWR contracts and gas costs and to update the reference to the accounting standard relevant to consolidation. A new sub-section was added to describe the Transition Cost Balancing Account (“TCBA”). This account has been in place since 1998; the description is being added to the Bundled Plan for

completeness as to the accounts used to collect commodity costs. Another new sub-section was added for the Local Generation Balancing Account (“LGBA”), approved by the Commission in D.13-03-029. This account tracks the costs and revenues associated with resources that the Commission has determined are subject to the CAM and should be allocated to all benefiting customers.

G. Revisions to Appendix A (Capacity and Energy Tables)

The bundled customers’ capacity and energy tables have been updated. Most of the assumptions used were provided through adopted planning assumptions and description of the Trajectory Scenario.^{7/} In some instances, however, the adopted planning assumptions did not provide utility-specific data or all of the data required to complete the tables; in such cases, SDG&E filled in the missing assumptions. SDG&E has eliminated the local capacity chart since local needs are now determined by the CAISO annually.

The values taken directly from the Track I assumptions include:

- System Load forecast;
- Additional Achievable Energy Efficiency (“EE”);
- Customer photovoltaic (“PV”) and CHP;
- Dispatchable Demand Response (“DR”);
- RA Net Qualified Capacity (“NQC”) Values;
- Demand-Side CHP additions;
- Nuclear, Conventional and Other retirements.

^{7/} *Assigned Commissioner’s Ruling Technical Updates to Planning Assumptions and Scenarios for Use in the 2014 Long Term Procurement Plan and 2014-15 CAISO TPP*, issued May 14, 2014 in R.13-12-010.

SDG&E made the following assumptions regarding its Bundled Plan to supplement for data needed but not provided in the planning assumptions in order to create the capacity and energy tables:

- *Direct Access customer load:* SDG&E assumed that direct access (“DA”) load remains capped at the current levels set in D.12-01-033.
- *Community Choice Aggregation:* No CCA was assumed for SDG&E service area since SDG&E has not received any binding notices. This approach is consistent with the Commission’s direction in D.12-03-014.
- *Renewable Resources:* Although the planning assumptions included an overall statewide portfolio for the State to achieve a 33% RPS, it did not assign specific resources to each utility. Thus, SDG&E used a renewable portfolio based on its current portfolio of signed contracts.
- *Energy Storage:* Since utility-specific values were not provided, SDG&E used the energy storage quantities for SDG&E established in D.13-10-014 and applied the same ratios that the Commission applied to the statewide value in order to determine how much capacity would provide capacity and flexibility in the planning assumptions. This analysis produced a result of 107.5 MW for SDG&E.
- *Contracted Fossil Resources:* SDG&E assumed that all existing signed and approved contracts in its bundled customer portfolio will continue for the study period or their contract term, whichever is shorter.
- *Existing Procurement Authorizations:* The standard planning assumptions assumed that the repower of the MMC Escondido facility (now referred to as Wellhead Escondido) would be in service in 2016. Since the plant is currently in service, SDG&E modeled it as being in service in 2015 rather than 2016.
- *Market Energy Price:* Since SDG&E makes all its resources available to the CAISO, which determines the least cost dispatch, SDG&E was required to develop a market price forecast as a proxy for the market the units will be bid into. Since no market price forecast assumption was included in the standard planning assumptions, SDG&E developed one by using the current forward prices for market power, natural gas and greenhouse gas (“GHG”) allowances. SDG&E first developed a market heat rate (btu/kwhr) by dividing the market price by the combined cost for gas and GHG. SDG&E then multiplied this market heat times the require gas and GHG prices from the planning assumptions.
- *Embedded PV and CHP:* The planning assumptions stated that embedded PV and CHP in the load forecast should be removed as load reduction and modeling as a supply resource. While this would matter for some types of modeling (such as

stochastic modeling), it does not have any effect on the results that are presented in this single deterministic presentation of energy needs. Thus, SDG&E left these values embedded in the load forecast.

H. Revisions to Appendix B (Electric and Gas Hedging Strategy Changes)

In Appendix B, SDG&E recommends changes to its 5-year hedging strategy and hedge targets in an effort to reduce overall hedging costs for customers. Under the 2012 Bundled Plan, as SDG&E rolls from Year 2 into Year 1, SDG&E has adopted an overall annual hedge target of between [REDACTED] of its total portfolio.^{8/} In addition, SDG&E will undertake hedges so that each year it fixes or caps the price of an additional [REDACTED] of ratepayer open positions in each of Years 3, 4 and 5 within certain bounds. SDG&E will not undertake further hedges under this rolling 5-year procurement plan:

- If in Year 3, the total portfolio hedged has reached [REDACTED].
- If in Year 4, the total portfolio hedged has reached [REDACTED].
- If in Year 5, the total portfolio hedged has reached [REDACTED].

As an example, in 2014, Year 5 of the hedging plan will be 2018. SDG&E would hedge, through a combination of products, [REDACTED] of the open position for that year. In 2015, Year 4 of the Plan will be 2018 and SDG&E would hedge an additional [REDACTED] of the 2018 open positions. In 2016, Year 3 of the Plan will be 2018 and SDG&E will again hedge [REDACTED] of 2018's open positions.

SDG&E is proposing to revise the hedging requirements for years 3, 4 and 5 and the corresponding portfolio thresholds. The proposed changes are shown in Table 1 below.

^{8/} SDG&E has determined that it is most consistent with its overall plan strategy to manage calendar Year 2 on a volumetric basis using an average annual hedge target.

TABLE 1 (CONFIDENTIAL)



In developing these recommended changes, SDG&E reviewed historical performance and over the past several years has observed a trend that while the future natural gas price curves remained contango, year-over-year they did so at a lower level (Figure 1).

FIGURE 1 (CONFIDENTIAL)



To determine if this was only a near-term trend, SDG&E conducted an extensive analysis based on 1-year, 2-year, 3-year and 4-year financial contracts. In conducting the analysis, SDG&E performed an analysis that simulated actual market conditions and its current hedging strategy for the period 1992 through 2013 that covered all available natural gas futures contracts traded on NYMEX. The analysis demonstrated that SDG&E's hedging strategy (*i.e.* buy and hold) generally results in [REDACTED]. The results showed that the highest probability of losses occurred when contracts were held [REDACTED]

[REDACTED]

FIGURE 2 (CONFIDENTIAL)



In addition, when hedging for years [REDACTED], markets tend to be less liquid relative to near-term markets. Less liquid markets impact the prices actually paid [REDACTED] because there tend to be fewer sellers, making it more likely that SDG&E will pay higher prices in order to execute the longer term trades.

This is a concern under the 2012 Bundled Plan hedge [REDACTED] since SDG&E is likely to enter into only a minimal number of fixed-price long-term contracts given its current long RPS position and capacity needs.^{9/} Therefore, to help reduce long-term hedging costs, SDG&E is recommending

^{9/} D.14-03-004 directs SDG&E to procure a minimum of 500 MW and up to 800 MW new resources by 2022. SDG&E must procure a minimum of 175 MW of preferred resources (including energy storage, pumped storage and large hydro) and a minimum 25 MW specifically for energy storage. The 200 MW of preferred resources must be procured through an all-source RFO. The decision also provides up to 600 MW of all-source procurement that may be procured bilaterally.

lower incremental hedge percentages for [REDACTED] In order to maintain consistency within the hedge plan, the corresponding hedge threshold for these years must also be lowered.

SDG&E will continue to consult with its PRG at least quarterly, or more frequently as required, to review the amount of hedges it adds over time.

I. Revisions to Appendix C (Gas Supply Plan)

This Appendix has been revised to reflect the fact that SDG&E no longer procures natural gas on behalf of CDWR.

J. Revisions to Appendix D (Congestion Revenue Rights) and E (Convergence Bidding)

Revisions to these Appendices are non-substantive clarifying/updating edits.

K. Revisions to Appendix F (Greenhouse Gas/AB 32 Compliance)

Appendix F has been revised to update the discussion of the Cap-and-Trade program to reflect the change from a program that was imminent to a program that is fully functional. Compliance with the Cap-and-Trade Program began January 1, 2013 and the first California Air Resources Board (“CARB”) quarterly auction was held in November 2012, both of which took place after the 2012 LTPP was approved. As such, this section has been updated to reflect that the program is now in existence and to update any date references. In addition, in Summer of 2014, CARB approved a fifth offset protocol eligible for Cap-and-Trade compliance. Appendix F has been updated to include this new protocol.

SDG&E has elected not to update its GHG forecast at this time, but will do so via a Tier 2 Advice Letter filing at the end of 2014. Further, proposed changes to GHG procurement rules, policy or strategy will be addressed in a separate phase of R.13-12-010.

L. Revisions to Appendix G (RFO Evaluation Methodology)

This Appendix has been deleted in light of the enhanced discussion of SDG&E's procurement solicitation process included in Section II.5.

M. Revisions to Appendix H (Consultation Processes with Independent Evaluators)

This Appendix has been re-titled Appendix G. Revisions to this Appendix are non-substantive clarifying/updating edits.

N. Revisions to Appendix I (Procurement limits)

This Appendix has been re-titled Appendix H. Table H-1 has been updated based on standard planning assumptions and Table H-2 implied market heat rate has been updated to reflect current data. The forward power curves used to update the 2-standard deviation measure span from November 2012 through September 2014. SDG&E submits that this time span is representative of future market conditions by eliminating time periods that included SONGS generation and time periods that did not yet include adjustments for GHG costs that are currently embedded in the forward implied market heat rates.

**III.
CONCLUSION**

SDG&E respectfully requests that the Commission expeditiously approve its 2014 Bundled Plan.

Respectfully submitted this 3rd day of October, 2014.

/s/ Aimee M. Smith

AIMEE M. SMITH

101 Ash Street, HQ-12

San Diego, CA 92101

Phone: (619) 699-5042

Fax: (619) 699-5027

E-mail: amsmith@semprautilities.com

Attorney for

SAN DIEGO GAS & ELECTRIC COMPANY



2014 LONG TERM PROCUREMENT PLAN

**SAN DIEGO GAS & ELECTRIC COMPANY
2014 LONG TERM PROCUREMENT PLAN**

TABLE OF CONTENTS

I. INTRODUCTION..... 3

II. PROCUREMENT PROCESS AND RISK MANAGEMENT 4

A. Procurement Process..... 4

1. Procurement Organizational Structure 4

2. Overview of Procurement Process 4

3. Description of Procurement Products..... 18

4. Overview of Energy Market Products..... 25

5. Procurement Contracting Methods and Practices 43

6. Use of the PRG Process and Consultation with PRG 66

B. Risk Management Policy and Strategy 68

1. Current Risk Management Practices – Hedge Plan..... 68

2. Portfolio Risk Assessment..... 69

3. Customer Risk Tolerance 70

4. VaR-to-Expiration 70

5. Risk Management Products 73

6. Risk Management Product Selection Considerations 77

7. Credit Requirements..... 78

III. LONG-TERM PROCUREMENT RESOURCE PLAN..... 83

A. Introduction to Resource Planning and Planning Approach..... 83

B. Load Forecast 83

C. Supply Forecast for Existing Resources 84

E. Bundled Customer System Capacity Need 85

F. Bundled Customer Local Capacity Need..... 86

G. Need for New Generation in Service Area 87

H. Resource to Fill Identified Need 87

IV. PROCUREMENT STRATEGY BY RESOURCE TYPE 88



2014 LONG TERM PROCUREMENT PLAN

A. Introduction to Resource Acquisition Strategy	88
B. Energy Efficiency	88
C. Demand Response	89
D. Self-Service Load	89
E. Renewable Energy Procurement	90
F. Qualifying Facilities and Combined Heat and Power Generation	90
G. Energy Storage Resources	91
H. Other Generation Supply Resources	91
V. EVALUATION OF RESOURCE PLAN	91
VI. COST RECOVERY ISSUES	93
A. Existing Recovery Mechanisms for Procurement Costs	93
1. Energy Resource Recovery Account (ERRA) Balancing Account.....	93
2. Non- Fuel Generation Balancing Account (NGBA)	94
3. Transition Cost Balancing Account (TCBA)	95
4. Local Generating Balancing Account (LGBA).....	95
B. Current Commission Guidance Related to Debt Equivalence	95
C. Current Commission Guidance Related to ASC 810	96
Appendix A: Energy and Capacity Tables	A-1
Appendix B: Electricity and Gas Hedging Strategy	1
Appendix C: Gas Supply Plan	1
Appendix D: Congestion Revenue Rights	1
Appendix E: Convergence Bidding	1
Appendix F: Greenhouse Gas/AB 32 Compliance Plan	1
Appendix G: Independent Evaluator Consultation Processes	1
Appendix H: Procurement Limits and Ratable Rates	1
Appendix I: Glossary of Terms	1
Appendix J: Acronym Glossary	1
Appendix K: Energy Procurement Organization	1



2014 LONG TERM PROCUREMENT PLAN

I. INTRODUCTION

San Diego Gas & Electric Company’s (SDG&E’s) Long Term Procurement Plan (LTPP or the Plan) establishes the upfront achievable standards and criteria for SDG&E’s procurement activities and cost recovery, consistent with California Public Utilities Code § 454.4. SDG&E’s LTPP is effective upon approval by the California Public Utilities Commission (CPUC or Commission) and will remain in effect until Commission approval of a superceding LTPP.

SDG&E submitted its draft Plan to the Commission on October 3, 2014. The Plan was approved in Decision (D.) _____, which directed SDG&E to make certain revisions to the Plan and to submit a conformed version of the Plan via an advice letter compliance filing. SDG&E’s compliance filing, Advice Letter _____ was approved by the Commission in Resolution ____, issued on _____. The LTPP approved in Resolution _____ constitutes SDG&E’s approved conformed 2014 LTPP and supersedes and replaces SDG&E’s approved 2012 LTPP. Updates to the Plan made prior to Commission approval of the superceding LTPP will be undertaken through the Commission’s advice letter process. Advice letter updates will include redlined pages of the conformed LTPP, as well as clean replacement pages.^{1/} A glossary of acronyms used in the LTPP is set forth in Appendix I; a glossary of terms used is set forth in Appendix J.

^{1/} D.07-12-052, *mimeo*, p. 181.



II. PROCUREMENT PROCESS AND RISK MANAGEMENT

A. Procurement Process

The following section provides an overview of SDG&E's procurement organizational structure and process, describes procurement products and energy market products utilized by SDG&E, and discusses the role of the Procurement Review Group (PRG) in SDG&E's procurement activity.

1. Procurement Organizational Structure

SDG&E's procurement function consists of four main areas:

- Short-term procurement: Includes four areas: (a) electric and fuel trading and gas scheduling; (b) operational functions including pre-scheduling, transaction scheduling and dispatch; (c) market and policy analysis, including compliance with annual and monthly Resource Adequacy (RA) requirements; and (d) purchases and sales of greenhouse gas (GHG) compliance instruments to meet Cap and Trade obligations;
- Medium and long-term procurement: Includes procurement of all mid-to-long term resources including RA-related resources;
- Settlement; and
- Risk analysis.

An organization chart showing the structure of the energy procurement department is set forth in Appendix K.

2. Overview of Procurement Process

a. *Planning Process*

The description of the planning process set forth herein generally applies to both short-term and long-term procurement of energy resources. The short-term procurement process is described in this Section and Appendix C. Longer-term procurement is based on determined



2014 LONG TERM PROCUREMENT PLAN

need (see Sections III and IV) and typically occurs through a Request for Offers (RFO) process, discussed in Section II.A.5.b below.

Long-term planning looks out over a ten year planning horizon. The long-term planning process implements the State's Loading Order and integrates the various resource options available to serve SDG&E's bundled customer needs. SDG&E maintains a production costing model to obtain a long-term (multi-year) forward view of its resource portfolio parameters, such as the short positions, gas burns and need for resource/infrastructure additions. Long-term assumptions and positions are described in Sections III and IV.

With respect to short-term planning (*i.e.*, one year or less), SDG&E uses GenTrader (a least-cost dispatch model developed by Power Costs Inc. or PCI) to provide short-term guidance on dispatch and transaction decisions to economically serve the net short position. Basic inputs into the model include:

- SDG&E portfolio resources modeled with all constraints and operational parameters;
- Gas price forecast;
- Electric price forecast;
- Load forecasts; and
- Other market data.



2014 LONG TERM PROCUREMENT PLAN

The planning model is used by SDG&E on a weekly basis to create a 12-day least-cost dispatch forecast that includes a plan for unit commitments and market transactions.^{2/} Outputs from the model used for decision-making in the transaction stage include:

- Forecasted usage of dispatchable units;
- Forecasted gas burns; and
- Forecasted economic power purchases and sales.

All modeling assumptions are updated to capture the most current information. Changes in the model inputs can occur both daily and hourly. The model will be re-run if significant differences arise intra-day, creating an updated outlook.

SDG&E meets its load obligations in a least-cost dispatch manner that begins with planning for must-take generation, including renewable energy and firm contracts. The load that is not filled by must-take energy is met through a combination of dispatchable units and market purchases.

It is important to note that actual least-cost dispatch may vary, sometimes significantly, from the model output due to the dynamic nature of certain inputs to the model, such as demand and prices, as well as the inability of the model to capture all constraints. Also, it must be recognized that real time dispatch takes into account all market- and operational-related factors, whereas models take into account only those factors that are known at the time the plan is developed. SDG&E's procurement team continuously reviews model inputs, forecasts, and makes changes in model parameters as needed in order to continually improve results.

^{2/} SDG&E also uses GenManager, another product procured as part of a package from PCI, to assist with bid optimization as preparation for submittal of bids into the CAISO's Market.



2014 LONG TERM PROCUREMENT PLAN

b. Procurement Process

SDG&E's procurement processes are described herein. Short-term processes are described in Sections II A.3 and 4 and Appendices C, D, E and F. SDG&E's long-term procurement practices are described in Section II.A.5 and 6, Section IV and Appendix H.

c. Dispatch Process

SDG&E schedules its generation supply and bundled customer demand within the market structure (Market) of the California Independent System Operator (CAISO). The two primary elements of the Market are: 1) a nodal model of the CAISO grid that provides the CAISO with enhanced tools to manage congestion on its grid; and 2) an Integrated Forward Market (IFM) that includes a Day-Ahead Market (DAM) that produces binding day-ahead awards for energy and capacity. An overview of the Market structure is provided below:

(i) Day-Ahead Market

The CAISO Market structure affects SDG&E's least-cost dispatch (LCD) process in several ways. The DAM competitively matches load requirements with resources on a system-wide basis. As part of the DAM, SDG&E submits schedules and bids for both demand and supply (generation and system) resources. The CAISO receives such schedules and bids from all market participants to construct a supply/demand curve across the CAISO system. The CAISO then clears the market at the marginal price, subject to congestion, transmission losses and certain adjustments to address operations and market power mitigation. In effect, the IFM DAM 1) obviates the need for SDG&E to balance its bundled demand with schedules from its own portfolio of resources and market transactions; 2) eliminates reliance on individual



2014 LONG TERM PROCUREMENT PLAN

market participants, including SDG&E, to efficiently dispatch resources among themselves through bilateral transactions; and 3) provides a transparent DAM clearing price for each hour and for each electrically or commercially significant point on the CAISO system.

The CAISO IFM process runs on a full transmission network model that reflects congestion points, transmission outages and other operating contingencies, versus the much simpler zonal model that existed pre-Market. As a result, the DAM (as well as the hour-ahead and real-time markets) more explicitly addresses the cost of re-dispatching resources to avoid infeasible schedules and eliminates the need for SDG&E to consider intra-zonal congestion costs in its least-cost dispatch process.

The IFM DAM is the process by which the CAISO procures ancillary services (AS). The IFM process now co-optimizes the allocation of available capacity between generation and reservation for AS requirements, based on prices submitted for each of these services in the resource bids. The resulting allocation of awards between generation and AS across the system should be more efficient because it is based on energy and capacity bids that more accurately reflect the economic trade-off between generation and reserves.

A feature of the Market is that day-ahead awards on resources and load are financially binding obligations. Deviations between these awards and actual energy delivery (or load consumption) trigger settlement charges with the CAISO at real-time prices.

The IFM DAM process creates uncertainty regarding the fuel quantities to be procured to support generation awards. Day-ahead generation awards for most dispatchable resources are not known until approximately 1:00 p.m., well after the majority of next-day natural gas



2014 LONG TERM PROCUREMENT PLAN

volumes have traded. Due to this information lag, natural gas traders must rely on imprecise forecasts of fuel requirements that may or may not correspond to actual requirements. When actual results deviate sufficiently from forecasted fuel quantities, the natural gas desk must trade and/or schedule gas supplies in later scheduling cycles or on weekends to avoid pipeline penalties. Activity in these later scheduling cycles typically adds to the overall cost of fuel supply due to limited or no market liquidity for gas transactions and a higher risk of pipeline schedule cuts.

(ii) Intraday Market (Hour-Ahead Scheduling Process and Real-Time Market)

Like the DAM, the Hour Ahead Scheduling Process (HASP) market establishes financially binding awards for hour-ahead self-schedules and awarded bids, but only at intertie scheduling points. The HASP market enables SDG&E to submit cost-based bids for its dispatchable imported resources so that the day-ahead award can be economically incremented and decremented. Essentially, SDG&E can sell additional energy or buy back the day-ahead delivery obligation depending on whether the HASP price is above or below SDG&E's bid. No HASP market was implemented for resources or load within the CAISO system; the CAISO instead publishes advisory HASP prices and awards for these resources and loads, but they are not financially binding.

On May 1, 2014, the CAISO implemented market changes in response to Federal Energy Regulatory Commission (FERC) Order No. 764 (FO764) to provide an improved framework for variable energy resources. FO764 has resulted in the CAISO offering fifteen minute scheduling and pricing in the Intraday Markets for both internal and inter-tie schedules.



2014 LONG TERM PROCUREMENT PLAN

SDG&E now has the option to bid inter-tie schedules as an hourly static value or to allow the inter-tie schedule to change every fifteen minutes in an operating hour.

As a result of FO764 implementation, the HASP Locational Marginal Price (LMP) is no longer financially binding on inter-tie scheduling awards. Instead, hourly inter-tie schedules are now financially settled at the average of the four fifteen minute LMPs for the scheduled hour. Should SDG&E participate in explicit fifteen minute scheduling, the fifteen minute schedule is priced at the corresponding fifteen minute price for the relevant interval. As a result of the new market design, the HASP price is used only as a non-binding price to commit the hourly schedule at the inter-tie. With respect to the real-time market after implementation of FO764, financially binding DAM awards for all cleared load and supply are resolved in the fifteen and five minute markets in real time. Hence, the fifteen minute real-time market awards are incremental or decremental to the Day-Ahead market awarded quantity. Next, the five minute real-time market awards are incremental or decremental to the fifteen minute market awards. For example, if the DAM clears 3,000 MW of load but the average of the fifteen minute CAISO load forecast is for 3,100 MW, the LCD response is limited to only the incremental 100 MW of load because the first 3,000 MW has already been purchased and settled at the day-ahead price. Next, the five minute CAISO load forecast is for 3125, the LCD response is limited to only the increment of 25 MW of load because the 100MW increment to the Day Ahead award has already been purchased in the fifteen minute market. Likewise, if a supply unit is awarded 200 MW day-ahead but its self-schedule is revised upward to 250 MW in the fifteen minute market, only the incremental 50 MW is sold in the real-time fifteen minute



2014 LONG TERM PROCUREMENT PLAN

market with the first 200 MW having already been awarded and settled in the DAM. Next the five minute real-time market may keep the self-schedule at 250 MW. Hence, there is no increment or decrement to the fifteen minute market in this case.

It is important to note that post-FO764, supply incremental or decremental real time awards from DAM awards are settled at the fifteen minute real-time price as published by the CAISO. Supply is then re-optimized in the five minute real time market. The incremental or decremental awards from the fifteen minute market are settled at the five minute real-time price which the CAISO publishes at each supply price node.

Another characteristic of the Market that affects LCD is the use of self-schedules on SDG&E's resources. Self-schedules are essentially price-taker bids submitted into the day-ahead or real-time market. The CAISO uses generator/supply self-schedules to establish a floor on the unit's dispatch awards in the real-time market. Therefore, hour-ahead self-schedules, if greater than the day-ahead award, cause the incremental portion of the supply to be a price-taker at the real-time price.

(iii) CAISO Impacts on Least-Cost Dispatch

Exceptional Dispatch (ED) is a form of dispatch under the Market that is used by the CAISO to meet reliability requirements that cannot be resolved through market processes. The CAISO orders EDs to address local generation requirements, system capacity needs, transmission outages, software limitations and other operational issues. Because EDs are



2014 LONG TERM PROCUREMENT PLAN

reliability-driven, they are outside the scope of LCD and likely to be uneconomic relative to market prices or other resources. However, all CAISO resources are obligated to comply with these dispatches.

Residual Unit Commitment (RUC) is a market award for capacity that the CAISO issues to ensure that sufficient capacity is committed to meet system load. Although RUC results from the market process, it is required to manage grid reliability and is outside the scope of LCD. Non-use limited RA resources are obligated to provide RUC capacity if awarded, which requires that they be committed even though it may be uneconomical relative to market prices.

Under certain circumstances, operational factors take priority over LCD economics. Unit testing and maintenance for example, require generators to run at pre-defined load points to achieve an objective. During these periods, generation is considered must take and cannot be dispatched according to standard LCD economics.

Constrained pipeline operations may impact least-cost dispatch. For example, Operational Flow Orders (OFOs) declared by Southern California Gas Company (SoCalGas) can impact dispatch decisions. Under a high-inventory OFO, if a resource failed to consume 90% of the delivered natural gas quantity, the pipeline will assess penalties. This may constrain resources from decreasing generation in response to lower prices. SDG&E evaluates the potential loss of revenue from reducing generation relative to the expected penalty when making a decision as to whether to decrease generation.



2014 LONG TERM PROCUREMENT PLAN

SDG&E's portfolio contains several use-limited resources, which are resources that are only available for a limited number of hours per period. To efficiently allocate dispatches on these units, SDG&E plans their use over a monthly or annual time horizon depending on the limit. SDG&E manages these resources to assure availability over summer peak load periods. Use-limited resources include Demand Response (DR) programs that can only be triggered during certain months for limited hours each month.

(iv) The Market Transaction Process and Strategy

SDG&E considers many different factors when developing buying and selling decisions, including (1) market prices (both spot and forward) for power and gas; (2) weather (local and nationwide); (3) availability of resources; (4) counterparty credit; and (5) risk and trading limits, when and if applicable. As a tool to assist in forecasting daily demand, SDG&E uses a load forecasting tool developed by Pattern Recognition Technologies, Inc. (PRT). This application analyzes relationships between historical system load and weather data, and develops an hourly forecast of future loads using forecasts of temperature and humidity. The program is updated daily and hourly as actual load and weather data are recorded, and updated temperature and humidity forecasts are made available by SDG&E's weather forecasting service provider. SDG&E monitors the performance of its forecasting application on an hourly basis and may make corrective adjustments to its results, if warranted, to account for changing load patterns.



2014 LONG TERM PROCUREMENT PLAN

The direct access (DA) load forecast is a 7-day forecast that is based on the current DA accounts in the SDG&E billing system and the historic load for those accounts. System transmission losses are calculated as a percentage estimate of the system load forecast based on historical data.

For a given delivery day, the short-term bundled load forecast is first made a week in advance as an input to SDG&E's short-term least-cost dispatch model (SDG&E utilizes the GenTrader model from PCI to provide bi-weekly and weekly forecasts for dispatch of its supply portfolio). The model output provides SDG&E with information regarding how its supply portfolio can be optimally dispatched to meet the forecasted load. The bundled load forecast is then updated on the pre-scheduling day prior to the delivery day to refine the day-ahead least-cost model that is then used to make decisions on unit commitments and market transactions.

Starting at approximately 5:30 a.m. each day, information to run the GenTrader model is updated. In addition, traders begin phone conversations with the market to execute trades (both physical and financial) and place orders on Exchanges (e.g., ICE) and through brokers and other means. The CAISO clears each resource and load schedule/bid against the day-ahead clearing price and there is no requirement for an individual market participant to balance its resource and load schedules. Therefore, these trades are transacted not to meet net short positions, but rather as hedges against fluctuations in the CAISO DAM LMPs (trades at intertie points outside the CAISO are still for physical energy). Executed trades are entered in the Allegro system, transmission "tags" are created for physical imports and Inter-Scheduling Coordinator (SC) trades (ISTs) are submitted to the CAISO. SDG&E's traders also transact to



2014 LONG TERM PROCUREMENT PLAN

procure physical natural gas for delivery the next day, through ICE, brokers and instant messaging (IM), in order to meet the expected needs for SDG&E utility-owned generation (UOG) and tolled generation facilities the next day. Sales of natural gas may also be transacted to manage OFOs on the SoCal and SDG&E systems. A further discussion of SDG&E's fuel procurement activities appears later in this Plan.

The PCI application is also used to generate bids and schedules for energy and AS. SDG&E utilizes two scheduling methods, economic bidding and self-scheduling, to schedule energy and AS on its resources. AS products include Regulation, Spin and Non-Spin, and can be provided by dispatchable resources. Economic bidding is applied to AS products to capture the value of opportunity cost when the capacity could otherwise be used for energy instead of AS. Self-provision is used to directly schedule AS if the likelihood of energy dispatch is low due to factors including generation price and operational constraints limits. Self-provided AS allows SDG&E to avoid a portion of the CAISO AS charge, and therefore, the value of the avoided charges is included as a credit in the variable cost analysis for the dispatch

In accordance with the Market rules, SDG&E must submit Day-Ahead bids and schedules for both supply and demand by 10:00 a.m. on the day prior to the actual trade date. For supply resources, SDG&E may either bid a quantity and price for each resource or submit a quantity as a self-schedule (willing to supply at any price). Demand is handled similarly, where SDG&E can either bid a quantity of demand it is willing to procure in the DAM at a price or various levels of price, or it can elect to self-schedule all or a portion of its load supplied in the DAM (price taker). SDG&E can also submit a combination of self schedule and price bids



2014 LONG TERM PROCUREMENT PLAN

for demand in the DAM. The CAISO posts the results of its IFM by 1:00 PM each day and all results for supply and demand in the DAM are financially binding. In addition, SDG&E cannot update its demand forecast in the Real Time Market (RTM). Any deviations between the demand quantity settled in the DAM and actual demand are settled at the RTM price.

Real-time demand and generation quantities (relative to day-ahead cleared awards) are continuously evaluated and incremental generation self-schedules and market transactions can be submitted up to the HASP deadline to support least-cost dispatch. Information to support such actions include an updated load forecast, updated prices for generation and market trades and updated availability of generation capacity to account for day-ahead commitments and outages. SDG&E updates spreadsheets and the PCI model with this information to assess its real-time requirements and make the “generate or buy” decision. Any residual long or short position is settled in the CAISO imbalance market.

SDG&E primarily trades over-the-counter (OTC) products (typically traded on ICE or through voice brokers) rather than ISTs, since over-the-counter products have lower transaction costs and higher market liquidity. SDG&E may also utilize market financial transactions for the same purpose in real-time. These transactions are made with the goal of locking in fixed prices consistent with least-cost dispatch and to reduce exposure to DAM or RTM prices. A description of the type of products used for this purpose is described in more detail in Section II.A.3 and II.A.4.



2014 LONG TERM PROCUREMENT PLAN

The SDG&E procurement process uses various markets, market products and internal strategies to achieve least-cost dispatch. However, various constraints may impose additional requirements that force SDG&E to make procurement decisions that are not tied to least-cost dispatch. Such constraints are generally related to operational limitations, operational contingencies and reliability considerations and include:

- Commission guidance to obtain no more than 5% of need in spot markets without justification. As a market participant of the CAISO, all of SDG&E's demand needs are met through the CAISO, and as such SDG&E will typically seek to hedge its physical price exposure in the CAISO DAM by bilaterally procuring in the market a combination of physical and/or financial products.
- Requirement under D.04-07-028 that investor-owned utilities (IOUs) account for anticipated intra-zonal congestion when creating schedules and mitigate any forecasted congestion, thereby limiting access to remote markets and resources. The CAISO markets account for intrazonal congestion in determining generation awards. Congestion produces power flow constraints that cause generation dispatches that deviate from, and result in higher costs than, an unconstrained transmission system. SDG&E participates in the CAISO Congestion Revenue Rights (CRR) market to mitigate the cost of day-ahead congestion for SDG&E customers.

SDG&E's day-to-day dispatch activities are generally distinct from transactions related to longer-term risk management objectives. The strategies related to transactions are described in Section II B, "Risk Management Policy and Strategy" of this LTPP.



2014 LONG TERM PROCUREMENT PLAN

3. Description of Procurement Products

Table 1 below sets forth the physical and financial products SDG&E intends to utilize in its procurement activities. SDG&E may, from time-to-time, file advice letters requesting approval to add specific products to this list. New products may become available as the CAISO Market further develops or as a result of new legislation. Changes in regulatory policies may also result in availability of new products.

Table 1 (a)
Electric Procurement Products

Transaction	Description
Real-time Energy	Hour-ahead and intra-day energy.
Spot Energy	Day-ahead and intra-day energy.
Forward Energy	Intra-month and forward energy and demand side usage reduction.
Capacity	Right to purchase energy or load reductions at an incremental energy charge at specified rate if exercised.
On-Site Energy or Capacity	Energy or capacity products self-generated on the customer side of the meter.
Tolling Agreement	Purchase Agreement for capacity and energy products where buyer provides the fuel and seller converts the fuel to energy in return for a pre-established tolling charge and guaranteed heat rate from plant.
Peak for Off-Peak Exchange	Trade where $x \text{ peak MWh} < y \text{ off-peak MWh}$.
Seasonal Exchange	Trade peak energy in Summer period for peak energy in Winter period.
Electricity Transmission Products	Transmission, transmission rights or locational spreads, arranged through CAISO and with non-CAISO transmission owners.
Ancillary Services (AS)	Services include replacement reserve, regulation up, regulation down, spinning-reserve and non-spinning reserve.
Day-Ahead and Hourly Financial Products	Day-Ahead or Real Time financial products procured as hedges against the CAISO DAM and RTM prices.
Inter-Scheduling Coordinator Trade (IST)	Product established by CAISO as a settlement service.
Congestion	Products that provide insurance and financial protection against the costs of congestion



2014 LONG TERM PROCUREMENT PLAN

Table 1 below sets forth the physical and financial products SDG&E intends to utilize in its procurement activities. SDG&E may, from time-to-time, file advice letters requesting approval to add specific products to this list. New products may become available as the CAISO Market further develops or as a result of new legislation. Changes in regulatory policies may also result in availability of new products.

Table 1 (a)
Electric Procurement Products

Transaction	Description
Revenue Rights (CRRs)	experienced in the transmission system.
CRR Locational and Non-Locational Swaps	Trading of CRRs typically with the intent of monetizing value of excess CRRs.
Convergence Bidding	CAISO Tariff Product that allows market participants the ability off offset risk between the DAM and RTM.
Multi-Stage Generation (MSG)	MSG is a CAISO tariff product that allows SDG&E to better reflect the operational characteristics of power plants, particularly combined cycle power plants, for bidding and scheduling purposes.
Proxy Demand Response (PDR)	CAISO tariff product that enables DR resources to participate in the CAISO market.
Resource Adequacy (RA) Products	Monthly and annual system and local RA products to satisfy planning reserves in order to meet Commission RA Requirements (RAR).
RA Import Counting Rights	Trade of CAISO intertie capacity used for forecast imports of RA products to be used to meet RA requirements.
Greenhouse Gas (GHG) Products	Products associated with the purchase and trading GHG attributes.
Bundled Renewable Energy Products	Renewable energy products that include both the energy and Green Attributes (as such term is defined by the CPUC) associated with such energy.
Unbundled Tradable Renewable Energy Credits (TREC)	The Green Attribute portion of a renewable energy product that is sold separately from the associated energy.



2014 LONG TERM PROCUREMENT PLAN

Table 1 below sets forth the physical and financial products SDG&E intends to utilize in its procurement activities. SDG&E may, from time-to-time, file advice letters requesting approval to add specific products to this list. New products may become available as the CAISO Market further develops or as a result of new legislation. Changes in regulatory policies may also result in availability of new products.

Table 1 (a)
Electric Procurement Products

Transaction	Description
Emissions Reduction Credits (ERCs)	Trade to meet environmental compliance for owned generation or new "in-basin" fossil generation. Product is local in nature.
SO ₂ Allowances	Trade to meet environmental compliance for owned generation or new "in-basin" fossil generation. Product is traded/transacted homogenously in the U.S.
Energy Storage	Commercially available technology that is capable of absorbing energy, storing it for a period of time, and thereafter dispatching the energy.



2014 LONG TERM PROCUREMENT PLAN

Table 1 (b)	
Gas Procurement Products	
Transaction	Description
Physical Gas	Buy or sell physical natural gas on a daily, weekly, monthly, multi-month, annual or multi-year basis at an index or fixed price.
Natural Gas Transportation	Contract for purchase of interstate or intrastate ^{3/} natural gas pipeline capacity to transport natural gas for a specified term from specified receipt point(s). Deliver at specified delivery point(s) on each day such quantity of natural gas, if any, up to the maximum receipt quantity for each such receipt point and up to the maximum delivery quantity for each delivery point all as specified in the contract, less any requisite fuel and loss reimbursement, not to exceed the physical capacity of such point at a designated rate. The levels of service for natural gas transportation may range from firm down to interruptible. The purchase of natural gas pipeline capacity can be achieved directly with the natural gas pipelines or through capacity release transactions pursuant to the natural gas pipeline's applicable tariff.
Capacity Release	The purchase or sale of natural gas pipeline capacity through a party's release of a specific quantity of natural gas pipeline capacity on a specific natural gas pipeline from specified receipt points to specified delivery points, for a designated term and rate, pursuant to the natural gas pipeline's applicable tariff. The release of natural gas pipeline capacity can be on a permanent or temporary basis and such release may contain special provisions. In the case of Canadian pipelines, this activity may be accomplished as an assignment of capacity pursuant to the applicable tariff.
Natural Gas Pipeline Imbalance Trading	Allows parties to manage the difference between the scheduled quantity and measured quantity at the receipt and/or delivery points of the natural gas pipeline through purchases or sales of natural gas or by trading imbalance positions pursuant to the natural gas pipeline's applicable tariff.
Gas Park and Loan	Pursuant to a natural gas pipeline's FERC Gas Tariff or other applicable tariff, the natural gas pipeline agrees on an interruptible service level to receive and park natural gas tendered for SDG&E's account at an agreed upon point, up to the maximum quantity specified subject to a mutually agreeable withdrawal schedule at a specific rate. The natural gas pipeline agrees on an interruptible service level to loan natural gas to SDG&E at an agreed upon point, up to the maximum loan quantity specified plus any requisite fuel and loss reimbursement subject to a mutually agreeable repayment

^{3/} Receipt point Backbone Transportation Service (BTS) provides SDG&E and SoCalGas customers delivery of gas into the system from the interstate pipeline and delivery supplies off system to Pacific Gas & Electric Company. The BTS Tariff can be accessed on SoCal Gas's website at: <http://www.socalgas.com/for-your-business/natural-gas-services/backbone.shtml>.



2014 LONG TERM PROCUREMENT PLAN

	schedule at a specific rate, all pursuant to the natural gas pipeline's applicable tariff.
Gas Storage	Buyer reserves gas storage capacity for a defined price. Capacity storage procured with defined injection and withdrawal rights. Can be procured either short-term (monthly capacity rights or annual capacity rights up to 3 years) or long-term (annual capacity rights up to 10 years). Storage may have some inherent hedge characteristics as it can mitigate price risk on either short-term (weekly) or long-term (seasonal) basis.
Physical Option – Call or Put	Right to purchase (call) or sell (put) energy in the future at pre-set price (price may be pegged to an index).
Physical Swap	Over the counter agreement between two parties specifying the exchange of payments based on a given commodity or formula.
Financial Option – Call or Put	Right to purchase (call) or sell (put) the future financial energy cash flows at pre-set price (price may be pegged to an index).
Financial Swap or Future	Exchange of cash-flows between a floating price index and a fixed negotiated price. Can be long or short-term transactions. Typically between 2 parties under an International Swaps and Derivatives Association, Inc. (ISDA) agreement, but can be "ICE Cleared." ICE Cleared deals allow parties to make or receive payments through a clearing house.
Financial Spread	Spread is the difference between two prices, amounts or numbers such as the bid/ask prices in commodity trading. In the futures and options markets, a spread is the simultaneous purchase and sale of two different contracts in the expectation of a favorable change in their relative prices.
Financial Spread Option	An option on the price differential between two related instruments or commodities.
Credit Insurance Products	Contract to insure against various adverse credit events to reduce credit exposure and Credit Risk (e.g., credit default swaps, credit insurance, etc.).
Volumetric Insurance Products	Contract to insure against various adverse physical and/or operational events to protect against replacement costs (e.g., business interruption insurance, unit outage insurance, etc.).



2014 LONG TERM PROCUREMENT PLAN

Table 1 (c)	
Credit Products	
Transaction	Description
Credit Insurance Products	Contract to insure against various adverse credit events to reduce Credit Exposure and Credit Risk (e.g., credit default swaps, credit insurance, etc.).
Volumetric Insurance Products	Contract to insure against various adverse physical and/or operational events to protect against replacement costs (e.g., business interruption insurance, unit outage insurance, etc.).



2014 LONG TERM PROCUREMENT PLAN

Table 1 (d)
Green House Gas Products

Transaction	Description
Allowances	Allowances will effectively serve as permits to emit GHGs. All allowances are distributed by the California Air Resources Board (ARB) to compliance entities or placed into the auction to be procured by entities.
Offsets	An offset is a credit for a verified emission reduction from a source outside the Cap-and-Trade Program, with the intention of reducing emissions in sectors not captured in the Cap-and-Trade Program.
Future Vintage Allowances	Future vintage allowances are expected to be auctioned in limited quantities in the ARB auctions.
Allowance Futures	Futures for GHGs are standardized contracts that obligate the seller to sell allowances. They can be traded on exchanges and easily converted to allowances in the future.
Forwards of Offsets and Allowances	Forwards for offsets or allowances are also obligations to sell at a future date, but the contracts are not as standardized and would not be traded on exchanges.



2014 LONG TERM PROCUREMENT PLAN

Table 1 (e)
Exchanges

Exchange	
Intercontinental Exchange (ICE)	Intercontinental Exchange (ICE) operates leading regulated exchanges, trading platforms and clearing houses serving the risk management needs of global markets for agricultural, credit currency, emissions, energy and equity index markets
New York Mercantile Exchange (NYMEX)	NYMEX is a Designated Contract Market owned by Chicago Mercantile Exchange (CME) that offers trading and clearing services in Agricultural and Energy products.

4. Overview of Energy Market Products

Below is a description of the key energy market products that will be used for managing the physical position of SDG&E’s portfolio.

a. *Inter-SC Trades*

ISTs are a service offered by the CAISO to assist market participants in the settlement process. ISTs can be useful for settling third-party physical bilateral trades and for settling payments for purchase power agreements (PPAs) for which SDG&E is not the SC. The IST authorizes the CAISO to transfer money between SCs based on the matching quantity submitted and the market price that clears at the designated delivery point. The settlement service offered by ISTs is optional in the sense that the counterparties to a bilateral contract could elect to settle their bilateral contract outside of the CAISO settlement system. The CAISO charges a fee to both parties for providing this settlement function.



2014 LONG TERM PROCUREMENT PLAN

b. Spot Markets/Spot Energy

“Spot markets” include transactions of many types, executed in different markets, whose common characteristic is the timing of the transaction relative to the delivery period. The Commission has defined spot markets as any trading done in a day-ahead, hour-ahead or real-time period. Spot transactions may be executed either through exchanges or directly with counter parties. It is appropriate to make responsible use of the spot market as a means to procure a reasonable percentage of the total portfolio based on economic criteria.

Some participation in the spot market is necessary to protect the interests of ratepayers. The spot market offers greater flexibility to (i) respond to market conditions; (ii) diversify the price exposure of its portfolio; (iii) capture opportunities that may be advantageous to the portfolio; and (iv) contribute to market efficiency. Since the implementation of the Market, the level of SDG&E’s participation in spot market transactions has decreased. SDG&E anticipates that its reliance on the spot market for energy on an annual basis will be limited.

c. Counterparty Sleeves

SDG&E may enter into two-sided trades where the same product is purchased from one counter party and sold to another simultaneously for the purpose of providing credit. Such transactions, known as credit sleeves, have the two main benefits. First, and most importantly, sleeves help SDG&E control its credit exposure to various counterparties. If SDG&E becomes concerned with its level of financial exposure to Party A, SDG&E may be able to arrange for Party B, who does not have similar credit issues with Party A, to buy from Party A and sell to SDG&E. Thus, Party B acts as a credit sleeve, absorbing SDG&E’s exposure to a



2014 LONG TERM PROCUREMENT PLAN

counterparty with whom it would otherwise be unable to transact. These sleeves, which entail a nominal fee, are useful in expanding the pool of counterparties available to SDG&E. Second, SDG&E may achieve modest yet certain cost reductions to its supply portfolio. From time to time, SDG&E may be asked to buy from Party B to sell to Party C at a small profit because both parties desire to trade, but due to credit restrictions, cannot do so. SDG&E can act as a credit sleeve if the seller is able to sell to SDG&E and if SDG&E has a credit surplus with the buyer. SDG&E has the ability to sleeve trades and either maintain or even improve its credit exposure with the counterparties. In these cases, credit sleeves would have the positive effect of reducing portfolio cost and potentially mitigating credit exposure to either party.

d. Procurement and Sale of RPS Products

SDG&E procures renewable resource products (bundled energy, capacity and renewable energy credits [RECs], as well as unbundled RECs) to meet the requirements of the Renewables Portfolio Standard (RPS) program. As detailed in SDG&E's separately-filed RPS Procurement Plan and discussed in Section II.A.5.c hereof, SDG&E's procurement of renewable products is typically undertaken through long-term PPAs. Long-term procurement of renewable resource products will be handled through RFO and bilateral negotiations, subject to review by the Independent Evaluator (IE) and SDG&E's Procurement Review Group (PRG). Should liquid markets for short-term renewable products become available, however, SDG&E may explore the purchase of renewable products on a Day-Ahead or balance-of-month basis. SDG&E also engages in the sale of renewable energy from its portfolio, when it is reasonable to do so.



2014 LONG TERM PROCUREMENT PLAN

e. Tolling

Tolling arrangements give the buyer access to generation capacity at a guaranteed gas-to-electricity conversion heat rate. This product can be loosely characterized as a power plant lease. Depending on the circumstances, SDG&E could find itself in the market as either a buyer or seller of tolling contracts. Tolling agreements are relatively complex structured products that do not trade like standardized products since any tolling arrangement must be customized to the characteristics of the unit underlying the contract. The most likely means of trading a Tolling contract is through an RFO.

f. Proxy Demand Response

Proxy Demand Resource (PDR) is a new type of resource the CAISO developed and introduced in 2010 to enable DR programs to participate directly in the wholesale market. It was developed in response to stakeholders' requests for a product designed to facilitate the participation of existing retail DR programs in the ISO wholesale energy and AS markets. The CAISO creates a new PDR upon request after a DR provider registers participating customers of a DR program into the CAISO Demand Response System. Once the PDR is created, the DR provider (through its SC) may submit bids and schedules for the PDR similar to any other wholesale supply resource. PDR is not itself a DR program and does not provide financial incentives to support DR programs, other than payments for energy and AS awards. SDG&E will adopt PDR in accordance with direction provided by the Commission in its DR-related proceedings.



2014 LONG TERM PROCUREMENT PLAN

g. Multi-Stage Generation

Multi-Stage Generation (MSG) is a modeling enhancement that allows for more specificity in bidding resources with multiple operating states (such as combined cycle power plants) into the CAISO market. Under MSG, generator master files and bids can explicitly reflect characteristics for each operating state, including dispatch ranges, minimum load and transition costs, ramp rates and AS capability. Each MSG resource may have between two and ten distinct operating states that the CAISO will utilize in the DAM and RTM for energy, RUC, AS and ED. The following types of resources are required to register as MSG: combined cycle resources; resources with multiple operating regions with hold- or off-times after a transition through a forbidden operating region; generating units with multiple operating ranges which a forbidden operating region would prevent the resource from providing the amount of awarded ancillary service capacity. SDG&E has implemented MSG for all of its applicable resources.

h. Resource Adequacy Products

In D.04-10-035, the Commission defined Resource Adequacy Requirements (RAR) for all Load CPUC-jurisdictional Load-Serving Entities (LSEs). Under this and subsequent Commission orders, each CPUC-jurisdictional LSE is required to acquire RA capacity volumes that are at least 15% greater than its peak load forecast. The peak load forecast may be adjusted by the California Energy Commission (CEC). As the result of this mandate, SDG&E may be required to procure resources solely for the purpose of meeting this RA obligation, rather than to meet customer load. SDG&E may determine that it must execute transactions,



2014 LONG TERM PROCUREMENT PLAN

as a buyer or a seller, in order to meet its RAR needs. In accordance with existing Commission requirements, SDG&E submits a year-ahead RA filing in the October/November time-frame for the following compliance year, as well as month-ahead system and flexible RA filings. These filings are intended to demonstrate that SDG&E has sufficient resources to meet its local, system, and flexible RA Requirements. SDG&E will include any reliability must run (RMR)-related allocations, as well as RA allocations related to capacity procurement that benefits all customers (rather than solely bundled), into its overall local, system, and flexible RA portfolio during the allocation process for both annual and monthly RA filings.

In accordance with D.04-07-028, depending upon the length and timing of need, SDG&E may seek RA products of up to 5 years in length either through bilateral negotiations; through an SDG&E RFO process; or through participation in a counterparty RFO or electronic auction process.^{4/} SDG&E may make excess local, system, or flexible RA supply (*i.e.*, RA in excess of what SDG&E requires to meet its own RA obligations) available to the market. SDG&E may procure excess capacity from resources to enhance local area reliability in order to reduce the chance of the backstop by the ISO as part of the ISO's capacity procurement mechanism Tariff authorization. SDG&E may offer such excess RA products to the market through an RFO process, through a response to a counter-party RFO or through bilateral negotiations with counterparties. Such transactions would be for capacity or rights to capacity, and the related cost would be fully recoverable through SDG&E's Energy Resource Recovery

^{4/} In D.04-07-028, the Commission relaxed the restrictions on negotiated bilateral contracts to allow for the use of bilateral negotiated contracts for capacity and energy from power plants where the purpose is to enhance local area reliability (*mimeo*, p.17 and Ordering Paragraph 1.e.). D.04-07-028 prohibits bilateral negotiations between SDG&E and affiliated third parties.



2014 LONG TERM PROCUREMENT PLAN

Account (ERRA). Current Commission rules permit SDG&E to buy and/or sell products bilaterally when (1) SDG&E is approached by an outside non-affiliated third party seeking to sell or procure short-term RA of one year or less in duration; or (2) SDG&E has a need to procure short term system, local, or flexible RA capacity. SDG&E will periodically brief its PRG on its RA positions. SDG&E may choose to retain all or some portion of excess RA in order to retain surplus RA for use in management of scheduled outage replacement or lowering the CAISO's Standard Capacity Product charges, discussed below.

i. Resource Adequacy Import Counting Rights

Under the current RA rules, LSEs are given an allocation of CAISO intertie capacity that they may use for forecast (in annual and monthly RA compliance filings) imports of RA products to be used to meet their system RA requirement. SDG&E may, during the period covered by the Plan, have a need to either buy more rights than it has been allocated or sell any unused portion of its allocation. These rights convey no physical access to transmission; they are simply an accounting right in RA compliance.

j. Standard Capacity Products

In 2010 the CAISO implemented its Standard Capacity Product (SCP) I Tariff for RA resources; it implemented its Standard Capacity Product II Tariff in 2011. SCP incentivizes and penalizes RA resources that exceed or fail to meet strict availability standards. Availability is calculated based on unit forced outages and temperature related ambient derates. SCP allows scheduling coordinators to substitute RA resources on forced outages with non-RA



2014 LONG TERM PROCUREMENT PLAN

committed resources to avoid SCP penalties or unavailability charges. As mentioned above, to the extent that SDG&E has excess non-RA resources year ahead or month ahead, SDG&E may elect to reserve some or all of the resources for substitution to avoid SCP penalties.

k. Bilaterally Negotiated Contracts for Conventional Resources

Due to the non-standard nature of many of SDG&E's short and long positions, it may be difficult to locate standard products traded on transparent exchanges that fit all of SDG&E's needs for economic purchases, sales and load-serving. In certain instances, a non-standard, structured product negotiated with a single counterparty may produce the best product for SDG&E's portfolio. The advantages of the bilateral approach over a competitive bid process include both timing and flexibility. Bilaterally negotiated transactions are primarily utilized in day-to-day market transactions where RFOs would be impractical due to the continually changing prices for products. Bilateral transactions may also be used for renegotiation of existing contracts where SDG&E has the potential to extract added value for customers as a result of the renegotiated terms. In these instances, the bilateral approach permits greater flexibility and ability to adapt to changing market conditions and the flexible negotiating process allows counter-parties to reach agreement on commercial terms, including price, more quickly and to achieve potentially more creative and beneficial contract commercial terms.

Prior to executing any such structured transaction, SDG&E will compare the economic and operational benefits to its associated premium over dispatching a generation unit, and against purchasing a standard energy product valued against the forward prices covering the



2014 LONG TERM PROCUREMENT PLAN

same period of delivery, and will demonstrate that the product benefits the overall portfolio by reducing net cost or portfolio VaR-to-Expiration (VtE) compared to other products.

In D.03-12-062, the Commission established the following limits on bilateral contracting: (1) for short-term transactions of less than 90 days duration and less than 90 days forward, the utilities are authorized to continue to use negotiated bilaterals subject to the strong showing standard adopted in D.02-10-062, as modified by D.03-06-067, and any such negotiated bilateral transactions shall be separately reported in the utilities' quarterly compliance filings; (2) to purchase longer term non-standard products provided they include a statement in quarterly compliance filings to justify the need for a non-standard product in each case; the justification must state why a standard product that could have been purchased through a more open and transparent process was not in the best interest of ratepayers; and (3) for standard products in instances where there are five or fewer counterparties who can supply the product.^{5/} This authority is limited, however, to gas storage and pipeline capacity. Bilateral products for renewable resources are discussed below in Section II.A.5.c.

I. Procurement Diverse Business Enterprises

SDG&E's annual goals within its overall internal procurement strategies currently include procurement of a portion of its natural gas and electric products requirement from Diverse Business Enterprises (DBE), (*i.e.* minority or women owned businesses). The Commission has indicated that it supports purchases from DBE suppliers. SDG&E intends to negotiate single or multiple monthly arrangements with DBE suppliers either through an RFO

^{5/} D.03-12-062, *mimeo*, pp. 39-40.



2014 LONG TERM PROCUREMENT PLAN

process or bilaterally. These arrangements have the advantage of supporting the DBE businesses, as well as reducing the amount of energy-related products SDG&E must procure on a daily basis, further diversifying SDG&E's overall procurement strategy.

m. Feed-in Tariffs

The Commission has adopted RPS Feed-in Tariffs (FiTs) as a means of encouraging procurement of renewable generation from smaller renewable resources as well as net excess generation from Combined Heat and Power (CHP) facilities. SDG&E currently offers two FiT opportunities: (a) the Renewable Market Adjusting Tariff (Re-MAT) for renewable projects sized up to 3 MW, and (b) the CHP FiT for CHP projects sized up to 20 MW. Both FiTs require that the facilities be located within SDG&E's territory and meet certain eligibility criteria. SDG&E may modify or replace these FiTs, or add additional FiTs, in the future in accordance with the Commission's direction.

n. Inter-Utility Exchanges/Swaps

SDG&E will make use of inter-utility exchanges when the appropriate offsetting position with another IOU results in an effective match. Exchanges may be as short-term as intra-day, where one party delivers morning peaking energy and receives back evening peaking energy. Exchanges may also be peak or off-peak, or reach across seasonal differences in net open positions. Additionally, exchanges may be entered into with municipalities, non-California IOUs, merchant generation companies or trading companies to offset short positions with long



2014 LONG TERM PROCUREMENT PLAN

positions, rather than balancing positions by trading illiquid products and incurring unnecessary transaction costs.

o. Convergence Bidding

Convergence bids are transactions that permit market participants to arbitrage prices between two financially binding energy markets. In the CAISO's case these are the DAM and RTM. If the convergence bid clears in the DAM, the same volume automatically clears in the RTM in the opposite transaction (purchase versus sale). The settlement of this transaction (sales revenue – purchase cost) is determined by the difference between the two market prices and the award quantity. To participate in the CAISO market with convergence bids, a participant only needs to meet the CAISO credit requirements, since the CB product is financial and has no physical delivery requirement.

In D.10-12-034, the Commission authorized SDG&E's participation in the CAISO CB market under three separate strategies. Convergence bids under all strategies are limited to the nodes or locations where the SDG&E-owned or SDG&E-contracted resources or load are physically located. SDG&E is not required to use any of the three bidding strategies and, to the extent it elects to use one or more of the strategies, may apply them flexibly to meet its own circumstances, consistent with the provisions of D.10-12-034. All costs of such participation are recoverable in the SDG&E ERRRA.

The Commission-authorized products for SDG&E include: (1) manage Real-Time price exposure resulting from unanticipated forced outages, derating of generating units, derating of transmission, or uncertain generation performance for resources scheduled by the IOUs in the



2014 LONG TERM PROCUREMENT PLAN

CAISO's DAM; (2) manage the forecast/costs of scheduling of intermittent generation into the CAISO market, for volumes up to, but not exceeding, the amount of the Day-Ahead forecast of intermittent generation in the DAM, followed by buying it back through the convergence sale in the CAISO Real-Time market; and (3) as a defensive convergence bidding strategy in the DAM and RTM to mitigate real harms from market manipulation or other unintended market dynamics. Any SDG&E use of the defensive CB strategy will be reported on a case-by-case basis with actual market and settlement data. SDG&E will report if and how it employed CB strategies intended to protect SDG&E's ratepayers from avoidable risks at identified locations.

SDG&E shall, within one business day of its receipt of notice, provide written notice to the Commission's Executive Director, General Counsel and the Director of the Energy Division of: a) notice from the CAISO or its Department of Market Monitoring that SDG&E is the subject of an investigation pursuant to the CAISO Tariff, including Section 37.8.4; b) notice from the CAISO that the conduct of SDG&E has been referred to the FERC by the CAISO pursuant to the CAISO Tariff, including Section 37.8.2; or c) notice from the CAISO that SDG&E's CB trading has been suspended or limited by the CAISO.

SDG&E's use of CB in the DAM and RTM shall be subject to an absolute stop loss limit on the amount of loss SDG&E can incur from CB, on a rolling 365 day basis, of not more than \$5 million. Exceeding this limit will suspend SDG&E's authorization to participate in CB until SDG&E files a Tier 3 advice letter and receives Commission approval to resume CB. SDG&E will report the following information in its Quarterly Compliance Report (QCR):



2014 LONG TERM PROCUREMENT PLAN

- a. A list of each cleared convergence bid, containing the hour, location, volume, and justification for the transaction;
- b. A list of the Day-Ahead and Real Time prices corresponding with each convergence bid;
- c. For each day the gains or losses, in dollars, as a result of CB;
- d. For that month, and any past months during the calendar year in which convergence bids were transacted, a monthly total of volume, gains or losses (in dollars), the number of times each strategy was employed, and the number of bids conducted outside of SDG&E's service territory;
- e. The approved CB strategies utilized during that time period;
- f. Qualitative analysis of CB impacts upon other related products, such as CRRs; and
- g. A list of any other Sempra affiliates who have or are registered with the CAISO to participate in CB.

In addition, SDG&E shall review its CB strategies, performance and market analysis with its PRG on at least a quarterly basis, beginning with the first quarter in which CB activities commence.

p. Greenhouse Gas Emissions Products

The first auction for GHG emission allowances was held in November, 2012 as part of the State's implementation of Assembly Bill 32. The GHG products SDG&E intends to transact are listed in in Table 1 (d). SDG&E may also purchase emission offsets and other products, as allowed by the applicable regulations. SDG&E's procedures for determining its emission allowance needs and the purchase of the required offsets and allowances are explained in Appendix F.



2014 LONG TERM PROCUREMENT PLAN

q. SO₂ allowances

SDG&E possesses sulfur dioxide (SO₂) allowances and intends to enter into trades of allowances from time-to-time in order to make the highest and best use of any allowances that it possesses.

r. Emissions Reduction Credits

SDG&E has several gas-fired peaking facilities and several combined cycle power plants in its portfolio. SDG&E is responsible for environmental compliance for units that are utility-owned, and would procure Emission Reduction Credits (ERCs) to achieve compliance. SDG&E may also find it cost-effective to buy additional ERCs to expand the hours of dispatch of tolling contracts at units that it does not own. Accordingly, SDG&E may periodically procure these products on the market for use at its generation facilities, at tolling facilities, or to hold for new “in-basin” fossil generation. The market for ERCs is very local in nature and quite illiquid. Such transactions would likely be bilateral, rather than acquired through RFOs or exchanges, and their costs would be recovered through SDG&E’s non-fuel generation balancing account (NGBA). Given the limited amount of ERCs available in SDG&E’s service territory, it is possible that SDG&E may acquire ERCs that it would hold and book as plant held for future use. The cost of such ERCs would be recovered via advice letter or as part of a future general rate case (GRC).

s. Forward Products

SDG&E may procure energy and capacity well in advance of the actual delivery period. As with other physical products discussed in this section, the actual requirement to transact on



2014 LONG TERM PROCUREMENT PLAN

a forward basis may be due to either managing the portfolio's price risk, filling short positions or realizing economic value. Forward transactions may be for standard energy blocks or non-standard structured products, depending on portfolio need and the market used to procure the product. It is important to note that despite its physical position, SDG&E may still elect to make a forward purchase or sale of energy if doing so is in its customers' interest.

t. Indexed Energy

SDG&E may buy energy and capacity products by use of indexed pricing. In this instance, energy is contracted for on terms that are certain as to quantities and delivery times, but the price "floats" based on an agreed upon index. Such transactions allow SDG&E to ensure reliability of supply or market, while stripping away pricing terms for consideration in a risk management strategy.

u. Heat Rate Call Options

A heat rate call option is an option that entitles the holder of the option to purchase power at a strike price that is based on an indexed gas price multiplied by the heat rate, and the seller will collect the premium. This tool is a particularly good means of: (i) realizing value from units with higher than market heat rates because they represent no intrinsic value, but contain extrinsic value due to the volatility of forward prices; or (ii) protecting SDG&E from market heat rate risk.

v. Tradable Renewable Energy Credits

As is discussed in more detail in SDG&E's RPS Procurement Plan and Section II.A.5.c hereof, SDG&E may procure and/or trade Tradable Renewable Energy Credits (TRECs). To



2014 LONG TERM PROCUREMENT PLAN

date, SDG&E's procurement of long-term TRECs has occurred through PPAs, however liquid markets for short-term renewable products have become available and may be accessed.

w. Congestion Revenue Rights

Under the CAISO's Market, hedging of exposure to congestion costs is managed through the Congestion Revenue Rights (CRR) process conducted by the CAISO. Under the CAISO's process, each LSE receives a certain allocation of CRRs based on its relative market share, and can use this allocation to bid on available CRRs in the CAISO CRR allocation process. The CAISO currently conducts multiple phases of CRR allocations. In addition to the CRRs allocated to the various LSEs, each LSE also has the opportunity to compete with all market participants for additional CRRs through a supplemental auction process held after the initial auction process is completed.

SDG&E utilizes CRRs to manage forecasted congestion on the CAISO system. In the Market structure, the CAISO is responsible for managing congestion on the grid and at interties. While SDG&E continues to manage congestion risk, and may choose to sell off certain resources/products rather than import them if it can do so at a cost less than importing the resource/product and incurring the congestion cost, there are situations where SDG&E may have to incur the congestion costs, either because it cannot economically sell the resource short-term or because it is contractually obligated to purchase and/or import the resource.



2014 LONG TERM PROCUREMENT PLAN

In Resolution E-4124, the Commission granted, with criteria for implementation, SDG&E's request for authority to convert CRRs allocated to it in Tiers 1 and 2 of the CAISO CRR allocation process into long-term (10 year) CRRs, in conformance with the rules established in the CAISO tariff.^{6/} In this approval, the Commission required that such long-term CRRs be used for hedging of expected use of the transmission grid and that long-term CRRs not be acquired for speculative purposes.

In Resolution E-4136, the Commission granted, with criteria for implementation, SDG&E's request^{7/} for acquisition of CRRs. Authorization conferred in that resolution: (1) allows SDG&E to acquire CRRs through the CAISO tariffed allocation and auction program in volumes as limited by the CAISO tariff and SDG&E's expected grid use, and allows SDG&E to transact in secondary CRR markets; (2) requires that SDG&E use CRRs for hedging and not for speculation; (3) requires consultation with the PRG and the Commission's Energy Division prior to nominating CRR quantities, where the nominations are based upon forecast valuation established by SDG&E; and (4) requires reporting of CRR transactions in the QCR. A description of how SDG&E manages CRRs is contained in Appendix D.

x. CRR and Non CRR Locational Swaps

SDG&E may have certain resources or contracts for energy, in which the delivery location is outside of its service territory. These would include, for example, power from the Yuma cogeneration plant in Yuma, Arizona, the long term PPA for delivery at Nevada Oregon

^{6/} AL 1920-E, filed August 3, 2007.

^{7/} AL 1926-E, filed September 14, 2007.



2014 LONG TERM PROCUREMENT PLAN

Border (NOB), and various other PPAs, which must be imported into the CAISO grid for delivery. Due to the risk of congestion charges and potential curtailments across transmission paths, SDG&E may elect not to import power from these units, but to instead sell the power at the delivery point and purchase replacement power in SP15 or another location with less congestion risk.

In addition, SDG&E may in certain circumstances have more CRRs than resources at a particular inter-tie. SDG&E may choose to monetize these surplus CRRs by purchasing power at one location and selling it at SP15, if it is economic to do so. This would be considered a locational swap.

y. Third-Party Transmission Capacity

SDG&E will consider purchasing non-CAISO transmission capacity made available by a number of parties in operation in the Western Electricity Coordinating Council (WECC) on the Open Access Same-Time Information Systems (OASIS). OASIS is a bulletin board open to many parties that sells transmission capacity at regulated rates. Such capacity will allow SDG&E to access markets such as the Pacific Northwest during the spring run-off season and the Desert Southwest during certain shoulder and off-peak hours. Transmission may also be required to garner deliveries under exchange agreements or other structured transactions. SDG&E intends to purchase third-party non-CAISO transmission capacity from time-to-time on an opportunistic basis, should its analysis show that such transactions will help to reduce the overall cost of delivered energy for ratepayers.



2014 LONG TERM PROCUREMENT PLAN

z. Energy Storage Products

Pursuant to the Energy Storage Decision (D.13-10-040) and its Energy Storage Procurement Application (A.14-02-006 filed February 28, 2014), SDG&E will seek to acquire energy storage through four bi-annual solicitations. The first of these solicitations will be issued in 2014 as a part of the 2014 All-Source RFO authorized by the Track 4 Decision (D.13-10-040). The Energy Storage Decision sets a goal for SDG&E to procure 165 MW of energy storage to be installed no later than December 31, 2024. Additionally, the Track 4 Decision requires that SDG&E procure at least 25 MW of energy storage as part of its local capacity resource (LCR) requirement. Energy storage resources procured through the 2014 All-Source RFO will count toward the requirements of both the Energy Storage Decision and the Track 4 Decision.

5. Procurement Contracting Methods and Practices

SDG&E describes below its procurement methods and practices for: (a) short- and medium-term transactions; (b) long-term transactions; (c) RPS transactions; (d) CHP and Qualifying Facility (QF) transactions; (e) local and system RA transactions; and (f) once-through cooling (OTC) resource transactions. SDG&E will utilize the authorized products and mechanisms detailed above for purchasing, selling and contracting for resources. The actual quantities transacted through any one of these means are a function of SDG&E's need, capacity limits, the product availability and pricing. The products listed herein may not always perfectly match the needs of SDG&E's portfolio. Hence, the need may arise to pursue structured products through bilateral transactions. As discussed in Section II.A.4.o, above, in



2014 LONG TERM PROCUREMENT PLAN

considering whether to enter into a bilateral transaction, SDG&E would perform an analysis to ensure that any product considered on a bilateral basis is priced competitively relative to its value to the portfolio and against alternate physical energy products.

a. Short- and Medium-Term Transactions

Short-term transactions are also discussed in Sections II.A.2.c, II.A.3 and II.A.4 and Appendices C, D, E and F. SDG&E bids its supply and its load into the CAISO DAM, and the CAISO will determine the most economic solution for supplying load with available supply. SDG&E will transact in the spot market as a hedge against the CAISO DAM and RTM prices. The transactions may be either physical and/or financial and may be performed day-ahead or day-of. Spot transactions may include the purchase and/or selling of energy during periods of over-supply or to meet least-cost dispatch obligation when contracts/units are economic to dispatch. Spot transactions are typically executed either day-ahead or in real-time in advance of the delivery period at fixed or indexed prices. Spot transactions are performed either through exchanges (including voice brokers) or directly with counter parties on a bilateral basis, and may include but are not limited to, firm and non-firm energy supplies, capacity products and financial swaps. The primary objective of spot transactions is to manage the physical supply/load balance at competitive prevailing market prices. The Commission has provided guidance that IOU spot market transactions should be less than 5% of total load, it has also ordered the IOUs to follow least-cost dispatch. In CAISO's Market, both supply and



2014 LONG TERM PROCUREMENT PLAN

demand are bid into and purchased through the market. As such SDG&E will ensure that not more than 5% of its demand is met by the purchase of bilaterally (outside the CAISO market) transacted physical resources.

Below is a list of some of the key processes SDG&E will utilize to execute short- to medium-term transactions:

- **Exchanges:** Exchanges can include a broad group of distinct markets such as electronic auctions and electronic trading platforms. Broker markets are the manual equivalent to electronic exchanges in that brokers have access to a wide pool of buyers and sellers and convey this pricing information to all participants, creating the same price transparency as electronic exchanges, and therefore should be considered exchanges. In addition to creating price transparency, exchanges and brokers create liquidity in the market by attracting large numbers of buyers and sellers into a single arena. This increased liquidity creates the greater competition amongst participants.

Another common characteristic of exchanges is their “double blind” nature. That is, the buyers and sellers are unknown to each other prior to being matched up by the broker/exchange. This allows for transactions with affiliates to be conducted without raising concerns about undue preferential treatment. Lastly, exchanges tend to deal in standard products. This is the trade-off for increased liquidity; the most successful exchange-traded products are those that allow all products and terms to be standardized. Many highly structured products, such as tolling arrangements for specific power plants or locational swaps for two thinly traded locations, do not have a broad enough market to create standard traded products.

The simplicity of the exchanges/broker markets are part of their appeal. Access to pricing on standard products usually reduces the selection criteria down to a single determinant: price. Exchanges and brokers usually allow participants to be selective about with whom they are matched while preserving anonymity. For instance, a participant can elect to “turn off” any particular counterparty for any reason such as a lack of established credit terms, and these two participants will not be matched. Voice brokers offer a similar service on a manual basis, and can provide pricing for non-standard products that are not currently available through electronic exchanges.



2014 LONG TERM PROCUREMENT PLAN

Exchanges provide timely and transparent pricing information by essentially reporting, in real time, the best current market prices and volumes available for transaction. The types of products most frequently procured through exchanges/brokers are standard energy products including baseload gas, 6x16 power, financial products and CAISO products such as Ancillary Services. SDG&E also intends to use exchanges for procurement of GHG products. Exchange and broker fees are recovered through SDG&E's ERRA. SDG&E intends to use the exchanges listed in Table 1 (e) to trade energy and GHG products for terms ranging from day-ahead to multi-month or longer.

- **Inter-dealer (Voice) Brokers and Exchanges:** SDG&E uses voice brokers and electronic exchanges for its procurement and hedging activities. Fees charged for these brokerage services will be submitted for recovery under the ERRA.
- **Online Auctions:** Online auctions are platforms provided by a third party that allow SDG&E to conduct auctions with selected parties through the third party's Internet website. The auctions are conducted securely (counterparties cannot see each other's offers/bids) and relatively quickly and are typically used for transactions involving short-term products, although these auctions can also be utilized for long-term transactions. The auctions may, in certain situations, provide benefits including additional price transparency and/or additional market liquidity. SDG&E may choose to use online auctions as part of its procurement strategy if it believes there is added value provided by doing so, and may enter into one or more agreements with providers of this service.
- **Instant Messaging:** SDG&E uses IM to transact with counterparties in certain situations. SDG&E will utilize IM to transact with brokers and other counterparties for both standard and non-standard/physical and financial products. SDG&E will typically use IM when transacting bilaterally since it provides an efficient way to seek offers from multiple counterparties simultaneously for a particular product or set of products, allowing SDG&E to choose the best price for certain products being bought or sold on a particular day and time. IM can also help reduce broker fees if SDG&E is able to transact for a particular product with a counterparty rather than a broker. IM is also used to schedule both gas and power and to purchase or sell physical power at CAISO intertie points as it is more efficient to transaction through IM compared to performing the same duty over the phone or email. Because this form of transaction is not "double blind" and will not involve an IE given the speed at which it is conducted, SDG&E will not transact with affiliates through this means.
- **Open Season:** Open Season is defined as a designated time period in which potential customers for a proposed transmission or storage project must submit their



2014 LONG TERM PROCUREMENT PLAN

service elections for capacity to the interstate pipeline, utility, or storage provider. For the PUC-regulated utilities, noncore customers that do not elect firm capacity during an open season may receive default service, or they may continue to receive service based on prior elections depending upon tariff provisions and available capacity.^{8/} When seeking to procure gas transportation or storage, SDG&E will likely participate in Open Seasons held by providers of those services.

- **Bilateral Transactions:** It may be necessary for SDG&E to transact directly with a counterparty under certain circumstances, including but not limited to when there exists a lack of liquidity through exchanges and broker, a need for expediency, a favorable pricing opportunity, etc.

Those products that are not readily available through exchanges or brokers would be considered non-standard. Non-standard products may be purchased for terms longer than one calendar quarter and/or with delivery beginning longer than one calendar quarter forward. Since these products are dynamic in nature and their availability is often subject to time constraints, it would not be practical to seek approval through an advice letter filing. Table 1(c) below contains the products that would qualify as non-standard. SDG&E will revise this list as needed.

^{8/} See CPUC Glossary of Acronyms and Other Frequently Used Terms:
<http://www.cpuc.ca.gov/PUC/glossary>



2014 LONG TERM PROCUREMENT PLAN

Table 1(c)
Authorized Non-Standard Products
Electricity Transmission Products
RA Sales
RA Import Counting Rights
Park & Loan
Natural Gas Storage
Natural Gas Transportation
Natural Gas Imbalance
Locational Physical and Financial Options
Heat Rate Options

As discussed in Section II.A.4.o, for transactions with a term longer than three months, the Commission’s preferred means of utility procurement is through an RFO. For certain short-term transactions offering ratepayer benefits, however, it may be impractical to use an RFO process for purchases. In instances where purchases or sales are made outside of an RFO process, depending upon the length and type of product procured, SDG&E will document the transaction using available and relevant market data and include it in its compliance filings in ERRA and/or the QCR.



2014 LONG TERM PROCUREMENT PLAN

(i) Contract Duration Pre-Approval Limits

In D.07-12-052, the Commission clarified the applicability of pre-approval rules to certain procurement contracts. The Commission's discussion, set forth below, is incorporated into this LTPP:

- IOU may execute a contract of under five years without pre-approval for which deliveries end at any point within the 10-year LTPP procurement cycle, provided the procurement complies with a procurement limit methodology (which various parties refer to as a ratable rate, laddering or layering methodology) developed by the IOU and approved by a Commission resolution or decision.
- In calculating contract duration, calendar days are used, not days of obligation, days of service under the contract or days of need for the resource.

(ii) Capacity Contract Procurement Limits

In D.12-01-033, the Commission ordered SDG&E to incorporate capacity procurement limits. Procurement position limits and maximum rates of transaction (referred to as "ratable rates") apply to electrical capacity transactions for delivery months that occur two or more calendar years beyond the transaction year (e.g., for transactions occurring in 2012, limits would apply to contract deliveries in 2014 and beyond). SDG&E has no limits on its ability to meet its RA capacity requirements for the current calendar year and prompt calendar year (i.e., the calendar delivery year immediately following the current year). SDG&E will file an annual (or more frequent, if necessary) update to its electrical capacity procurement limits and ratable rates in a Tier 1 advice letter during years in which SDG&E does not file an updated conformed bundled procurement plan.



2014 LONG TERM PROCUREMENT PLAN

Delivery years two through ten shall have maximum annual position limits equal to the difference between (1) SDG&E's forecast electrical capacity requirement to meet its RA requirement (*i.e.*, peak annual hour load using a 1-in-2 year load forecast multiplied by 117%), and (2) the forecast Net Qualifying Capacity (NQC) of SDG&E's committed resources and planned for preferred resources. SDG&E's procurement of electrical capacity as measured by the NQC of the resource, exclusive of preferred resources, cannot exceed the applicable annual position limit in years two through ten. For purposes of calculating annual electrical capacity limits and compliance with such limits, preferred resources are energy efficiency (EE) programs, DR programs, renewable resources, and distributed generation (DG).

Ratable rates shall apply to SDG&E's procurement of electrical capacity. The maximum rate of transaction shall equal the annual position limit divided by the time difference between the applicable delivery year and transaction year. For example, the ratable rate for contract deliveries in Year 4 would be one-third of the annual position limit for Year 4 (*i.e.*, Year 4 annual position limit divided by the annual time difference between Year 4 and Year 1). These ratable rates accumulate year-to-year, producing cumulative ratable rate limits for each delivery year equal to those defined in Table H-1 of Appendix H.

Furthermore, the ratable rate methodology allows for procurement of two times the ratable rate for delivery Year 2 through Year 5 (*e.g.*, for transactions occurring in 2012, delivery years 2014-2017 are eligible for two times the ratable rate when certain market conditions are present, subject to the corresponding delivery year's annual position limit).



2014 LONG TERM PROCUREMENT PLAN

The operative ratable rate limit for delivery Year 2 through Year 5 shall be set as follows:

1. Two times the ratable rate if the prompt 12-month forward on-peak implied market heat rate is less than the two standard deviation historical high value contained in Table H-2 of Appendix H; and
2. One times the ratable rate if the 12-month forward implied on-peak market heat rate is greater than or equal to the two standard deviation historical high value contained in Table H-2 of Appendix H. The ratable rate limit for delivery Year 6 through Year 10 is one times the ratable rate.

b. Long-Term Transactions

In D.07-12-052, the Commission stressed that it does not favor “just in time” resource acquisition and directed the IOUs to begin procurement on a timeline that takes into consideration project development cycles. SDG&E sees the value of RFOs in longer-term procurement where it is procuring highly-structured, non-standard products and no transparent pricing exists, or where products may be standardized, but no exchange exists on which to trade them. An example of a non-standard product is a complex tolling arrangement.

SDG&E’s RFOs generally follow an established process:

- (i) Analysis is performed to determine the portfolio need and to define the best products to fill that need, given all constraints that exist on procurement, including the State’s preferred Loading Order, GHG emission reduction measures, RPS goals, intra-zonal congestion, and system and local RA requirements. SDG&E will issue either all-source or resource-specific (*i.e.*, soliciting either renewable or conventional resources) solicitations, depending on the identified need it intends to fill. In certain circumstances, SDG&E may limit participation such as where regulatory/statutory targets or “set asides” create a need to buy or to limit procurement of certain resources (*e.g.*, renewables). In such a case, relative prices among different potential resources is not the primary consideration, but relative prices within the targeted set of resources (*e.g.*, renewables or CHP). Local RA and RFOs targeted to add new generation needed for grid reliability are another form of “set aside” where the concerns



2014 LONG TERM PROCUREMENT PLAN

regarding the pure economics of procurement may be outweighed by other policy concerns, such as the need for new construction to meet reliability needs.

- (ii) RFO documents are created. This is a multi-disciplinary task, utilizing subject matter experts from the procurement, resource planning, legal and credit functions. The draft RFO typically includes a detailed description of products sought and any requirements that must be met, the term of the products, the minimum or maximum quantities being sought, a description of the data that must be returned with a valid, conforming offer, a draft term sheet that outlines the commercial arrangements that will form the basis of the contract negotiated with the successful bidder, and the administrative schedule of the solicitation. In creating RFO bid documents, SDG&E will consult with its IE, PRG and the Commission's Energy Division on the type and quantity of products to be solicited, the evaluation process and criteria to be used in ranking offers and any unique considerations in the RFO. In the event that the IE, PRG, or Energy Division staff have differences of opinion with SDG&E regarding any aspect of the RFO, SDG&E will work with Energy Division staff to resolve such issues prior to release of the RFO, to the extent possible.
- (iii) Bid evaluation criteria are prepared. In order to ensure equitable treatment of all RFO participants, it is necessary to have a pre-established method for evaluation of offers. The evaluation methodology applied will vary in accordance with the nature of the products being solicited. Section II.A.5.b describes the factors that will be included in the evaluation criteria. SDG&E will work with its IE and PRG to establish and refine its evaluation criteria on an RFO-by-RFO basis.
- (iv) The RFO is distributed to the market. In order to achieve the RFO goal of maximum liquidity and competition, SDG&E uses the broadest possible distribution list for e-mailing the RFO document directly to potential bidders. This typically starts with the Western Systems Power Pool (WSPP) membership list and is expanded to include past RFO participants and any party that has shown an interest or is known by SDG&E to be capable of providing the resources sought in the RFO. Information regarding the status of the RFO and responses to bidder questions are routinely provided as updates to interested participants.
- (v) SDG&E evaluates the bids received. At the conclusion of the evaluation process, it will present its shortlist to the PRG, including the rationale for the disposition of every selected and rejected bid. The Commission will then approve or reject the submitted shortlist.



2014 LONG TERM PROCUREMENT PLAN

- (vi) Contract negotiation is undertaken. Even where a pro-forma contract is developed for the RFO, the contracting stage can be a time-consuming series of negotiations. Contracts represent a collection of agreements on a multitude of risk sharing provisions. Negotiations are an opportunity for both sides to create a balance in the contract terms that captures the issues most important to each side. These negotiations tailor the contract to a specific counterparty that was a successful bidder – it is impossible to develop a pro forma contract that accounts for all of the preferences of an unknown counterparty. Credit is a good example of one such “deal point” to be negotiated, as it is one of the many risks that is governed by language in the contract. SDG&E may choose to lower credit requirements, unless such requirements are pre-established by a Commission decision, as a trade-off for some other risk mitigation in the contracting process. This makes credit requirements fluid and difficult to standardize, as discussed in the credit section of this LTPP. This negotiating stage makes the RFO process somewhat similar to bilateral contracting; however the negotiations cannot move the original transactions too far from the product that was bid on by all other RFO respondents. This is one area where IE oversight is useful.

Other steps or processes enter into the conduct of RFOs from time to time. In conducting Request for Bids (RFBs), where SDG&E is selling to the market, SDG&E may employ a reserve price. Such a price would be designed to ensure that ratepayers do not experience a significant loss in the market. For instance, if an RFB receives only a single response, and that bid is for a penny, the ratepayers are protected if the RFB is designed with a reserve price that is set closer to market value of the product. In such case, the RFB would fail due to a lack of bids at or above the reserve price and SDG&E could hold onto the product it seeks to sell and launch a redesigned RFB, or devise another means of attracting more buyers closer to the expected market value. The value of the reserve price would be reviewed with the IE and the PRG.



2014 LONG TERM PROCUREMENT PLAN

The Commission has established requirements regarding when procurement contracts must be filed for pre-approval. In general, contracts with a duration of five years or longer must be submitted to the Commission for pre-approval.^{9/} Thus, SDG&E will apply the guidelines established in D.07-12-052, *et seq.*, in order to determine whether a procurement contract must be filed with the Commission for prior-approval. In addition, in accordance with D.07-12-052, SDG&E will “publicly reveal the names of winning bidders, a description of the product and the contract term, within 90 days of when the IOU files an application with the Commission for approval of the contract.”^{10/}

The standard products described herein may not match the needs of the SDG&E portfolio in every instance. Thus, the need may arise to pursue structured products through bilateral transactions. As stated above, in considering whether to enter into a bilateral contract, SDG&E would perform an analysis to ensure that any product considered was priced competitively relative to the portfolio of alternate products that could meet the designated need.

(i) Application of Least-Cost Best Fit Analysis in Procurement Transactions

The least-cost, best fit (LCBF) analysis is the analytical portion of the selection process for a given candidate product for procurement where the function of the evaluation is to apply consistent criteria to determine what options best match SDG&E’s portfolio requirements. For

^{9/} D.04-012-048, as further clarified in D.07-12-052, *mimeo*, p. 171.

^{10/} D.07-12-052, *mimeo*, p. 269.



2014 LONG TERM PROCUREMENT PLAN

example, meeting the physical, RA, energy, and ancillary services needs, and doing so at the lowest cost to ratepayers from among the competing options. While some general principles remain the same, the analysis to be performed on each potential transaction will need to be tailored to the circumstances. SDG&E will review the specific LCBF analysis for each RFO with its PRG and IE prior to receiving bids in any RFO process.

In general, all LCBF processes will:

- Analyze the candidate options to determine the cost of the transaction relative to other known alternatives.
- Apply constraints such as meeting target goals/set asides in various programs and honoring recognition of physical constraints.
- Normalize a multitude of non-standard attributes from differing types of resources and the impacts on the entire portfolio.

(ii) Competitive Bid Solicitations (Request for Offers)

The key characteristic of competitive bid solicitations such as RFOs is their utility in bringing together the largest possible number of market participants to make offers to sell, thus promoting liquidity, competition and price discovery. These benefits must be balanced against another, less favorable, characteristic of RFOs, namely that the RFO process is very slow relative to the volatility of market prices and leaves the portfolio exposed until contracts are negotiated and signed. SDG&E sees the value of RFOs in medium to long-term procurement where it is procuring highly structured, non-standard products and no transparent pricing exists, or where products may be standardized, but no exchange exists on which to trade them. Further, RFOs are administratively costly due to the extensive contract negotiations required to cover deal-specific commercial, legal and credit terms, which themselves may add



2014 LONG TERM PROCUREMENT PLAN

additional risk to SDG&E customers. SDG&E regularly evaluates the needs of the portfolio to determine whether RFOs present advantages to the alternative of spot trades, exchange traded products, bilateral transactions or some combination thereof. The administrative overhead of RFOs makes them unsuited for shorter term procurement.

Examples of non-standard products include complex tolling arrangements or new capacity additions. Examples of standard products that SDG&E may buy or sell through RFOs include RA capacity. In certain instances non-standard and standard products may be combined (*i.e.* tolling arrangements that include RA). In D.08-11-008, the Commission modified the requirements for use of an IE, such that: (i) SDG&E is required by the Commission to use an IE in the solicitation process for products of greater than two years in duration and (ii) SDG&E must employ an IE wherever an affiliate bidder is present, regardless of contract duration.^{11/} The contract duration clock begins: (1) at the time the contract resources begin delivery or the product is made available, if delivery or availability of the product occurs within one year of contract execution; or (2) at the time of contract execution, if delivery or availability does not begin within one year of contract execution. Further, to ensure that an IE is retained in all cases where an affiliate may participate in an SDG&E RFO process, the Commission requires that SDG&E address the possibility of affiliate bids by designating at the outset of an RFO whether such bidders are allowed to participate. If SDG&E elects not to make such a determination upfront, SDG&E will either require that all parties that intend to

^{11/} D.08-11-008, *mimeo*, p. 27 and Ordering Paragraph 2.



2014 LONG TERM PROCUREMENT PLAN

participate in an RFO submit a notice of intent early in the RFO process such that an IE can be retained before bids are received or designate at the outset of the RFO that an IE will be used.

In D.04-12-048, the Commission defined “all-source” RFOs as, “open to all resources (conventional/renewable - turnkeys, buyouts, and PPAs).”^{12/} SDG&E interprets this literally as meaning that any resource that can fit the identified need is eligible to participate, but it is important to note that not all resources fit all needs. For instance, a run-of-river hydro project cannot fit a baseload need and a remote project cannot fulfill an in-basin grid reliability need for SDG&E. The Commission recognized this in D.04-12-048: “the IOUs have the flexibility to tailor their RFOs to reflect their specific resource needs.”^{13/} SDG&E cannot in this document present an all-inclusive list of caveats to the term “all-source.” However, SDG&E will endeavor to be as inclusive as possible in order to ensure the largest possible pool of products to meet procurement needs. Also, SDG&E will identify the products sought in each all-source RFO as clearly as possible so that bidders may evaluate for themselves whether or not their product will qualify. In the event that SDG&E seeks to procure a product not authorized in the LTPP, it will make a “showing in advance, through advice letter, that unusual or extreme circumstances warrant such an action.”^{14/}

^{12/} D.04-12-048, *mimeo*, Ordering Paragraph 26a.

^{13/} *Id.* at p. 141

^{14/} See D.07-12-052, *mimeo*, p. 150.



2014 LONG TERM PROCUREMENT PLAN

(iii) Procurement of Utility-Owned Generation

The Commission has recognized that there are instances in which a utility proposal for UOG projects is reasonable and in the best interest of ratepayers.^{15/} To the extent SDG&E seeks UOG projects, in accordance with D.12-04-046, it will not solicit such projects through its RFO process and will instead seek approval for UOG through the certificate of public convenience and necessity (CPCN) process^{16/}.

Before SDG&E can seek a CPCN for a UOG project, it must demonstrate that an RFO has failed. SDG&E must file a Tier 3 advice letter setting forth the reasons why the RFO has failed^{17/} and this result must be confirmed by the RFO's IE.

Once the Commission has issued a resolution determining that an RFO has failed, the utility may submit an application for a UOG project. SDG&E will propose a UOG project only in the following circumstances.^{18/}

- Market Power Mitigation: The IOU must make a strong showing that as a result of some attribute of the desired resource, a private owner would have the ability to exert significant influence over the price of its development or of the price and quantity of its output (energy, capacity or AS).
- Preferred Resources: Resources that further the State's environmental policy objectives.
- Unique Opportunity.

^{15/} See *id.* at pp. 200-201.

^{16/} Note that D.12-04-046 does not apply to UOG that is a "proposed eligible renewable energy resource" under Public Utilities Code § 399.14. D.12-04-046, *mimeo*, p. 30.

^{17/} One such reason might be the utility's good faith belief that a specific UOG proposal would provide greater ratepayer benefit than any of the offers in the RFO

^{18/} See D.07-12-052, *mimeo*, p. 211.



2014 LONG TERM PROCUREMENT PLAN

- Reliability: Resources needed to meet specific, unique reliability issues (particularly under circumstances in which it becomes evident that reliability may be compromised).
- If new resources are required in the near-term and the only means of developing new resources in a sufficiently timely manner is via UOG.
- In accordance with Commission direction.

SDG&E must include analysis that puts UOG and PPA projects on equal footing, and includes all project costs, as required by D.12-04-046.

Ratemaking for UOG projects discussed above will be handled on a case-by-case basis with proposals made in each individual application. The former cap on recovery of costs of UOG projects, established in D.04-12-048, is removed.

(iv) Procurement Positions

The purpose of this LTPP is to document the upfront standards that govern SDG&E's procurement activity. Appendix A set forth forecast long/short positions for energy and RA. These short positions are based on forecasts, which will almost certainly change, and are merely illustrative. SDG&E's procurement efforts will be undertaken in accordance with updated forecasts and the upfront guidelines found in this Plan. SDG&E keeps its PRG up-to-date on current positions.

c. RPS Transactions

(i) Overview

In accordance with Commission direction, SDG&E separately prepares for Commission approval an RPS Procurement Plan (RPS Plan), which provides a detailed description of SDG&E's RPS procurement strategy. As is described in more detail in SDG&E's RPS Plan,



2014 LONG TERM PROCUREMENT PLAN

SDG&E's RPS procurement strategy is designed to maintain compliance with existing RPS mandates, as well as with SDG&E's commitments related to the Sunrise Powerlink. The RPS Plan establishes a trajectory to meet a 33% renewable energy target by 2020, within a LCBF framework.

As explained in the RPS Plan, in order to accomplish its renewable energy procurement goals, SDG&E will implement a procurement strategy that includes soliciting contracts through RPS-specific RFOs. SDG&E will periodically issue RFOs seeking offers for renewable resources, in accordance with RPS requirements established by the Commission and the CEC. The RFOs will solicit bids from all RPS-eligible technologies located anywhere in California, to the extent such projects are eligible for the RPS program, as well as outside of California. Requirements are described in more detail in SDG&E's RFO documents submitted with its RPS Plan. SDG&E's RFOs may solicit products such as capacity, energy services, and TRECs from existing repowered, upgraded or new facilities. SDG&E will evaluate all resources using the LCBF evaluation methodology that has been reviewed by its IE.

In addition, SDG&E will consider bilateral contracting opportunities presented to SDG&E that comply with RPS program requirements, fit SDG&E's resource needs, are competitive when compared against recent RFO offers and provide benefits to ratepayers. SDG&E will also consider utility ownership or investment when SDG&E's economical and prudent participation enhances the viability of the project and provides benefits to ratepayers. Finally, SDG&E will offer FiTs and any other mandatory renewable procurement programs in accordance with Commission requirements.



2014 LONG TERM PROCUREMENT PLAN

(ii) Supply and Demand to Determine the Optimal Mix of RPS Resources

SDG&E has been successful in adding renewable resources in previous solicitations that represent a diversified portfolio of technologies suitable for SDG&E's resource needs. SDG&E's goal is to continue to promote a renewable mix that is wide-ranging in technology types and allows SDG&E to pursue a combination of both power purchase and ownership options, including turn-key and joint ventures. SDG&E's ability to make upfront decisions regarding an optimal mix of renewable resources is limited inasmuch as the Commission's RPS rules do not allow a utility to delay procurement in order to wait for "optimal" resources to be offered into its solicitations. The evaluation methodology, in accordance with RPS rules, involves an assessment based upon quality, viability, price and terms of offers submitted. In essence, SDG&E is required to meet RPS requirements in the most expeditious and cost-effective manner. SDG&E may be prevented from procuring a particular technology due to the lack of offers, or lack of cost-attractive offers.

(iii) The Use of Flexible Compliance Mechanisms

As explained in its RPS Plan, SDG&E may utilize, consistent with existing RPS rules, flexible compliance mechanisms in order to satisfy RPS program goals. Specifically, SDG&E may utilize flexible compliance mechanisms such as: (1) the ability to sign bilateral agreements, including short-term contracts; (2) the ability to bank purchases in excess of compliance period targets; (3) the ability to withdraw from its RPS procurement bank to make up for purchase shortfalls; and (4) other flexible compliance mechanisms, as permitted.



2014 LONG TERM PROCUREMENT PLAN

(iv) RPS Portfolio Optimization

Once SDG&E has determined its RPS need, it continually reviews its portfolio to minimize costs, maximize value and manage risk. Generally, if SDG&E foresees a shortfall then it will procure additional resources; if it foresees an excess then it may seek to sell a portion or all of this excess, depending upon the results of a detailed cost/benefit analysis of banking versus selling of excess procurement.

d. Procurement Method for CHP and QF Resources

In D.10-12-035, the Commission approved a CHP Program Settlement between interested parties. The Settlement establishes a new CHP Program and, for QFs greater than 20 MW, a transition from a program approved by the Commission pursuant to its authority under the Public Utility Regulatory Policies Act (PURPA)^{19/} to a new program that includes competitive solicitations.

As a result of the Settlement, SDG&E will have established procurement targets for the first program period (Settlement Effective Date through 48 months) of 160 MW, the second program period (end of first program period through 2020) of 51 MW, and additional GHG Emissions Reduction Targets (2015 through 2020). The MW Targets are based on the contract nameplate^{20/} for the CHP facility and the MW SDG&E must procure. As an example,

^{19/} 16 United States Code (U.S.C.) Sec. 8241-3(d), *et seq.*

^{20/} For existing CHP facilities, the amount that counts toward the MW target is the contract nameplate value listed on each IOU's July 2010 Cogeneration and Small Power Production Report. For new CHP facilities, the amount that counts toward the MW target will be established by a Capacity Demonstration Test.



2014 LONG TERM PROCUREMENT PLAN

a CHP facility with a 40 MW contract nameplate that uses 20 MW at its facility and sells 20 MW to SDG&E, will count as 40 MW against the procurement targets.

The following types of CHP procurement will count towards the CHP MW and/or GHG Emissions Reduction Targets: CHP PPAs obtained through RFOs, bilaterally negotiated PPAs and amendments, Optional As-Available PPAs, PPAs for QFs 20 MW or less, AB 1613 PPAs, IOU-owned CHP, Utility Prescheduled Facilities,^{21/} and new behind the meter CHP facilities. To the extent SDG&E is unable to meet its procurement targets, it will make a showing to justify its inability to meet the targets. Lack of sufficient offers, the efficiency of the CHP facility, excessive offer prices and amount of GHG emissions reductions are valid justifications for missing the MW and GHG Emissions Reduction Targets. Lack of need or portfolio fit arguments are not justifiable reasons for failure to procure the MW Targets, but are reasons to justify an inability to meet the GHG Emission Reduction Targets.

SDG&E will conduct CHP-only RFOs, in accordance with Settlement requirements. SDG&E may also solicit CHP resources through all-source RFOs.

e. Local and System Resource Adequacy Transactions

SDG&E anticipates that it will have both long and short positions in RA at various points in time. A discussion of how SDG&E manages its RA positions on an annual basis is contained in Section II.A.4. SDG&E attempts to procure the majority of RA products for one year or more in duration, through the RFO process.

^{21/} Utility Prescheduled Facility is defined in the CHP Settlement as an existing CHP facility that has changed operations to convert to a utility controlled scheduled dispatchable generation facility, including but not limited to an Exempt Wholesale Generator.



2014 LONG TERM PROCUREMENT PLAN

f. Once Through Cooling Resource Transactions

The California State Water Resources Control Board (SWRCB) has adopted a *Statewide Policy on Use of Coastal and Estuarine Waters for Power Plant Cooling* regarding retirement of generating facilities that rely on OTC technology.^{22/} In D.12-04-046, the Commission established interim guidelines regarding contracting with OTC facilities.^{23/} Accordingly, SDG&E may, as appropriate, enter into PPAs with OTC facilities subject to the conditions described in sub-sections (i) through (iii) below. However, such agreements may not commit to purchases beyond the applicable SWRCB OTC compliance deadline, except as specifically provided in Section II.A.5.f.iv. In addition, any RFO or other solicitation evaluation for OTC procurement must take into consideration the resource's use of OTC technology.

(i) OTC Contracts with a Duration of 2 or Less Years

OTC Contracts with a duration of two years or less are subject to the Commission's standard procurement rules. If, however, the PPA terminates one year or less prior to the applicable SWRCB compliance deadline, that agreement must be submitted to the Commission for approval via a Tier 3 advice letter. Such advice letter must specifically show how the agreement helps facilitate compliance with the SWRCB policy regarding OTC.

^{22/} See http://www.swrcb.ca.gov/water_issues/programs/ocean/cwa316/policy.shtml accessed on May 10, 2012).

^{23/} D.12-04-046, *mimeo*, pp. 25-27; The Commission has indicated that "OTC issues will be examined further, either in a later phase of this proceeding or in a successor proceeding." *Id.* at p. 27.



2014 LONG TERM PROCUREMENT PLAN

(ii) OTC Contracts with Durations Greater Than 2 but Less Than 5 Years

OTC Contracts with durations longer than two years but less than five years must be submitted to the Commission for approval via a Tier 3 advice letter. Such advice letter shall include the following criteria:

- How the contract helps facilitate compliance with the SWRCB OTC policy, or at a minimum why it does not delay compliance;
- The expected operation of the OTC facility under normal load (1 in 2) and high load (1 in 10) conditions, including number of starts and run time after each start;
- The LCR net position with and without the OTC facility over the contract duration and two years beyond the contract duration; and
- How other available generation resources compare under these criteria.

(iii) OTC Contracts with Durations of 5 or More Years

OTC Contracts with durations five years or longer must be submitted to the Commission for approval via an application, consistent with standard procurement rules. If, however, the contract terminates one year or less prior to the applicable SWRCB compliance deadline, such application must specifically show how the agreement helps facilitate compliance with the SWRCB policy regarding OTC.

(iv) OTC Contracts Which Extend Beyond the SWRCB Compliance Deadline

In addition to the above conditions, OTC Contracts with durations that extend beyond the SWRCB OTC compliance date will be permitted but only if such contracts:

- Allow for purchase or receipt of power generated by a unit using non-compliant OTC only up to the SWRCB OTC policy compliance date in effect on the date the contract is signed. The contract shall not allow the continued purchase or receipt of power generated using non-compliant OTC beyond that date even if SWRCB extends the compliance date;



2014 LONG TERM PROCUREMENT PLAN

- Protect ratepayers against stranded costs;
- Protect ratepayers against the risk of future unspecified price increases resulting from generation cost increases due to unit compliance with the SWRCB OTC policy. Recovery of such cost increases from ratepayers must obtain the necessary approval from the Commission;
- Are consistent with a need authorization from the LTPP System Track proceeding; and
- Are consistent with other procurement rules, including the Tier 3 advice letter or application filing requirement, as applicable, contained in this Section II.A.5.f. Any such advice letter or application must show compliance with all relevant SWRCB policies and regulations, and also must show how the contract provides or facilitates cost effective and reliable service.

6. Use of the PRG Process and Consultation with PRG

The Commission established the PRG in D.02-08-071 “[i]n order to ensure that interim procurement contracts entered into by the utilities are subject to sufficient and expedited review and pre-approval.”^{24/} Since that time, the Commission has expanded the scope of the PRG’s review to include a wide range of procurement matters, while maintaining the role of the PRG as advisory in nature. The PRG has continued to provide value to utility procurement and, accordingly, has been made a permanent part of the procurement process. In D.04-01-050, the Commission established an ongoing requirement that each IOU “meet and confer with its PRG on a quarterly basis.”^{25/}

SDG&E typically meets with its PRG on a monthly basis to ensure that its PRG is kept current on the procurement activities of SDG&E and to solicit the feedback and perspectives of its PRG members. SDG&E’s PRG is comprised of non-market participants and includes

^{24/} D.02-08-071, *mimeo*, p. 24.

^{25/} D.04-01-050, *mimeo*, Conclusion of Law 42.



2014 LONG TERM PROCUREMENT PLAN

Commission staff as *ex officio* members. PRG members must sign a nondisclosure agreement. SDG&E observes the following PRG meeting/notice guidelines:

- In order to communicate with its PRG, SDG&E has established a web based calendar.^{26/} This calendar will contain only public information as follows: (1) a schedule of upcoming meetings; (2) RFO milestone dates; and (3) to address the suggestion of the Transparency Working Group as adopted by the Commission: (a) the date, time and duration of each PRG meeting; (b) the organizations participating in the PRG meeting and the individuals representing each organization; and (c) a list of items discussed, which list will contain only public information (this Transparency Working Group information will also be provided to the LTPP proceeding's current and future service list).
- A commitment to circulate an agenda and meeting materials to PRG members a minimum of 48 hours in advance of a PRG meeting, unless there are unusual, extenuating circumstances.
- Circulation of confidential meeting summaries to PRG members on the earlier of: (1) 14 days after the PRG meeting; or (2) 48 hours before the next regularly scheduled PRG meeting. If SDG&E anticipates that unusual circumstances will cause a delay in its ability to circulate the summary within 14 days of the PRG meeting, SDG&E will send an email to the PRG distribution list within 7 days of the PRG meeting notifying the PRG of the expected delay. In such an instance, SDG&E will distribute the summary 21 days after the PRG meeting. These summaries will contain "a list of attending PRG members, including the organizations represented, a summary of topics presented and discussed, and a list of information requested or offered to be supplied after the meeting, (and identify the requesting party)".^{27/}

When procuring or potentially procuring Cost Allocation Mechanism (CAM) resources pursuant to D.06-07-029, 07-09-044 and D.11-05-005 or a successor CAM that would allocate costs of new generation resources to both bundled and non-bundled customers in accordance with Public Utilities Code § 365.1(c), SDG&E will utilize an advisory CAM Group consistent with guidelines set forth in D.07-12-052, Attachment D.

^{26/} This calendar can be found at <http://sdge.com/regulatory/prg/calendar.shtml>.

^{27/} D.07-12-052, *mimeo*, p. 124.



B. Risk Management Policy and Strategy

This section addresses the following major topics: Current Risk Management Practices; Portfolio Risk Assessment; Customer Risk Tolerance (CRT); VaR-to-Expiration (VtE); Risk Management Products; and Credit Requirements.

1. Current Risk Management Practices – Hedge Plan

SDG&E's procurement plan outlines the company's hedging strategy to manage and report on near-term risk utilizing a rolling 12-month risk metric, as directed by the Commission in D.07-12-052 and in compliance with the Commission's objectives. The hedging strategy presented in Appendix B provides the details of SDG&E's 5-year risk management plan. The hedging strategy includes hedging objectives and targets that, when approved, will become the AB 57 upfront guidelines that guide SDG&E's future actions when hedging. SDG&E's overall hedge strategy will continually be reviewed and periodically updated, as required.

SDG&E will implement its hedge strategy using the list of authorized products approved by the Commission and discussed in Sections II.A.3 and II.A.4 above. SDG&E will follow an "incremental and over time" hedging program over a 5-year horizon in order to layer on hedges so as to reduce overall portfolio risk.^{28/} SDG&E intends to take small positions through time to build into rates an average of market prices through time where timing and volumes transacted are informed decisions, guided by the CRT and VtE metrics.

^{28/} "Incremental and over time" is similar in concept to the "ratable rate" approach outlined in Appendix I.



2014 LONG TERM PROCUREMENT PLAN

SDG&E plans to actively manage risk during the first rolling 12 months of the 5-year plan using measures, as described in Appendix B, and to manage hedges on a volumetric basis. To assure compliance, SDG&E will measure the annual hedge percentages daily from the first business day through the last business day of each calendar year, will review the overall hedge percentages compared to the 12-month rolling risk metric and annual hedge percentage targets and will increase its hedge percentages over time on a notional basis, as required. Therefore, SDG&E's actual hedge positions may differ (either up or down) from the "target hedge" strategy, as market conditions dictate. SDG&E will brief its PRG on hedge targets and percentages on at least a quarterly basis.

2. Portfolio Risk Assessment

In developing the hedge strategy required to meet the annual hedge percentage targets for the portfolio, SDG&E uses the current bundled load forecast and existing and committed resources to develop a forecast of hedged and unhedged positions. Each year a percentage of the portfolio energy is already hedged and no longer exposed to market price fluctuations. These hedged volumes are primarily made up by portfolio fixed price contracts, including renewables contracts and existing hedges.

In establishing the portfolio hedge strategy, SDG&E also considers potential fixed-price contracts that are expected to be signed. In addition, SDG&E develops a forecast of gas to be consumed in SDG&E-owned or contracted units as SDG&E undertakes least-cost dispatch of its resources. Any forecast gas volumes that are unhedged are at risk through exposure to



2014 LONG TERM PROCUREMENT PLAN

rising market prices. SDG&E develops plans to hedge some portion of this, consistent with the risk strategy and hedge targets presented in Appendix B.

3. Customer Risk Tolerance

In D.12-01-033, the Commission set the CRT rate for SDG&E equal to ten percent (10%) of SDG&E's system average rate.^{29/} SDG&E uses the CRT measure as a guide to manage customer risk in the rolling 12-month risk management strategy. SDG&E calculates its CRT every month using a forward 12-month period. To calculate the CRT, the total bundled load forecast for the appropriate rolling forward 12-month period is multiplied by the current CRT rate, which is expressed in cents/kWh. The resulting CRT is compared to the VtE calculation.

4. VaR-to-Expiration

SDG&E uses the term VtE synonymously with TEVaR (To-Expiration-Value-at-Risk). TEVaR presumes that all positions are held to expiration. Value at Risk refers to the statistical dollar amount that can be lost on the net open position of a portfolio over a specific time horizon within a given confidence interval. TEVaR accounts for the increasing potential distribution of prices as time passes, as well as the expiration of the positions in the portfolio with the passage of time. The result is the estimation of loss, at the specified confidence level, assuming that the portfolio remains constant over time until all positions within it have expired.

^{29/} The CRT rate of 1.95 cents/kWh will be updated every two years in each LTPP filing. If the LTPP filing is delayed or not made, the CRT rate will be updated two years from the filing of the previous LTPP via a Tier 1 Advice Letter.



2014 LONG TERM PROCUREMENT PLAN

For many risk management purposes, VaR is calculated over a one-day time horizon using a 95% confidence level. While a number of methods to calculate VaR exist, one standard is:

$$\text{VaR}(\text{for a specified time horizon}) = \text{Net Open Position Value} * \text{Volatility} * \text{Confidence Interval Factor} * \text{Square Root time, where:}$$

Net Open Position value is the value of the portfolio expressed in dollars over the specified time horizon;

Volatility is the annualized volatility of the portfolio divided by the square root of one year as specified in units of the desired time horizon (*i.e.*, square-root of 252 days to reflect one business day VaR);

Confidence Interval Factor refers to the number of standard deviations in the analysis (for example: the number of standard deviations is 1.645 for a confidence interval of 95%); and

Time horizon refers to the holding period of the VaR calculation in units of business (or trading) days.

The one-day VaR at the 95% confidence interval is appropriate for liquid trading portfolios with risk that may be actively managed, or traded away. This is not the current situation faced by SDG&E's ratepayers, whose risk profile is that of being "short" gas and power over long periods of time. In this circumstance, the short-term VaR measure described above is not appropriate. Instead, a VaR measure that measures risk over a much longer time horizon is required. TEVaR is a methodology for specifically calculating the risk over a longer time horizon of a portfolio of individual positions with different tenors. The expiration of



2014 LONG TERM PROCUREMENT PLAN

portions of the portfolio can drastically change the portfolio's risk profile. In most cases, expiration will tend to decrease the total remaining risk. SDG&E uses VtE as an approximation to TEVaR for calculating this longer term risk, based on the following assumptions:

First, it is technically impossible to generate a TEVaR model that can be back-tested for TEVaRs of one year or greater. As such, SDG&E is not in a position to statistically certify the reasonableness of any true 1-year TEVaR model. However, there are numerous off-the-shelf models that are commonly utilized in the energy industry to calculate 1-Day VaR using historic, analytic or Monte Carlo methodologies. These models are fairly straight-forward to back-test for 1-Day VaR.

Second, it is a common industry practice to assume that, for normal distributions of prices, longer term VaR of the average net open position of a portfolio increases in relation to the square root of time (as measured in trading days). It is a stretch to assume that prices are distributed normally above the 95% confidence interval. As such, SDG&E calculates the VtE of the average net open position of its portfolio by scaling up the 1-Day VaR by the square root of the average business day time to expiration weighted by the shape of the net open positions.

SDG&E utilizes a publicly available Excel-based model utilizing a vendor software solution (Financial Engineering Associates [FEA] VaR Works) for calculation of VtE that utilizes dynamic portfolio valuation. It takes as inputs market information, commodity forward



2014 LONG TERM PROCUREMENT PLAN

curves, forward volatility curves, intra-commodity correlation, inter-commodity correlation, position information and position volume. The market information is used to create price simulations that have the appropriate joint distributions.

The FEA VaR Works model supports the calculation of analytic, historical and Monte Carlo VaR, as well as stress testing, component VaR and back-testing. Technical features and specifications of FEA VaR Works are available at www.fea.com. SDG&E currently utilizes the Analytic VtE as the official metric for reporting purposes and portfolio management. To implement VtE with FEA, the only change necessary to convert from one- or ten-day VaR is to set the time horizon equal to the volumetric weighted average time to expiration (or duration) of the portfolio.

In general, VtE tends to be the largest when there are the greatest volumes of open positions, when time to expiration is longest, thus statistically allowing for large price movements prior to expiration of positions or when market volatility increases. Volatility is a significant driver in the calculation of VtE because, from a statistical standpoint, prices are likely to make greater changes during periods of high volatility. Additionally, high market prices and low correlations between commodities and locations are drivers that can lead to higher VtEs.

5. Risk Management Products

In Sections II.A.3 and II.A.4 above, SDG&E discusses many of the physical products that it expects will play a large role in procurement activities and also discusses available risk



2014 LONG TERM PROCUREMENT PLAN

management products. All of the risk management products discussed are included in Table 1 above.

SDG&E anticipates that risk management products used in the implementation of this LTPP will be transacted primarily through exchanges and brokers, trades directly with counterparties, and bilaterally negotiated structured contracts. Risk management products will include those listed in Table 1 located in Section II.A.3 and any other products listed in this LTPP. Because of the importance of timeliness in managing risk, a formal solicitation process will most likely not be utilized. Except in circumstances where time does not allow, SDG&E will meet and confer with its PRG and propose its strategy to the group prior to taking action.

Executing risk management transactions may require SDG&E to incur administrative and management costs directly associated with the transactions. These costs could include, among other items, expenses for providing credit collateral to counter-parties and brokerage fees as well as the cost of the financial hedges themselves. SDG&E expects that the administrative costs associated with energy and portfolio risk management transactions associated with the Utility Electric Generation (UEG) contracts and the cost of the products themselves will be reimbursed by booking these costs into the ERRA.

a. Electricity Exposure

Generally, SDG&E will procure purchased power requirements in the spot and forward markets to spread out timing risk and to best match purchases with forecasted needs and attractiveness of pricing. Additionally, SDG&E may enter into accelerated forward transactions



2014 LONG TERM PROCUREMENT PLAN

to control the financial exposure of the portfolio when portfolio VtE increases relative to CRT or to maintain certain hedge percentages as specified by this Plan. This activity may include hedges related to anticipated excess energy sales with the goal of protecting the portfolio from excessively low sales prices or locking in future margins. All of the transactions types below may be either physical or financial contracts, although with electricity, a lack of financial instruments makes physical fixed price transactions an attractive hedge instrument.

b. Fixed-Price Forward Trades for Power

A forward trade of standard blocks (e.g., 6x16 or 6x8, 7x24) may be the best hedge of the Net Open Position, despite the imperfect match between the product and actual shape of the Net Open Position. Standard products have several advantages over structured contracts including greater market depth, efficiency in transacting and price transparency. Forward trades can also be expanded to include non-standard products such as super-peak or fixed-shape energy, should product offering and liquidity increase. Also, SDG&E may execute forward trades of non-SP15 delivery products such as NP15 or Palo Verde as a proxy. The benefit to this strategy is access to additional market depth should SP15 become illiquid, provided that these markets are reasonably correlated with SP15.

c. Exchange of risk exposure

Market risk is dynamic and differs by time of year and type of exposure. For example, spot month volatility is generally higher than back month volatility and summer volatility is higher than shoulder month volatility. Also, certain products, such as super-peak, are likely to have higher volatility risk as well as higher liquidity risk than a standard on-peak product.



2014 LONG TERM PROCUREMENT PLAN

Exchanging risk from one part of the portfolio to another may be used to adjust risk to the desired level, time period or product type. These differing volatilities may also contribute to formation of specific hedge plans.

d. NYMEX Gas Futures, Options and Gas Basis Swaps

Because the marginally priced units in SDG&E's portfolio are fueled by natural gas, SDG&E will typically use financial gas products as a cross-commodity hedge to manage its price exposure to electricity prices. SDG&E also uses financial electric products to hedge short-term day-ahead and/or real-time exposure in the CAISO market. SDG&E periodically reviews its hedging strategies and may use financial electric products in the future for short-term (one to five year) hedges.

e. Gas Price Exposure

When risk attributable to the short gas position increases, SDG&E may, enter into longer-term gas transactions to control the financial exposure created by the heat-rate dispatchable units/contracts of the UEG gas portfolio. Products and tools to manage gas price risk may include the following.

- *Bilateral structured contracts:* As with bilateral power transactions, these contracts can be structured to closely match the product with the profile of the risk to be managed. In pursuing structured contracts, the decision to transact will depend on comparing the benefit of an accurate hedge to the additional cost of the customization. Structured gas contracts may also be either physically or financially settled.
- *Fixed-price futures, forwards and swaps:* Standard products (e.g., baseload delivery, futures or swaps) may be the best hedge of the short gas position despite the imperfect match between the flat delivery schedule and actual gas usage. Several advantages to standard products over structured contracts include market



2014 LONG TERM PROCUREMENT PLAN

depth, efficiency in transacting and price transparency. Forward trades can also be expanded to include non-standard products such as non-uniform flow gas to better match peak production, should product offering and liquidity increase.

- *Physical and financial options:* SDG&E anticipates the use of options as an important risk management tool for both gas and power. In addition to call options, combinations and various forms of potential option solutions for managing risk may be employed such as collars, straddles, or floors.
- *Swing-swaps:* A specific type of contract-for-difference, which effectively converts gas pricing from a fixed monthly price to a daily price. Swing-swaps are required to extend the protection offered by forward financial gas hedges into the actual month of delivery, as financial hedges typically expire just prior to the commencement of the delivery month.
- *Basis Swaps:* Basis swaps are similar to a contract for differences that offers protection for the difference in pricing at one point versus another. This would allow SDG&E to use very liquid NYMEX swaps and futures, which trade for gas priced at Henry Hub in Louisiana, to hedge physical positions with delivery in California.

f. GHG Price Exposure

When the risk attributable to GHG allowance costs increases, SDG&E may control the financial exposure by acquiring GHG allowances or offsets as a hedge, as described in Appendix F.

6. Risk Management Product Selection Considerations

SDG&E will use the authorized hedge products as approved in this LTPP to manage risk. The selection of a particular product will take into account several factors, including how well the hedge fits the target risk for VtE reduction or increase of hedge percentage, hedge cost relative to hedge effectiveness, and product liquidity given complexity and urgency of need. In addition, the ability to transact depends on the availability of sufficient credit and



2014 LONG TERM PROCUREMENT PLAN

collateral under SDG&E's physical and financial trading agreements with counterparties including NYMEX and OTC brokerage accounts.

7. Credit Requirements

The buying and selling of energy commodity products necessitates multiple transaction types with external counterparties. Contracts with security provisions (e.g. cash, letters of credit, etc.) often require SDG&E to post collateral and maintain adequate liquidity capacity to cover potential collateral requirements. There are working capital costs associated with collateral to maintain these transactions over time. Contracts that allow for unsecured credit exposure require less (or no) working capital and less direct cost to manage collateral requirements. However, over time, if these transactions become positive to SDG&E, they create an indirect cost of credit risk due to an expectation of loss from potential non-performance or non-payment. An event of default, non-performance or non-payment can lead to an actual cost for this credit risk.

a. *Credit Risk*

SDG&E's procurement operations are exposed to the risk of loss attributable to the failure of a counterparty or customer to honor its contractual obligations, including the obligation to cash settle on a timely basis. Counterparty credit exposure is equal to the sum of all money due (billed or delivered and unbilled) plus the replacement cost of the Mark-to-Market (MtM) contract value, if positive. Credit risk is defined as the cumulative potential non-payment and non-performance of counterparties on contracts to receive and pay for or deliver energy products and derivatives. This risk is a function of the credit exposure, the



2014 LONG TERM PROCUREMENT PLAN

counterparty's probability of default and the proportion of this value that would be recovered in an event of default. It is important to note that the existence of credit risk, which can sometimes be significant, is an unavoidable by-product of utility procurement activity.

Credit exposure (including the effects of netting and set-off provisions where applicable) will be defined and measured as follows:

Credit Exposure =	MTM Gain/Loss + A/R Balance – A/P Balance + Un-invoiced
MTM Gain/Loss =	Any payments that would be due from (if positive) or to (if negative) the counterparty if all contracts were marked to market and settled for cash immediately
A/R Balance =	Account receivables balance
A/P Balance =	Account payable balance
Un-invoiced =	Value of delivered but un-invoiced commodity, including cash prepayments or cash that is under the control of the counterparty

- Credit exposure less collateral on hand, multiplied by
- Estimated probability of default (PD) of the counterparty, multiplied by
- Estimated loss given default (LGD).

Potential credit risk shall be calculated as follows:

- Peak potential credit exposure, multiplied by
- Estimated probability of default (PD) of the counterparty, multiplied by
- Estimated loss given default (LGD).

Peak potential credit exposure can be calculated as follows:



2014 LONG TERM PROCUREMENT PLAN

- VaR to Expiration (VtE) or Weighted Average Durational VaR at the 95% Confidence Interval.^{30/}

Probabilities of Default (PD) and Losses Given Default (LGD) are determined for each counterparty based on external credit analysis sources or the pricing of unsecured debt. When unsecured debt pricing or external source data is unavailable to determine PD and LGD, SDG&E will seek to utilize the current average for non-investment grade companies, limited to the applicable industry if possible. Potential credit risk will be calculated prior to contract execution for all fixed-price contracts for terms exceeding one year and not covered under a Master Agreement (e.g., ISDA and EEI), which contains appropriate margining provisions. Although this is an estimated expected cost based on PD and LGD, actual losses associated with counterparty default can be greater than the current credit risk.

In the event of a counterparty default, all costs associated with credit default will be recovered through ERRA where either SDG&E is seller and energy or services have been delivered but remain unpaid or where SDG&E is buyer or seller and undelivered energy or services are repurchased or sold at a loss. In addition, all costs associated with procurement

^{30/} In some cases, there may be valuable attributes to the proposed transaction (such as capacity or RA) that may not have adequate pricing data to calculate VaR. In these cases, the standardized financial attributes (such as fixed price energy or heat rate call option) can be valued and assessed for peak potential credit exposure separately from the more specialized attributes. These specialized attributes may require more subjective analysis to determine a reasonable potential replacement cost under stressed conditions that is based on information at hand (such as other bids in an RFO, known available local resources, assumptions for capital costs, etc.). With regard to existing asset-related contracts, in many cases the loss stemming from a contractual default or bankruptcy would take the form of a renegotiated contract on the same asset at a higher cost. Otherwise, replacement may potentially take the form of an entirely different product type providing the same specialized attribute.



2014 LONG TERM PROCUREMENT PLAN

activities aimed at mitigating credit risk (such as purchasing credit insurance and/or credit default swaps) will be recovered through ERRA.

b. Credit Risk Monitoring and Mitigation Strategy

SDG&E will seek to contract using clearing, margining provisions or other contractual terms, where possible, in order to minimize unsecured credit exposure.^{31/} Other contract terms that can be considered primary credit risk mitigation tools are netting and set-off provisions.

For short-term physical energy commodity transactions or otherwise where margining provisions are in place, SDG&E will work to maintain the unsecured credit exposure below the limits set by the credit department based on the counterparty's creditworthiness analysis. For these transactions, SDG&E's intent is to limit credit exposure to an amount lower than the assigned credit limit. When conditions warrant, the front office can look for opportunities to directly offset the exposure under the netting and set-off provisions of the agreements with other procurement transactions. If necessary, the front office can also work with the Credit Department to increase the credit limit by either (1) reviewing the counterparty's creditworthiness to determine whether the unsecured credit line might be increased or (2) seeking to secure an increase in collateral or parent guaranty.

For all other transactions, as described above, SDG&E's intent is to negotiate an acceptable amount of secured collateral and other potential contractual security provisions, while keeping in consideration other necessary business objectives, as part of its least-cost

^{31/} Use of clearing and margining provisions creates a demand on financial liquidity. Use of these products is limited by the liquidity limits established in this LTPP.



2014 LONG TERM PROCUREMENT PLAN

best fit analysis. As an example, levels of potential credit risk associated with various counterparties will impact how each counterparty scores in RFO evaluations by adding the potential credit risk to the total expected delivered cost in the least-cost best fit analysis. Where margining provisions cannot be applied, peak potential credit exposure and potential credit risk will be estimated in advance. In some cases, other contract terms can be used to increase collateral as the counterparty's credit rating falls or as the credit exposure increases.

In the event that the contract contains no provisions for margining or adjusting collateral requirements over time, it is understood that at some periods of time, credit exposure can exceed the amount of collateral on hand, thus resulting in a certain amount of actual credit risk. SDG&E will periodically calculate and monitor the total credit exposure and actual credit risk for the portfolio as well as the largest concentration (%) share of credit exposure and actual credit risk held by the top several counterparties.

SDG&E's standard approach to mitigating credit risk revolves around minimizing exposure, including credit-weighted selection of counterparty and product, negotiating advantageous terms in the contract, and securing collateral. Although SDG&E is authorized to use credit default swaps and credit insurance, both of which involve transferring credit risk to a third party, most of the credit risk in the electric procurement portfolio is expected to come from less standard transactions, such as fixed-price, asset-based energy, tolling agreements, and other long-term contracts. Because of this, SDG&E expects the use of these credit risk transferring instruments to be less effective (a poor hedge against the real underlying risk), uneconomic (prohibitively expensive) or unavailable (for unrated counterparties or non-



2014 LONG TERM PROCUREMENT PLAN

standard products). While use of credit risk transferring products are not an active part of SDG&E's credit risk mitigation toolbox, the appearance of unusually high credit risk levels or new information about the availability of such products could prompt a new assessment. The cost of such products, if used, would be recovered in ERRA.

III. LONG-TERM PROCUREMENT RESOURCE PLAN

A. Introduction to Resource Planning and Planning Approach

The objective of SDG&E's LTPP is to provide reliable electric supply to customers at the lowest possible cost, while simultaneously meeting the State's preferred Loading Order on an ongoing basis and reducing the GHG emissions associated with the portfolio. In order to accomplish these goals, the long-term plan addresses both demand- and supply-side resources. SDG&E's LTPP adds resources in the order of the State's priorities as set forth in the Loading Order, discussed in Section V below.

Consistent with Commission direction, SDG&E's LTPP serves as an "umbrella" document, incorporating and consolidating inputs from other Commission proceedings. The capacity values shown in the LTPP for these higher priority resources is based on forward-looking assumptions that are not intended to set minimum or maximum capacity targets. SDG&E will pursue preferred resources to the extent it is feasible, available and cost effective.

B. Load Forecast

The energy and peak demand forecasts use the load forecast from the Commission-adopted planning assumptions. The load forecast will include both committed and uncommitted EE programs, as well as self-served load, which is made up of generation on the



2014 LONG TERM PROCUREMENT PLAN

customer's side of the meter. In accordance with the Commission's direction, DR programs will be shown as reducing the peak demand, thus avoiding the need for reserves.

The load forecast will also include an assumption as to the amount of load that will be served by DA and Community Choice Aggregation (CCA) providers. In accordance with D.12-01-033, DA load assumptions are based on Senate Bill 695 and D.10-03-022. Any assumptions regarding CCA load will be based on the Commission direction in D.14-02-040.

C. Supply Forecast for Existing Resources

The LTPP will be based on the following assumptions regarding existing and planned supply resources, except to the extent different direction is provided by the Commission in its adopted planning assumptions.

Utility-Owned Generation:

- The Miramar Energy Facility I and II will be operational for the entire planning period.
- The Palomar Energy Center will be operational for the entire planning period.
- The Desert Star Power Plant will be operational for the entire planning period.
- The Cuyamaca Energy Facility will be operational for the entire planning period.

Purchased Power Contracts (Non-Renewable):

- Existing contracts with QFs will continue for their current term.
- Existing purchased power contracts with other suppliers will continue for their current term.

Renewable Power:

- Existing contracts for renewable power that are delivering will remain in service for their current contract terms.



2014 LONG TERM PROCUREMENT PLAN

- Existing contracts approved or currently awaiting Commission approval, but not yet delivering, will be discounted to reflect development risk.
- To the extent additional renewable power is needed to meet a 33% RPS, the Plan assumes a generic mix of renewable power or will use the Commission's approved rules regarding banking.

Energy Storage:

- Existing energy storage resource contracts will continue for their current term.
- Forecasted energy storage resources based on the adopted planning assumptions.

D. Need Determinations

SDG&E's need for additional resources is derived from calculating the difference between the load forecast and its existing and committed resources plus those resources assumed to be added as designated in the Commission's adopted planning assumptions. The Commission will, through various procurement-related proceedings, direct SDG&E to meet the resource needs of its bundled customers (both system and local) and to procure new resources that are needed to meet grid reliability concerns for all customers in SDG&E's service territory (including DA and CCA customers).

E. Bundled Customer System Capacity Need

SDG&E's bundled customer system RA need is the amount of capacity that SDG&E must add in order to meet its forecasted peak load plus the Commission's planning reserve margin requirement, currently set at 15%. SDG&E's bundled customer RA need is determined each year based on a load forecast provided to SDG&E by the CEC by August 1 of the prior year. SDG&E must make a showing by November 1 that it has met 90% of the System RA



2014 LONG TERM PROCUREMENT PLAN

need. SDG&E then makes a monthly showing to demonstrate that it has fully met the system RA need.

In addition to the obligation to provide capacity to meet system RA requirements, SDG&E's bundled customers also have an additional obligation to provide flexible RA capacity to meet the CAISO's ramping needs. Similar to the established process for determining system RA requirements, the flexible capacity requirement that must be met by SDG&E's bundled customers is determined each year in the Commission's annual RA proceeding.

Thus, SDG&E's need for system RA will change based on updates to the load forecast, changes in the NQC of each of its resources, and changes in resource on-line dates. An outlook for SDG&E bundled customer system RA needs based on the Commission's standard planning assumptions over the planning period is shown in Appendix A. It should be noted, however, that the values in Appendix A present the need based on one specific set of assumptions. The actual system RA need will be determined each year and will almost certainly differ from the amounts shown in Appendix A since all the inputs will be updated each year. Thus Appendix A should be viewed as illustrative in nature and should not be relied upon as a formal determination of SDG&E's system RA need.

F. Bundled Customer Local Capacity Need

Because SDG&E's entire service area is a load pocket, SDG&E's bundled customers are required to locate a portion of their system RA capacity within the SDG&E load pocket. The necessary amount of local capacity is determined each year as part of the Commission's RA proceeding based on studies undertaken by the CAISO. The need to meet a local as well



2014 LONG TERM PROCUREMENT PLAN

as a system resource adequacy requirement may limit the types and locations of resources SDG&E will request to fill any resource need.

G. Need for New Generation in Service Area

Periodically, the Commission may order SDG&E to procure new generation in its service area in order to ensure that sufficient generation is physically located in the service area to serve all loads. The need for new generation is driven by the total load in SDG&E's service area (not merely bundled customers' load), the amount of transmission import capacity and the amount of generation physically located in the load pocket.

H. Resource to Fill Identified Need

SDG&E follows the State's policy guidance, including the Loading Order, and applicable Commission decision(s) in filling its resource need. As discussed in Section V below, SDG&E's obligation to follow the Loading Order is on-going. SDG&E will procure energy storage resources in accordance with the direction set forth in D.13-10-040. SDG&E will comply with applicable resource procurement limits.

SDG&E's future RFOs may request offers for black start capability. The current black start capability in SDG&E's service area is provided by a fleet of combustion turbines that are nearing the end of their economic life. It is possible that many of the units will be retired within the planning horizon. Thus, future RFOs may request offers for black start capability so that the new capacity being added will be capable of providing this function to the CAISO and the older units will not have to be maintained solely in order to provide this service.



IV. PROCUREMENT STRATEGY BY RESOURCE TYPE

A. Introduction to Resource Acquisition Strategy

In this section, SDG&E addresses the general product types that SDG&E uses to meet its customers energy and capacity needs and the basis for each.

B. Energy Efficiency

SDG&E actively participates in Commission proceedings designed to determine the level of cost-effective EE and the funding that will be provided to achieve EE targets. These proceedings establish goals for a specific program period, review the cost effectiveness of programs and set targets and funding levels for the next program cycle. SDG&E may also procure incremental amounts of EE as part of all-source RFOs. These committed programs are then rolled into the load forecast that is used for planning the procurement of the remaining resources. Thus the load forecast used to determine resource needs includes committed EE. SDG&E will also include a forecast of additional achievable EE based on the adopted planning assumptions.

It is important to note that SDG&E's obligation to follow the Loading Order is ongoing; the values used for EE for system need planning do not represent a ceiling or a floor for the amount of EE that will actually occur in future years. SDG&E will undertake its procurement based on actual EE achieved and changes in forecasts of future EE that meet the cost effective, reliable and feasible standard.



2014 LONG TERM PROCUREMENT PLAN

C. Demand Response

Demand Response Programs (DRPs) offer an alternative to adding supply-side resources through capacity additions by providing customers the opportunity to participate in demand-side management, while seeking to limit the impact on their operations. DRPs are designed to target the highest load hours of the year when demand for energy peaks and normally energy costs are at their highest. The level of DR also includes reasonably anticipated impacts from programs that are being enabled by the Advanced Metering Infrastructure. As with EE, the Commission addresses DRPs and the funding required to support these programs in a separate proceeding. The Commission's DRP proceeding(s) involve review of the cost-effectiveness of existing and proposed programs for a specified program period (historically, a three-year cycle). SDG&E may also procure incremental amounts of DR as part of all-source RFOs.

It is important to note that SDG&E's obligation to follow the loading order is ongoing and that the values used for DR for system need planning do not represent a ceiling or a floor for the amount of DR that will actually occur in future years. SDG&E will undertake its procurement based on actual DR achieved and changes in forecasts of future DR that meet the cost effective and feasibly available criteria.

D. Self-Service Load

The load forecast will also include a forecast for self-served load. This is load that is served by generation installed behind the customer's meter. The Plan will use the forecast included in the CEC load forecast and the Commission adopted planning assumptions. This



2014 LONG TERM PROCUREMENT PLAN

will include all forms of self-served load including CHP, rooftop PV and any other technologies used by customers.

E. Renewable Energy Procurement

The Plan includes a forecast of the renewable resources that are needed to meet the State's RPS standards. The Plan assumes that all existing, delivering renewable contracts will continue through the term of their contract. To the extent these contracts do not reach the RPS procurement target, the Plan will show generic renewables. Generic resources will be added until the Plan does reach the RPS procurement targets. The generic resources will be grouped by technology such as bio-fuel, wind or solar Photovoltaic to reflect their different operational characteristics. Like the other resources types, the forecast does not represent a ceiling or floor for renewable power, or a specific generic mix SDG&E that SDG&E will target. Since renewables are typically procured by competitive RFOs, the actual procurement is likely to vary, especially on a year by year basis. SDG&E's procurement will also be influenced by SDG&E's ability to apply the Commission's adopted rules for banking renewable power to the extent SDG&E's procurement exceeds the required levels.

F. Qualifying Facilities and Combined Heat and Power Generation

The Plan will include a forecast of supply from CHP facilities consistent with the direction provided in the adopted planning assumptions. Procurement methods for QF and CHP resources are discussed in Section II.A.5.d. Like the other resources types, the forecast does not represent a ceiling or floor for these resources, thus actual procurement is likely to vary, especially on a year by year basis



2014 LONG TERM PROCUREMENT PLAN

G. Energy Storage Resources

The Plan will include a forecast of storage resources consistent with the adopted planning assumptions. Like the other resources types, the forecast does not represent a ceiling or floor for storage resources that SDG&E will target.

H. Other Generation Supply Resources

To the extent that the resources discussed above are not sufficient to meet SDG&E's bundled customer need, SDG&E will first consider meeting its need from resources in its service territory in order to meet local RA requirements, and then from resources in the CAISO control area and from imported generation (from outside of the CAISO control area) to meet its overall system resource need. The exact resources that will meet this need will be determined through procurement activities described in this Plan. An RFO held to procure such resources will describe the need, such as a need for peaking capacity, and then allow all technologies, such as combustion turbines, storage, etc., to compete to submit bids meet that need.

V. EVALUATION OF RESOURCE PLAN

This section describes how SDG&E's LTPP and resource planning processes meet the policy objectives of the State and the Commission.

Public Utilities Code § 454.5(b)(9)(C) states that utilities must first meet their "unmet resource needs through all available energy efficiency and demand reduction resources that are cost-effective, reliable and feasible." The State's Energy Action Plan II establishes a Loading Order or prioritization of resources, as follows:



2014 LONG TERM PROCUREMENT PLAN

The loading order identifies energy efficiency and demand response as the State's preferred means of meeting growing energy needs. After cost-effective efficiency and demand response, we rely on renewable sources of power and distributed generation, such as combined heat and power applications. To the extent efficiency, demand response, renewable resources, and distributed generation are unable to satisfy increasing energy and capacity needs, we support clean and efficient fossil-fired generation.^{32/}

SDG&E is obligated to follow the Loading Order on an ongoing basis. Once procurement targets are achieved for preferred resources, it is required to continue to procure preferred resources to the extent they are feasibly available and cost-effective.^{33/} In addition, SDG&E will procure energy storage resources in accordance with the direction set forth in D.13-10-040.

SDG&E's Plan incorporates the direction provided by the Commission and takes the Loading Order into account in its planning processes in the following manner:

- First, the Plan seeks to reduce energy demand through committed and uncommitted EE programs.
- Second, the Plan reduces the need for peaking resources by looking to demand response programs, including programs that will be made possible by the installation of Smart Meters.
- Third, the Plan contemplates achievement of a minimum of 33% RPS standard for SDG&E's bundled customers by 2020.
- Fourth, the Plan looks to maintain existing and add new CHP facilities that prove to be cost-effective and help the state lower its GHG production consistent with D.10-12-035 and subsequent relevant decisions.

^{32/} 2005 EAP II, p. 2.

^{33/} D.14-03-004, *mimeo*, pp. 14-15. It should be noted that the utilities carry out EE and DR for their entire service areas, including both bundled and DA customers. Because these programs are evaluated in other proceedings, cost-effective levels of these programs are often determined prior to the procurement organization's determination of the remaining need for bundled customers.



2014 LONG TERM PROCUREMENT PLAN

- Fifth, the Plan contemplates that SDG&E will add energy storage resources, consistent with Commission direction set forth in D.13-10-040 and subsequent relevant decisions and cost-effectiveness analysis.
- Sixth, the Plan looks to add resources needed to meet system, local and flexible RA obligations.
- Seventh, the Plan relies primarily on competitive solicitation and bilateral negotiations to add resources based on least-cost, best fit principles.
- Eighth, the Plan forecasts its expected energy and dispatch including a GHG price adder. This will provide SDG&E with a forecast of its GHG allowance needs so that a well-planned procurement strategy can be implemented.

VI. COST RECOVERY ISSUES

In this section, SDG&E describes existing cost recovery mechanisms for procurement-related costs and also summarizes the Commission's guidance related to debt equivalence and the Financial Accounting Standards Board (FASB) Accounting Standards Codification 810 (ASC 810) for resources procured during the term of this LTPP.

A. Existing Recovery Mechanisms for Procurement Costs

SDG&E's recovery mechanisms for procurement-related costs were adopted by the Commission in D.02-10-062 and D.04-12-048. The existing balancing account and ratemaking recovery mechanisms are described below.

1. Energy Resource Recovery Account (ERRA) Balancing Account

The ERRA records revenues from SDG&E's Electric Energy Commodity Cost (EECC) and EECC-Transitional Bundled Service rate schedules, adjusted to exclude commodity



2014 LONG TERM PROCUREMENT PLAN

revenues assigned to the Non-Fuel Generation Balancing Account (NGBA).^{34/} The ERRA account also provides for full recovery of energy procurement related costs including fuel costs, purchased power, purchased GHG compliance instruments, utility-retained generation, CAISO related costs, capacity payments and hedging costs. In accordance with AB 57, SDG&E's ERRA is subject to a trigger mechanism that requires the filing of a rate change application if SDG&E's monthly forecasts indicate that the ERRA will face an under-collection or over-collection in excess of 5% of the previous year's non-CDWR generation revenues.^{35/} SDG&E will continue to utilize the existing ERRA balancing account and ratemaking mechanisms for applicable ongoing and future procurement costs.

2. Non- Fuel Generation Balancing Account (NGBA)

The NGBA records electric generation non-fuel costs, such as authorized O&M and capital-related revenue requirements, associated with new turnkey and utility-owned generation plants.^{36/} The disposition of the NGBA account is addressed in SDG&E's consolidated advice letter filing that sets electric rates beginning January 1 of each year. SDG&E plans to continue to utilize the existing NGBA balancing account and ratemaking mechanisms in order to provide for timely cost recovery between rate cases of revenue requirements associated with ongoing and future utility-owned generation projects.

^{34/} In compliance with D.03-12-062, the NGBA became effective January 1, 2004.

^{35/} In D.07-05-008, the Commission authorized SDG&E to notify the Commission through an advice letter filing, instead of an application, when the ERRA balance exceeds its trigger point and SDG&E does not seek a change in rates, if the ERRA balance will self-correct below the trigger point within 120 days of filing (*mimeo*, Ordering Paragraph 2).

^{36/} SDG&E's NGBA also includes non-fuel costs related to its ownership share of SONGS that are approved for SDG&E as part of D.06-05-016 in SCE's General Rate Case.



3. Transition Cost Balancing Account (TCBA)

The TCBA records revenues from the Ongoing Competition Transition Charge (CTC) and the above market generation-related costs of CTC-eligible resources. The TCBA records only the above market procurement-related costs for PPAs and QFs that are eligible for cost recovery. The CTC recovers these uneconomic costs as a non-bypassable charge from all customers, as defined by Public Utilities Code §§ 367, 368, 369, 375 and 376. SDG&E will continue to utilize the existing TCBA and CTC ratemaking mechanisms for applicable ongoing and future procurement costs until these CTC-eligible resource contracts expire.

4. Local Generating Balancing Account (LGBA)

The LGBA^{37/} records the revenues and costs of generation where the Commission has determined that the resource is subject to the CAM policy adopted in D.06-07-029 and D.11-05-005. The generation costs incurred are for the specific PPAs, UOG units and any other like resource approved by the Commission. The Local Generation Charge (LGC) recovers these generation costs as a non-bypassable charge applicable to bundled service, direct access and CCA customers. The balance in the LGBA will be addressed in SDG&E's ERRA proceeding or in another proceeding deemed appropriate by the Commission. SDG&E will utilize the existing LGBA and LGC ratemaking mechanisms for applicable ongoing and future procurement costs.

B. Current Commission Guidance Related to Debt Equivalence

In D.08-11-008, the Commission allowed "the use of the 20% DE adder in head-to-head competition between PPAs where no UOG projects (including EPC or PSA bids) are being

^{37/} SDG&E's LGBA was approved in D.13-03-029.



2014 LONG TERM PROCUREMENT PLAN

considered.”^{38/} SDG&E will work with its IE and PRG to integrate debt equivalence into its bid evaluation criteria, in particular to ensure that “the use of the DE adder does not disadvantage bids for renewable and innovative low-carbon resources that may have higher capital costs than traditional gas-fired generation.”^{39/}

The Commission also stated that “[w]e continue to direct the IOUs, especially SDG&E, to raise any individual concerns it has with the impact of a particular PPA on its debt to equity ratio in its Cost of Capital proceeding.”^{40/}

C. Current Commission Guidance Related to ASC 810

The FASB released ASC 810 (formerly referred to as FIN 46[R]) to address consolidation of businesses on financial statements. In D.07-12-052, the Commission indicated that SDG&E may address the impacts of ASC 810/FIN 46(R) on its capital structure in Cost of Capital proceedings before the Commission. In addition, the Commission stated that “[a]t this point in time, without prejudice to the issue being re-introduced in future LTPP filings, we do not find that there is sufficient information for us to know how a utility should weigh the [ASC 810] impacts of a PPA when evaluating competing bids.”^{41/}

^{38/} D.08-11-008, *mimeo*, p 16.

^{39/} *Id.*

^{40/} D.07-12-052, *mimeo*, p. 164.

^{41/} *Id.* at p. 165.



San Diego Gas & Electric Company
San Diego, California

Original Sheet No. 0

2012 LONG TERM PROCUREMENT PLAN

APPENDICES

Advice Ltr. _____ / Decision _____

Date Filed: XXXX, XXXX

Effective: XXXXXX, XX, XXXX



APPENDIX A

Energy and Capacity Tables

The energy and capacity tables set forth below are based on the planning assumptions included in the *Assigned Commission’s Ruling Technical Updates to Planning Assumptions and Scenarios for use in the 2014 Long Term Procurement Plan and 2014-15 CAISO TPP*, issued May 14, 2014 in R.13-12-010.

Table A-1 (Capacity)
Based on Mandated Planning Assumptions

Peak Load (MW):	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Forecast System Peak Demand	4850	4906	4986	5059	5132	5188	5238	5284	5321	5357
Additional Energy Efficiency	60	120	176	229	283	331	385	442	504	567
Demand Response	90	91	92	92	93	93	93	94	94	95
Direct Access Load	■	■	■	638	638	638	638	638	638	638
Bundled Peak Demand	■	■	■	4100	4118	4126	4122	4110	4085	4058
Coincidence Adjustment	45	45	45	45	45	45	45	45	45	45
Bundled Coincident Peak	■	■	■	4055	4073	4081	4077	4065	4040	4013
Planning Reserve Margin (15%)	■	■	■	608	611	612	611	610	606	602
Bundled Resource Requirement	■	■	■	4663	4684	4693	4688	4675	4646	4614
Capacity Supply Resources										
Fossil Fuel										
Natural Gas: Cuyamaca	45	45	45	45	45	45	45	45	45	45
Natural Gas: Desert Star	419	419	419	419	419	419	419	419	419	419
Natural Gas: Miramar I	48	48	48	48	48	48	48	48	48	48
Natural Gas: Miramar II	48	48	48	48	48	48	48	48	48	48
Natural Gas: Palomar	565	565	565	565	565	565	565	565	565	565
Storage										
Storage	0	0	13	27	40	54	67	80	94	107



2012 LONG TERM PROCUREMENT PLAN

Pumped Hydro										
Lake Hodges	40	40	40	40	40	40	40	40	40	40
Qualifying Facility										
Natural Gas	194	194	194	194	194	94	94	94	94	37
Renewable Energy										
BioGas: Prima Deshecha	5	5	5	5	5	5	5	5	0	0
BioGas: MM San Diego - Miramar	3	3	3	3	3	3	3	3	3	3
BioGas: FIT	0	0	0	0	0	0	0	0	0	0
BioGas: Sycamore Landfill	0	0	0	0	0	0	0	0	0	0
Bio-Mass: Otay 3 Landfill	3	3	3	3	3	3	3	3	3	3
Bio-Mass: Blue Lake	8	8	8	8	8	8	8	8	8	8
Bio-Mass: San Marcos Land Fill	1	1	1	1	1	1	1	1	1	1
Small Hydro: SDCWA – Penasquitos	4	4	0	0	0	0	0	0	0	0
Small Hydro: Misc	1	1	1	1	1	1	1	1	1	1
Small Hydro: RAM	0	0	0	0	0	0	0	0	0	0
Solar PV: FIT	0	0	0	0	0	0	0	0	0	0
Solar PV: Arlington Valley	103	103	103	103	103	103	103	103	103	103
Solar PV: Campo Verde	125	125	125	125	125	125	125	125	125	125
Solar PV: Cascade SunEdison	0	0	0	0	0	0	0	0	0	0
Solar PV: Catalina	98	98	98	98	98	98	98	98	98	98
Solar PV: Centinela 1	114	114	114	114	114	114	114	114	114	114
Solar PV: Centinela 2	41	41	41	41	41	41	41	41	41	41
Solar PV: CSOLAR IV West	0	0	135	135	135	135	135	135	135	135
Solar PV: CSOLAR South	117	117	117	117	117	117	117	117	117	117
Solar PV: Desert Green	5	5	5	5	5	5	5	5	5	5
Solar PV: Gestamp-Calipatria	18	18	18	18	18	18	18	18	18	18
Solar PV: Imperial Valley 1	180	180	180	180	180	180	180	180	180	180
Solar PV: LanEast	0	20	20	20	20	20	20	20	20	20
Solar PV: LanWest	0	6	6	6	6	6	6	6	6	6
Solar PV: Maricopa West	0	0	0	0	0	0	0	0	0	0
Solar PV: NRG Borrego	24	24	24	24	24	24	24	24	24	24
Solar PV: Origination3 Brownfield	0	0	0	0	0	0	0	0	0	0
Solar PV: Rugged Farm	0	72	72	72	72	72	72	72	72	72
Solar PV: SDG&E owned	0	0	0	0	0	0	0	0	0	0



2012 LONG TERM PROCUREMENT PLAN

Solar PV: Solar Gen2	135	135	135	135	135	135	135	135	135	135
Solar PV: Sol Orchard	14	14	14	14	14	14	14	14	14	14
Solar PV: TallBear Seville	0	0	0	0	0	0	0	0	0	0
Solar PV: Tierra del Sol	0	41	41	41	41	41	41	41	41	41
Solar PV: Victorville Landfill	0	0	0	0	0	0	0	0	0	0
Wind: AES Tehachapi	0	0	0	0	0	0	0	0	0	0
Wind: Coram Energy	17	17	17	17	17	17	17	17	17	17
Wind: Energia Sierra Juarez	25	25	25	25	25	25	25	25	25	25
Wind: Nextera	3	3	3	3	0	0	0	0	0	0
Wind: Iberdrola	0	0	0	0	0	0	0	0	0	0
Wind: Kumeyaay	8	8	8	8	8	8	8	8	8	8
Wind: Manzana	33	33	33	33	33	33	33	33	33	33
Wind: Oak Creek	0	0	0	0	0	0	0	0	0	0
Wind: Oasis Power	7	7	7	7	7	0	0	0	0	0
Wind: Ocotillo Express	43	43	43	43	43	43	43	43	43	43
Wind: Pacific	24	24	24	24	24	24	24	24	24	24
Wind: San Gorgonia Westwinds II	4	4	4	4	4	4	4	4	4	4
Other Bilateral Contracts										
████████████████████	████	████	████	0	0	0	0	0	0	0
Celerity	0	0	0	0	0	0	0	0	0	0
████████████████████	████	████	████	0	0	0	0	0	0	0
Orange Grove	100	100	100	100	100	100	100	100	100	100
Otay Mesa	604	604	604	604	604	0	0	0	0	0
Wellhead El Cajon	48	48	48	48	48	48	48	48	48	48
Wellhead Escondido	48	48	48	48	48	48	48	48	48	48
Morgan Stanley	████	████	████	0	0	0	0	0	0	0
Pio Pico	0	0	300	300	300	300	300	300	300	300
Short-Term and Spot Market Purchases and Sales	0	0	0	0	0	0	0	0	0	0
Capacity Balance Summary										
Total:	████	████	████	3917	3928	3231	3244	3257	3266	3222
Peak-Hour Requirement	████	████	████	4663	4684	4693	4688	4675	4646	4614
(Capacity Need)	████	████	████	-746	-757	-1462	-1444	-1418	-1380	-1392



2012 LONG TERM PROCUREMENT PLAN

**Table A-2 (Energy)
Based on Mandated Planning Assumptions**

Energy Demand (GWh):	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
System Energy Demand	21,793	22,011	22,344	22,635	22,977	23,264	23,540	23,809	24,041	24,271
Additional Energy Efficiency	310	579	832	1,032	1,260	1,462	1,686	1,924	2,174	2,425
Demand Response	0	0	0	0	0	0	0	0	0	0
Direct Access Loads				3,840	3,840	3,840	3,840	3,840	3,840	3,840
Bundled Energy Demand				17,763	17,877	17,962	18,014	18,045	18,027	18,006
Firm Sales				0	0	0	0	0	0	0
Bundled Energy Requirement				17,763	17,877	17,962	18,014	18,045	18,027	18,006

Energy Supply Resources										
Fossil Fuel										
Natural Gas: Cuyamaca				9	15	39	43	44	48	49
Natural Gas: Desert Star				2743	2748	3152	3180	3238	3255	3295
Natural Gas: Miramar I				24	34	59	66	69	73	76
Natural Gas: Miramar II				23	33	58	64	67	71	73
Natural Gas: Palomar				3144	3170	3518	3540	3611	3630	3650
Storage										
Storage				21	32	43	4	64	75	85
Pumped Hydro										
Lake Hodges				36	38	42	42	42	42	41
Qualifying Facility										
Natural Gas	862	866	868	872	826	152	170	177	191	140



2012 LONG TERM PROCUREMENT PLAN

Renewable Energy										
BioGas: Prima Deshecha	40	40	40	66	81	81	81	61	0	0
BioGas: MM San Diego - Miramar	26	26	26	26	26	26	26	26	0	0
BioGas: FIT	95	60	60	60	60	60	60	60	60	60
BioGas: Sycamore Landfill	9	9	9	9	9	9	9	9	9	9
Bio-Mass: Otay 3 Landfill	24	24	4	0	0	0	0	0	0	0
Bio-Mass: Blue Lake	59	59	59	59	60	59	59	59	59	60
Bio-Mass: San Marcos Land Fill	11	11	11	11	11	11	11	11	11	11
Small Hydro: SDCWA – Penasquitos	20	20	0	0	0	0	0	0	0	0
Small Hydro: Misc	6	6	6	4	5	4	4	4	4	5
Small Hydro: RAM	0	22	22	22	23	22	22	22	22	23
Solar PV: FIT	19	41	41	41	41	41	41	41	41	41
Solar PV: Arlington Valley	332	332	332	332	332	332	332	332	332	332
Solar PV: Campo Verde	347	348	347	347	347	348	347	347	347	348
Solar PV: Cascade SunEdison	54	54	54	54	54	54	54	54	54	54
Solar PV: Catalina	254	255	254	254	254	255	254	254	254	255
Solar PV: Centinela 1	355	355	355	355	355	355	355	355	355	355
Solar PV: Centinela 2	86	86	86	86	86	86	86	86	86	86
Solar PV: CSOLAR IV West	0	1	392	392	392	393	392	392	392	393
Solar PV: CSOLAR South	300	301	300	300	300	301	300	300	300	301
Solar PV: Desert Green	10	10	10	10	10	10	10	10	10	10
Solar PV: Gestamp-Calipatria	38	49	48	48	48	49	48	48	48	49
Solar PV: Imperial Valley 1	462	463	462	462	462	463	462	462	462	463
Solar PV: LanEast	0	48	48	48	48	48	48	48	48	48
Solar PV: LanWest	0	14	14	14	14	14	14	14	14	14
Solar PV: Maricopa West	53	32	32	33	33	32	32	32	32	33
Solar PV: NRG Borrego	74	74	74	74	74	74	74	74	74	74



2012 LONG TERM PROCUREMENT PLAN

Solar PV: Origination3 Brownfield	1	14	14	14	14	14	14	14	14	14
Solar PV: Rugged Farm	0	176	176	176	176	176	176	176	176	176
Solar PV: SDG&E Owned	0	17	17	17	17	17	17	17	17	17
Solar PV: Solar Gen2	392	393	392	392	392	393	392	392	392	393
Solar PV: Sol Orchard	28	28	28	28	28	28	28	28	28	28
Solar PV: TallBear Seville	41	52	52	52	52	52	52	52	52	52
Solar PV: Tierra del Sol	0	99	99	99	99	99	99	99	99	99
Solar PV: Victorville Landfill	1	29	29	29	29	29	29	29	29	29
Wind: AES Tehachapi	2	18	18	18	18	18	18	18	18	18
Wind: Coram Energy	24	24	24	24	24	24	24	24	24	24
Wind: Energia Sierra Juarez	190	230	275	274	278	276	274	273	275	277
Wind: Nextera	32	32	32	32	0	0	0	0	0	0
Wind: Iberdrola	81	81	81	81	0	0	0	0	0	0
Wind: Kumeyaay	136	138	138	138	138	138	135	136	137	138
Wind: Manzana	254	254	253	253	255	255	253	253	253	255
Wind: Oak Creek	7	7	7	7	7	7	7	7	7	0
Wind: Oasis Power	126	127	126	126	126	0	0	0	0	0
Wind: Ocotillo Express	776	785	783	782	784	786	782	782	783	785
Wind: Pacific	333	334	333	334	335	336	334	333	333	336
Wind: San Gorgonia Westwinds II	32	28	28	28	28	28	28	28	28	28

Other Bilateral Contracts										
██████████	█	█	█	0	0	0	0	0	0	0
Celerity	█	█	█	0	0	0	0	0	0	0
██████████	█	█	█	0	0	0	0	0	0	0
Orange Grove	█	█	█	68	93	149	162	168	176	181
Otay Mesa	█	█	█	2693	2778	0	0	0	0	0
Wellhead El Cajon	█	█	█	15	22	52	59	61	68	71
Wellhead Escondido	█	█	█	13	20	47	51	52	57	58



2012 LONG TERM PROCUREMENT PLAN

Morgan Stanley				552	552	552	552	0	0	0
Pio Pico				387	454	563	603	612	640	654
Net Market Purchases and Sales				1152	1137	3733	3695	4078	4022	3940

Energy Balance										
Total:	17,643	17,592	17,672	17,763	17,877	17,962	18,014	18,045	18,027	18,006
Firm LSE Energy Requirements	17,643	17,592	17,672	17,763	17,877	17,962	18,014	18,045	18,027	18,006
Energy Need or Surplus	0	0	0	0	0	0	0	0	0	0



Appendix B

Electricity and Gas Hedging Strategy

I. OVERVIEW OF HEDGING

SDG&E has historically elected to not hedge electric positions on a long-term basis. SDG&E's price exposure is primarily gas related and, as such, the more effective means to reduce its long-term open positions is with natural gas hedges, which SDG&E performs on a one-to-five year basis as discussed further herein. As SDG&E's portfolio changes over time, long-term electric hedging may become a more effective means to hedge.

SDG&E executes hedges to reduce its forecasted open position over time. As a greater portion of its portfolio is hedged using gas hedges, price exposure will shift to electric prices. Therefore, SDG&E also will execute shorter-term hedges for electric prices. The majority of these short-term hedges will be in the day ahead or intra-day markets where it has the most certainty as to its expected long or short electric positions, and can reduce its exposure to the CAISO IFM prices. Financial hedges do not provide a perfect hedge by themselves, as they offer price protection for the IFM at the trading Hubs rather than SDG&E's Default Load Aggregation Point (DLAP), however during most hours the correlation between trading Hubs and SDG&E's DLAP is fairly good and as such these hedges will limit SDG&E's overall exposure to CAISO price volatility. CRRs also serve as a hedge by shifting price risk from the trading hub to the DLAP. The hedging strategy and instruments chosen will be dictated by the CRT risk strategy to control the cost of serving bundled customers.



2012 LONG TERM PROCUREMENT PLAN

II. HEDGING STRATEGY

The hedging strategy presented provides the details of SDG&E's short-term hedge plan (years one through five) and long-term hedge plan (years six through ten). The 5-year risk management plan includes hedging objectives and targets that, when approved, would become the upfront guidelines envisioned in AB 57 that will guide SDG&E's future actions when hedging.

A. First Rolling 12 Months and Year 1

In accordance with Commission requirements, SDG&E utilizes CRT and VtE on a 95% confidence level to measure portfolio risk.^{1/} For purposes of this document, VtE will be considered to be calculated at the 95th percentile if not specifically delineated as something other than VtE (95%). The purpose of this VtE metric at the 95th percentile is to estimate the 1 in 20 adverse outcome for portfolio cost over a rolling 12-month period. SDG&E will calculate risk using the Commission's preferred metric of CRT – VtE (95%), on a rolling 12-month basis, and use this for reporting purposes. SDG&E will actively manage risk during the rolling 12-month period and incrementally hedge to maintain an overall hedge position with a goal of maintaining positive values for CRT – VtE(95%). SDG&E will continue to review its overall hedge position and market conditions to determine if additional hedging is required. As such, SDG&E may, after considering its overall hedge position and market conditions, further

^{1/} D.12-01-033 established the Customer Risk Tolerance (CRT) rate for SDG&E equal to ten percent (10%) of SDG&E's system average rate.



2012 LONG TERM PROCUREMENT PLAN

increase its hedges as necessary in an attempt to mitigate a falling metric position(s) and re-establish positive risk metric(s).

In the event that at any time the VtE (95%) value exceeds CRT for the current rolling 12-month period, SDG&E will call a special meeting of its PRG to review the causes, review the pre-existing hedge positions, and discuss and decide whether new hedges are needed to bring CRT - VtE (95%) back within the allowed threshold. Depending upon the level to which the primary metric has fallen below zero and how quickly SDG&E can arrange for a meeting with the PRG, SDG&E may decide that it must act immediately and hedge more aggressively to further reduce its open position, even before it can brief the PRG. SDG&E will continue to review its hedge positions with the PRG at least quarterly.

B. Year 2

Since the Commission has directed SDG&E to manage risk for the initial time horizon of the Plan on a rolling 12-month basis, SDG&E determined that it is most consistent with its overall plan strategy to manage calendar Year 2 on a volumetric basis using an average annual hedge target. This is consistent with SDG&E's approach to managing Years 3 through 5, while recognizing that each month of Year 2 will also actively be managed as each month of Year 2 "rolls" into the rolling 12 month period throughout the year.

As SDG&E rolls from Year 1 into Year 2, SDG&E has adopted an [REDACTED] [REDACTED] of its total portfolio by adding fixed-price contracts, financial hedges or a combination of both. [REDACTED]

[REDACTED] SDG&E will



2012 LONG TERM PROCUREMENT PLAN

continually review its hedge position internally and decide whether additional financial hedging is necessary. SDG&E will brief its PRG on hedge targets and percentages on at least a quarterly basis. As with the strategy used for calendar years 3 through 5, as described below, the Year 2 period will move each year on a calendar year basis.

C. Intermediate Term – For Years 3 through 5 of the Rolling 5 Year Plan

For Years 3, 4 and 5 SDG&E undertakes more passive risk management than for the rolling 12-month period, for the reasons discussed below, where it takes positions without regard to market price signals but rather with an objective of maintaining a certain percentage of portfolio hedge positions. SDG&E will undertake hedges so that each year it fixes or caps the price of incremental portfolio open positions in each of Years 3, 4 and 5 within certain bounds.^{2/}

As an example, in 2014, Year 5 of the hedging plan will be 2018. SDG&E would hedge, through a combination of products, [REDACTED] of the open position for that year. In 2015, Year 4 of the Plan will be 2018 and SDG&E would hedge an [REDACTED] of the 2018 open positions. In 2016, Year 3 of the Plan will be 2018 and SDG&E will [REDACTED] of 2018's open positions. In 2017, Year 2 of the Plan will be 2018. By this point in time, SDG&E would have [REDACTED] of the open positions for that year, on top of any fixed price positions resulting from

^{2/} Due to the progressive nature of this plan, SDG&E uses a relativistic terminology to refer to calendar years. The first rolling 12-month period refers to the current month and next 11 months, while Year 2 refers to calendar Year 2. Year 2 will overlap the first rolling 12-month period as the rolling 12-month period moves. Therefore, if today is a date in 2014, a reference to Year 2 is 2015 and Year 3 would mean the calendar year 2016, and so on. When the first month of the rolling 12-month period reaches January 2015, then Year 2 will become 2016, Year 3 -2017 and so on.



2012 LONG TERM PROCUREMENT PLAN

existing fixed-price contracts or hedge positions. Since Year 2 will also be hedged volumetrically, the strategy utilized for calendar years 3 through 5 will now flow into year 2 to form a consistent, hedge-over-time strategy for management of portfolio risk.

The hedging plan outlined above is further constrained by two limits established here as a part of this plan. First, SDG&E does not believe that it is prudent [REDACTED] of ratepayer risk five years forward. To do so would preclude ratepayers from realizing the benefit from any future fall in market prices if hedging was accomplished through fixed price instruments, and ignore the risk of load uncertainty created by the resumption of DA or CCA, either of which could lead to potential stranded hedging costs. Therefore, SDG&E here establishes targets for how much of its total portfolio it will hedge in years 2, 3, 4 and 5 of the rolling five-year plan. Notwithstanding other elements of this plan, SDG&E will not undertake further hedges under this rolling 5 year procurement plan:

- If in Year 3, if the total portfolio hedged has reached [REDACTED]
- If in Year 4, if the total portfolio hedged has reached [REDACTED]
- If in Year 5, if the total portfolio hedged has reached [REDACTED]

Second, collateral/liquidity requirements necessary to implement the hedging contained in this plan can be significant and potentially impact company finances. As discussed in this Appendix under the Section labeled, "Liquidity Requirements," SDG&E describes the liquidity requirements, and sets a limit on how much liquidity SDG&E is prepared to make available to implement this plan.



2012 LONG TERM PROCUREMENT PLAN

SDG&E will use a variety of products and instruments to meet the goal of hedging incremental positions in Years 3, 4 and 5, all of which are authorized in Table 1 “Authorized Procurement Products” in D.02-10-062, or have been/will be approved by separate application. One of the most likely means of meeting the incremental annual hedge targets is hedging of SDG&E’s net open position through execution of [REDACTED]. These contracts are incremental to the current portfolio, and as they are added they eliminate the exposure to market prices for the volume transacted. A second likely means is hedging through [REDACTED]. Other means include [REDACTED]. [REDACTED]. Any shortfall in meeting the targeted forecast hedges in any individual category in this table will be made up through the use of a combination of other instruments, most likely financial gas instruments, as these are relatively liquid through the five year term discussed here.

In each plan year, SDG&E will seek to hedge an additional volume of the total portfolio regardless of previous year’s hedging, up to the limits described above. Because of the “lumpiness” of resource additions, it is possible in some years that SDG&E may add a fixed-price contract that exceeds the incremental hedge percentage for Plan years 3, 4 and 5. If that happens, in the next year SDG&E would still add the specified percentage of incremental

^{3/} D.10-12-035 adopted a new SRAC calculation, which is indexed to the SoCal Border.



2012 LONG TERM PROCUREMENT PLAN

hedge positions in each year, subject to the limits previously described. Additionally, there may be instances in which adding the prescribed incremental volume of hedges in one or more of years 3, 4 or 5, may still leave SDG&E below the capped levels for hedging. Given that the planning horizon in these instances is still a number of years out in the future, it may or may not be appropriate to increase the volume of financial hedges. As such, SDG&E will periodically throughout each year review its annual hedge levels, factoring in incremental hedges, which may not have been originally included in its analysis for the year(s) in question.^{4/} If after taking into account the potential for additional fixed-priced resource additions, the annual hedge level is still [REDACTED] below the yearly cap level, SDG&E may take action to incrementally hedge above the specified incremental hedge percentage to bring the annual hedge position more in line with the capped hedge target. This is appropriate if SDG&E determines that leaving the hedge levels as they otherwise exist could cause SDG&E to not meet its hedge targets in subsequent years of its plan.

In summary, this hedging strategy results in ratepayers acquiring a portfolio that has a weighted blend of market prices transacted at various points in time. This strategy of hedging incrementally and over time is similar to the “ratable rate” approach described in Appendix I. Hedging plans are regularly reviewed with SDG&E’s PRG, although this review may take place after some hedging has occurred if market price movements dictate that execution proceed on

^{4/} This could happen for several reasons: a fixed priced contract may be in the process of being negotiated but is not yet finalized; a fixed priced contract may have been executed but not yet approved by the Commission. In these instances SDG&E would evaluate the need to add the contract into the model and re-evaluate whether additional hedging was warranted or appropriate at that time.



2012 LONG TERM PROCUREMENT PLAN

a timeframe faster than a PRG meeting can be arranged. In addition, SDG&E also reports a rolling 60 month CRT –VtE (95%) to the Commission, but will not modify its 5-year hedging strategy based on the values contained in this report.

This approach is appropriate because sufficient time remains for SDG&E to analyze, discuss and modify its hedge plan as needed with the PRG and Energy Division without reacting defensively to adverse changes in forward market prices. SDG&E’s view is that over-hedging long-term positions in reaction to short-term price signals is ill-advised.

D. Long-term (Years 6 Through 10)

SDG&E’s effective fixed-price hedging target for years 6-10 is no lower than [REDACTED]. These hedge levels are currently assured through the fixed-price positions inherent in the portfolio’s legacy contracts and, as such, SDG&E has no plans to financially hedge a greater percentage through OTC or exchange-based derivatives. SDG&E will adopt reporting triggers at the following levels: Years 6-8: [REDACTED] Years 9-10: [REDACTED]. These calculations for Years 6-10 are to be performed no later than the last business day of each year. If the hedged portion of the portfolio falls below these levels, SDG&E will consult with its PRG and notify the Commission of any planned actions through an update to this LTPP. Some limited amount of passive hedging will occur naturally as a consequence of the addition of certain fixed-price supply additions to the portfolio.

In addition to the foregoing, the scope of the active hedging horizon has been limited to five years in this LTPP for the following reasons:



2012 LONG TERM PROCUREMENT PLAN

- The Commission's requirement that any transactions longer than 5 years be submitted for separate approval essentially places a limitation on trading authority for transactions such that any hedge for years 6-10 would require going to the Commission for pre-approval. SDG&E considers the notification at certain hedge levels followed by a plan update, as outlined above, is consistent with this restriction.
- Reduced liquidity in the market beyond five years, which makes transaction execution more difficult, increases bid/ask spreads and makes price discovery less robust.
- Beyond five years, the SDG&E Long-term Resource Plan currently relies on some generic, yet-to-be contracted-for resources. The uncertainties surrounding these future resources make calculation of the Net Open Positions much less certain for these years.

In addition to price risk, the Commission has previously directed SDG&E to address additional procurement risks:

- *Supplier Diversification* – SDG&E has plans that represent diversity of supply with resources expected to be drawn from electric market, gas markets, renewable suppliers and contract resources. SDG&E will adopt supplier diversity as one non-price aspect to be considered in procurement decisions when filling the short positions. SDG&E will also strive to evaluate all options to diversify, from use of Diverse Business Enterprises (DBEs) for procurement, to diversification of development risk through division of renewable procurement among a large number of projects and fuel types to limit over reliance on any single source.
- *Liquidity Risk* – To the extent that portfolio VtE remains below the CRT, transacting for energy supplies will be spread using the “incremental and over time” approach to hedging adopted in this plan. That approach reduces timing risk that would arise if all hedging were done at one point in time. Notwithstanding the need to pay attention to timing risk, a high volume of procurement or hedging activity could be appropriate in a short time period to defensively protect the portfolio should volatility (and thereby VtE) or prices show signs of increasing. Since market conditions will inevitably change as we move through the period covered by this Plan,



2012 LONG TERM PROCUREMENT PLAN

risk strategies and measures, including timing of transactions, will also need to be constantly updated to reflect current

market conditions. Timing in SDG&E's plan is governed largely by changes in the CRT risk metric.

- *Transaction Risk* – It is possible that there may not be sufficient market liquidity to execute the procurement plan at the time and in the manner proposed by SDG&E. Some of the transaction risk may be mitigated by spreading out transactions over time, using a variety of products to achieve a desired position (for example, financial versus physical), and having trading and credit agreements established with enough counter parties such that SDG&E is not precluded from certain transactions that are being offered to other participants.

E. Liquidity Requirement

Standard & Poor's (S&P's) rating agency has developed a standardized financial liquidity requirements test for certain companies using marginable derivatives or like products that contain any of a variety of contractual terms that could result in an obligation to post collateral (e.g. daily or initial margin). The potential to post collateral can create a cash requirement on the company. The collective contracts and positions that generate a potential demand for liquidity according to the S&P methodology will be called "liquidity demanding" contracts and positions. S&P's objective in this test is to ensure that companies engaging in such transactions maintain sufficient liquidity on hand (the capacity to meet cash obligations) to ensure the continuing viability of the corporate entity; this has a direct bearing on the credit rating S&P issues for energy companies.

Although not currently required by S&P, SDG&E has internally adopted S&P's liquidity calculation methodology in order to manage its working capital requirements within the liquidity limit set per this plan. SDG&E tracks this "Liquidity Utilization" against the liquidity limit. In



2012 LONG TERM PROCUREMENT PLAN

addition, we calculate a 10-day VaR on marginable derivatives to assess the statistical possibility of exceeding the authorized liquidity limit. "Liquidity Utilization" is defined as the sum of:

1. unrealized mark-to-market of marginable transactions; and
2. the greater of an upward or downward shock of NYMEX natural gas prices of 15% for first year forward and 20% for later years, with natural gas basis fixed and with full netting across positions.

One function of the S&P methodology is that the total liquidity requirements should always exceed the actual collateral that may be required to be posted at any given time. The S&P calculated "Liquidity Utilization" using the S&P methodology will be the binding requirement on this plan, since it includes both the unrealized MtM component as well as the 15% and 20% "stress test" reserve requirement. The liquidity utilization is the metric used to track against the liquidity limit. The 10-day VaR on marginable transactions is purely an internal management tool used to potentially provide early warning on the possibility of exceeding the liquidity limit.

F. SDG&E's Established Liquidity Limit

Approval of this plan will include the explicit limit on the amount of financial resources for executing this long-term hedging plan. SDG&E is proposing to set its liquidity limit at [REDACTED] in recognition of 1) the size of the anticipated liquidity requirements; 2) market conditions; 3) the expectation to complete identified hedging using a combination of products or instruments including those that do not require collateral; and 4) the impact of raising cash or cash equivalents to be used for collateral [REDACTED], which is based upon the



2012 LONG TERM PROCUREMENT PLAN

hedging volumes and instruments currently forecast to be used to implement this plan. The actual liquidity needs will vary with movements in forward market prices and the types of hedge instruments utilized under this plan.

Setting a limit on working capital requirements for liquidity is consistent with the AB 57 stated goal of assuring creditworthiness. At any time during the term of this plan, if SDG&E reaches or appears likely to reach its authorized and approved liquidity limit, SDG&E will take the following actions:

- Temporarily cease any further hedging activity that gives rise to additional liquidity requirements.
- Evaluate its current overall hedge position and portfolio and unwind hedges as needed to move its liquidity requirements below the authorized and approved limit.
- Meet with its internal management to evaluate its liquidity position, current hedge position and overall market conditions and determine whether SDG&E should apply to the Commission for additional borrowing authority to be used for the purpose of meeting these margin/collateral requirements so that it may resume execution of the hedge plan or continue to manage its hedge positions and portfolio within the authorized and approved limit.
- Inform the PRG of its liquidity position and intended actions.
- Update this plan to outline further actions as necessary.

III. SECURITY REQUIREMENTS (COLLATERAL AND CREDIT)

A. Collateral Requirements

As discussed in this LTPP, SDG&E can hedge open positions taking fixed-price positions (hedge open positions) up to five years forward to implement the company's risk strategy. There are a couple of implications associated with this strategy. First, a five-year



2012 LONG TERM PROCUREMENT PLAN

forward position covers periods where SDG&E's share of open positions are significantly larger. Second, given the increased holding period for positions there is a potential for greater divergence between the transaction price and market prices through time. These factors combine to create a much larger potential need for SDG&E to hold or post collateral. In this section, SDG&E discusses transactions that create needs for collateral as well as those that have reduced collateral requirements.

B. Products that Contribute to the Need for Collateral

These products would include all those that contain any contract provisions that may require SDG&E to make a cash or similar payment as a function of the contract's market value in advance of settlement. The contractual terms are typically standardized and reflected in Master Agreements, such as ISDA, EEI, WSPP and North American Energy Standards Board (NAESB). SDG&E's various contracts contain a variety of such provisions, ranging from active margining (see Exchanged Cleared Products below) on one extreme to a limited requirement to post collateral should SDG&E receive a credit downgrade.

C. Exchange Cleared Products

Products transacted on exchanges, such as NYMEX, often rely on a clearinghouse to guarantee settlement. Use of these products requires parties to meet active margining obligations, including initial margin, maintenance margin and margin calls on a day-to-day basis in some cases.

D. ICE Traded Products



2012 LONG TERM PROCUREMENT PLAN

Financial transactions executed through ICE are cleared through a clearinghouse. The margining process for these transactions is similar to that for exchange cleared products. Physical transactions on ICE can be cleared or traded bilaterally through WSPP Master Purchase and Sale Agreements.

E. Other OTC “Liquidity Demanding” Products

Most forward gas and electricity products, both physical and financial, such as fixed-price physical gas, fixed-price swaps, OTC basis swaps and options, contain contractual provisions for securing or collateralizing each counterparty’s positions. These are often referred to as credit or security provisions. These provisions lead to S&P’s insistence that sufficient liquidity be maintained for all such “liquidity demanding” contracts, since counterparties are able to negotiate unsecured credit lines.

F. Products that Do Not Contribute to the Need for Collateral

These products could limit the total need for collateral and are potentially necessary to fully implement this plan. The following, non-exhaustive list, highlights some of the products that do not contribute to the need for collateral and are likely to be used by SDG&E in the hedging of risk positions. It should be noted that, while SDG&E has a preference for these types of products (due to the lack of margining provisions), use of these products may be somewhat limited either by their higher costs, limited availability or increased exposure to credit risk.

[Redacted text block]



2012 LONG TERM PROCUREMENT PLAN

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Structured bilateral contracts with negotiated credit provisions. When a transaction is executed bilaterally, both parties may agree in negotiations on specific credit provisions covering that transaction that could result in a wide range of collateral reduction solutions. SDG&E intends to make use of this type of resource to execute on this hedge plan while working within the liquidity limit.

Options. SDG&E frequently uses options to hedge its electric portfolio where the premium paid is the extent of the margin requirements. SDG&E may act as an outright buyer of options (call options to cap price exposure act as a stop loss, or put options to restore ratepayer benefit associated with fixed-price purchases in a falling market) to reduce VtE or manage to volumetric hedge percentage targets (measured on a notional basis). SDG&E may also act as a seller of options to reduce overall hedging costs, reduce VtE or manage to volumetric hedge percentage targets (measured on a notional basis).

G. Calculation of Unsecured Credit Lines



2012 LONG TERM PROCUREMENT PLAN

The Credit Department will review counterparty creditworthiness and assign internal ratings. These ratings govern the amount of the unsecured credit line that will be made available to a counterparty [REDACTED]. The following criteria may be used to assign ratings and establish limits for counterparties:

- Counterparty's last three audited financial statements
- Counterparty's latest annual report and SEC 10K filing (if applicable)
- Organizational chart showing parent and subsidiaries
- First-hand and/or general knowledge or experience with the company
- Last month's or last quarter's internally prepared financial statements if this time period is not included in the most recent audited statements (if available)
- Agency public credit rating (if available)
- Personal visits to customer offices and facilities and with key company contacts
- Information services: Reuters; Bloomberg; Moody's; S & P; Dow Jones; Lexis-Nexis
- News articles
- Other information as necessary to conduct credit analysis

H. Contractual Credit Provisions

Below are brief descriptions of the credit terms of various standard contracts used in procurement.

Physical Energy Master Agreements: For short-term physical energy transactions, SDG&E uses standardized master agreements, including, among others, the NAESB a bi-lateral form for natural gas transactions and the WSPP a multi-lateral agreement for power



2012 LONG TERM PROCUREMENT PLAN

transactions. Typically these agreements contain provisions for liquidated damages to cover cases of counterparty default. Counterparties may negotiate collateral arrangements in support of transactions under these agreements; however, margining is generally not a feature of these agreements.

ISDA Master Agreements: For OTC financial transactions (*i.e.*, derivatives), such as swaps and options, SDG&E generally utilizes the ISDA Master Agreement, including the various cover letters and schedules used to tailor the terms. When an ISDA has not been fully negotiated and executed SDG&E may use a “long form confirmation” for each transaction. The long form confirmation contains many of the provisions in an ISDA, but may be easier to negotiate quickly because it won’t necessarily apply to follow-on transactions.

ISDAs contain liquidated damages provisions and also provide for margining. The ISDA makes delay or refusal to comply with a margin call an event of default, thus triggering liquidated damages. As a result, when transacting under a contract with margining provisions, SDG&E expects that exposures in excess of the unsecured credit line can be quickly collateralized.

Cleared Transactions: The use of clearing can dramatically reduce credit risk. For transactions with a commodity futures exchange, such as NYMEX futures and options, the exchange clearinghouse acts as the counterparty to every transaction while maintaining adequate margin monies from all clearing members. In addition to NYMEX futures and options other products and transactions (*e.g.*, OTC) can also be cleared through the exchange, thus providing all of the credit backing of the exchange to an OTC product.



2012 LONG TERM PROCUREMENT PLAN

Long-Term Renewable Energy PPAs: Generally, SDG&E's renewables PPAs involve buying power under long-term, fixed-price contracts. [REDACTED]

[REDACTED] SDG&E has established standards for how much collateral must be secured in support of renewable PPAs, including project development security and default security, based on the creditworthiness of the counterparty and the likelihood that actual exposures may exceed that level during some period over the lifetime of the contract.

The project development security applies to new generation development projects and represents performance assurance. The amount is calculated as twice the estimated energy amount (MWh) multiplied by a value not lower than \$5/MWh, and is held during the construction phase until the commencement of deliveries. This collateral is returned to the counterparty, net of any delay damages, upon commercial operation.

The default security applies to the commercial operation period of new renewable PPAs. The seller provides default security prior to the commencement of commercial operation or expected deliveries, which is then used to secure a portion of the potential losses associated with a contract default. The default security amount is calculated as twice the estimated energy amount (MWh) multiplied by a value not to exceed \$20/MWh and is held throughout commercial operations. This collateral is returned to the counterparty, net of any default related damages retained, at the end of the contract.

Other Long-Term Contracts: These types of contracts may include capacity or RA contracts, tolling agreements or heat-rate options, or other fixed-price energy PPAs, among



2012 LONG TERM PROCUREMENT PLAN

others. The counterparty's potential credit risk will be factored into the least-cost best-fit analysis when comparing against other counterparties. [REDACTED]

[REDACTED]

[REDACTED] Because some contracts have 5-, 10- or even 20-year terms, the peak potential exposure that may be calculated prior to contract execution will often represent an amount that

[REDACTED]

[REDACTED].

SDG&E will seek to minimize the potential for this unsecured credit exposure, and during contract negotiations will use the calculated potential credit risk as a reference point.



Appendix C

Gas Supply Plan

Natural Gas Procurement Strategies

The following section describes some of the strategies/procedures used by SDG&E in meeting the natural gas requirements for its generation portfolio:

I. FUEL SUPPLY PROCUREMENT

SDG&E purchases natural gas for both SDG&E-owned facilities and SDG&E-contracted tolling agreements. As outlined below, SDG&E will procure gas for its generation portfolio, as required by the Commission's Standard of Conduct #4.

The SDG&E generation fuel portfolio of natural gas contracts and purchases is maintained as a separate and distinct portfolio from SDG&E's portfolio of gas contracts and purchases to serve its core gas customers.

Natural gas for dispatch by SDG&E to serve bundled customer load represents costs that will be recovered from ratepayers through ERRA and thus are part of the CRT risk management strategy.

SDG&E procures gas for load-serving generation with the objectives of least-cost dispatch and managing gas costs through its CRT-based risk management strategy, as described in this LTPP Section II.B.

Regarding affiliate transactions in gas procurement, SDG&E may conduct transactions over the ICE, which could result in anonymous transactions with its regulated or non-utility



2012 LONG TERM PROCUREMENT PLAN

affiliates. Such anonymous transactions with regulated affiliates are authorized by Resolution E-3838 and other Commission decisions, and such transactions with non-utility affiliates are specifically authorized in D.03-06-076 and elsewhere.

II. NATURAL GAS PROCUREMENT STRATEGIES AND PRODUCTS

A. Products

The primary physical products that SDG&E intends to trade in procuring natural gas for electric generation include the items discussed below. SDG&E's traders transact to procure physical natural gas for delivery the next day, through ICE, brokers and IM, so as to meet the expected needs for SDG&E UOG and tolled generation facilities the next day. Financial instruments are also discussed as part of SDG&E's hedging strategies.

1. Baseload Gas

For each month, SDG&E plans to baseload [REDACTED] of gas requirements for generation which serves SDG&E customer load at prevailing prices, given liquidity and credit constraints.. SDG&E may purchase additional baseload gas supply to lock in generation cost associated with a forward sale. The price for baseload gas will typically be fixed-price or based on index pricing. While SDG&E's practice has been to purchase baseload gas month-to-month, multi-month contracts may also be used to reduce the exposure to bid-week volatility and liquidity constraints. The [REDACTED] level assures that the major portion of gas to be used to serve bundled customers remains hedged after financial hedges expire, a few days prior to the delivery month.



2012 LONG TERM PROCUREMENT PLAN

2. Intra-month (swing) Gas

SDG&E expects to procure the balance of its UEG physical gas requirements throughout the month in the spot market at prevailing prices. This procurement may be constrained at times by liquidity and credit.

3. Transportation Services

SDG&E will incur intra-state transportation, firm non-core transportation rights and Firm Access Rights charges to transport gas supply between various points, such as from SoCalGas border points, SoCalGas storage or SoCal Hub receipt points to the UEG units. These costs will be based on prevailing tariff rates. SDG&E also will explore and procure short and long-term interstate transportation capacity opportunities to access producing basins in the San Juan, Permian, and Rockies basins, if such interstate transport supports its gas procurement objectives and is forecast to be economic based on forward prices. Transportation and storage are discussed below.

4. Operational transactions

SDG&E may incur operational costs associated with managing gas supply and balances to respond to late notice dispatch, forced curtailment of the units, OFO notices and other operational issues. These costs include, among other things, park and loan transactions, interruptible transportation, storage capacity, imbalance trades, late cycle purchases and sales, OFO and other imbalance-related charges and credit sleeves. Such costs may be either explicit or bundled in the commodity price.



2012 LONG TERM PROCUREMENT PLAN

5. Park and Loan Services

Park and Loan services allow SDG&E the flexibility of storing gas on its system for later use (Parking) or taking gas off of its system (Loaning) in order to avoid purchasing spot-gas at high prices. SDG&E will utilize this "balancing service" at times when SDG&E may find itself out of balance on the pipeline (different pipelines will have different allowances for balancing) so as to avoid any balancing fees or penalties. In addition, SDG&E may use this service to take advantage of short-term price swings on the open market.

6. Brokerage Services

SDG&E anticipates using voice brokers and electronic exchanges for its procurement and hedging activity. Fees charged for these brokerage services will be submitted for recovery under the ERRRA.

7. Sleeve Fees

When transacting in the market, it is sometimes economic to transact with a party that does not have a contractual relationship with SDG&E. In these instances, it is possible to use an intermediary, a third party that can transact with both SDG&E and the party of interest. This third party charges a "sleeve fee" for performing this transaction. SDG&E will not engage in any such transactions with affiliated, unregulated companies.

In addition to transacting outright for the products and services listed above, SDG&E may also combine certain purchases for cost-effectiveness or transactional efficiency reasons. For example, SDG&E may include hedge products in its physical baseload purchases to supplement financial hedges. One such combination could be purchasing baseload gas on a



2012 LONG TERM PROCUREMENT PLAN

forward basis, where the price is based on the bid-week index price that is capped at a predetermined strike price. Such a transaction is a combination of a baseload purchase and a financial call option, and may be a better procurement solution than an outright financial call option that expires prior to the delivery month.

8. Gas Pipeline Capacity

SDG&E procures natural gas supplies for its own generation load and reliability requirements including delivery to the SoCalGas pipeline system. SDG&E also procures natural gas supplies for an out-of-state generation facility located in Nevada. Overall, SDG&E procures the majority of its additional gas requirements at the California border at spot market prices each month. Currently with excess supply and delivery capacity to SoCal, the border price purchases do not represent a risk to supply availability and are the most economic alternative to SDG&E ratepayers.

SDG&E manages a limited amount of firm interstate pipeline capacity on the Kern River Transmission (Kern) system pursuant to a CDWR contract that was novated to SDG&E. SDG&E does not envision entering into additional long-term commitments for interstate pipeline capacity at this time but will continue to evaluate opportunities to procure long-term interstate pipeline capacity and may enter into such arrangements if they are forecasted to be economic. Should SDG&E enter into one or more such transactions, SDG&E will brief its PRG on the projected benefits of entering into such long-term commitments.

Availability of long-term Kern River capacity is uncertain since capacity is currently fully subscribed. SDG&E will evaluate any posted capacity bids that may be offered for a full 15



2012 LONG TERM PROCUREMENT PLAN

years or for partial subscriptions based on forecasted benefits over the offered term. Capacity on the El Paso and Transwestern Pipelines is currently being offered for short-term commitments, reducing the risk of longer-term price uncertainty.

In conclusion, SDG&E will evaluate the economics of entering into long-term pipeline capacity transactions based on forecasted economic benefits. SDG&E will also seek short-term opportunities to secure pipeline capacity and may enter into short-term commitments for capacity should forecasts show positive benefits. SDG&E will brief its PRG on a periodic basis to update it on its strategies and transactions related to pipeline capacity forecasted prices, costs and benefits.

9. Gas Storage Capacity

Firm storage inventory, injection and withdrawal rights may be obtained through SoCalGas for annual terms effective each April 1. Long-term storage is defined as annual capacity rights for up to 10 years. SDG&E defines short-term storage as either monthly capacity rights or annual capacity rights for up to 3 years. The availability and price for firm storage service will not be known until bidding commences during each SoCal Storage open season, and an estimate will be made of these costs by calculating the expected premium (or price mark-up) to the projected summer/winter price spread from historical data trends for the SoCalGas Transaction-Based Storage bids, and any associated projected operational benefits. For each storage cycle, the seasonal price spreads at the time of bidding are compared to the price determined for the current year's reservation and variable expense costs. The price of this firm storage bid consists of the seasonal price spread and variable storage cost plus a



2012 LONG TERM PROCUREMENT PLAN

premium that includes an extrinsic value for market risk and utilization of firm storage rights to generate a price advantage through continuous cycling and trading. The greater the expected volatility and risk, the more the storage is worth to participants willing and able to manage storage for these purposes. This premium is the “break-even” cost that would have to be recovered through market trading using the storage (such as buy-hold-sell excess supplies) and from operational flexibility in avoiding OFO penalties and managing imbalances.

Given the significant market/operational savings required to economically justify a commitment to long-term storage service, SDG&E may not conclude the acquisition of long-term storage services to be economic, but instead may focus on procuring annual (1 year) storage services based on the forward spreads between winter and summer prices and operational value. Analysis of these seasonal spreads is based on one year forward market prices and allows SDG&E to inject gas during the summer season when prices are typically lower and withdraw during winter months when prices are typically higher. In addition, savings from holding firm storage inventory would be possible should it become necessary to sell excess gas supply in the market at a loss in order to avoid utility OFO penalties. SoCalGas declared OFO conditions can occur frequently during certain periods of the year, most notably in spring and the fall when gas usage is low, and can occur infrequently during other times of a year. SDG&E will tailor its storage bid to maximize the potential value for ratepayers and will enter into short-term storage transactions when the potential benefits for short-term storage exceed the cost SoCalGas commands for such storage capacity.



2012 LONG TERM PROCUREMENT PLAN

10. Other Products/Other Fuels

SDG&E may procure biofuels as part of its RPS RFO process. SDG&E may also procure biofuels on a monthly and/or daily basis similar to procurement of natural gas products should such markets/exchanges develop.

III. FUEL PROCUREMENT STRATEGY

A. SDG&E-Owned Facilities

SDG&E-owned facilities run predominantly based upon economics, but are also subject to CAISO dispatch under RA, RUC Ancillary Service and ED obligations. Gas for these units is supplied under applicable SDG&E, SoCalGas and Southwest Gas tariffs, or other such tariffs as necessary and appropriate for procurement and delivery of natural gas or other alternative fuels to the respective facilities. Gas positions are marked to SoCal Border Index and/or the SoCal CityGate Index prices (for plants located in California) or Kern Delivered indexed prices (for facilities located in Nevada). SDG&E is responsible for the management of all associated gas transactions for these plants and buys in its own name for plant fuel needs. Consistent with the SDG&E gas portfolio strategy, SDG&E will generally procure during bid week each month [REDACTED] of its anticipated forecasted baseload needs.

Peaking units are subject to the same CAISO obligations as baseload units. SDG&E purchases the gas in its own name as needed to meet the requirements of this peaking generation facility. The generation output may be used to meet load, or be dispatched by the CAISO for RA, RUC Ancillary Service and ED obligations. Peaking resources have infrequent



2012 LONG TERM PROCUREMENT PLAN

and often unpredictable dispatches, and as such, gas is usually purchased either in the daily market or after actual dispatch has occurred, to fill any imbalance.

B. SDG&E-Controlled Units (Tolling Agreements)

SDG&E transacts new tolling agreements through periodic RFO processes. These units will consist of baseload, intermediate and peaking type facilities. SDG&E expects that these facilities will run for the purpose of serving bundled customer needs. As with SDG&E owned units, the units should run predominantly based upon economics, however, they are also subject to CAISO dispatch under CAISO RA designation, RUC, Ancillary Service and ED obligations.

Gas for these units is supplied under the applicable SDG&E tariff. Gas positions are marked to SoCal Border Index and/or the SoCal CityGate Index prices. SDG&E also, is responsible for the management of all associated gas transactions, buying in its own name for plant fuel needs. Consistent with the SDG&E gas portfolio strategy, SDG&E will generally procure during [REDACTED] of its anticipated forecasted baseload needs.

For peaking resource with infrequent and often unpredictable dispatches, gas will typically be purchased either in the daily market or after actual dispatch has occurred, to fill any imbalance. For intermediate type resources, gas may be purchased either in the daily market, DAM or a combination of both, depending upon the characteristics and frequency of dispatch of the individual unit.

C. Qualifying Facilities



2012 LONG TERM PROCUREMENT PLAN

SDG&E also purchases capacity and energy from a number of QFs through a combination of Standard Offer and non-Standard Offer contracts. While SDG&E does not procure fuel for any of the QF plants, SDG&E has financial exposure to movements in gas prices even though SDG&E has no physical position with respect to the procurement of gas for QF plants, because QFs are paid the utility's SRAC. That payment formula is indexed to SoCal Border gas prices. As such, the indexation of payments for the electric off-take of QFs creates a financial exposure at the SoCal Border, equal to a volume proportional to the electric QF off-take. SDG&E may choose to hedge this gas position with financial products in conjunction with hedging of other UEG physical gas positions as part of the risk strategy described elsewhere in this LTPP.



Appendix D

Congestion Revenue Rights

I. OVERVIEW

The CAISO Allocation process is the means by which SDG&E acquires the majority of its CRRs. SDG&E does not incur any cost for CRR acquired through the allocation (SDG&E is allocated CRRs in proportion to its load share), however SDG&E is limited in the quantity of CRRs that it can request and CRRs must have a sink that corresponds the location of the load served, the SDG&E DLAP.

The Allocation process is divided into two separate processes, annual and monthly. The Annual Allocation is conducted in the September to November timeframe of the year prior to the year that the awarded CRR will be effective. Annual Allocation CRRs are seasonal and all four seasons are available for nomination. Nominally, up to 75% of the CRRs acquired by SDG&E will be from the Annual Allocation. Grid capacity for the Simultaneous Feasibility Test (SFT) is reduced to 75% and nomination limits are based on 75% of peak load. The Monthly Allocation is conducted monthly in the month prior the month that the CRRs will be effective. Grid capacity in the monthly SFT is increased to 100% however there may be a global derate factor applied by the ISO on all paths.

Both the Annual and Monthly Allocation processes start with the submission of load data by SDG&E to the CAISO. The load data is the basis for setting the limits of CRRs that SDG&E can nominate in the two allocation processes. For the Annual Allocation, historic



2012 LONG TERM PROCUREMENT PLAN

bundled hourly load meter data from the prior year is used.^{1/} For the Monthly Allocation, forecast bundled hourly load for the CRR month is used. The peak load forecast used for Monthly Allocation is the same one used for RA.

The CAISO makes several adjustments to the submitted load data to determine SDG&E CRR nomination limits. One adjustment is for 99.5% exceedance. The adjustment selects a MW value from the submitted data that is only being exceeded in 0.5% of the period hours. Another adjustment to the CRR limit is load migration, which accounts for service area customers moving between SDG&E and Energy Service Providers for commodity service. The load migration adjustment can be either positive or negative.

When the CAISO has completed processing the load data, it provides SDG&E with Adjusted Load Metric (ALM), which is the basis for setting all CRR limits. The ALM is provided for both the on-peak and off-peak periods. For the Annual Allocation, the ALM is based on seasonal (quarterly) data and for the Monthly Allocation, it is base on monthly data. In the Annual Allocation, the ALM is further reduced by 25% to determine the Seasonal Eligible Quantity (SEQ),^{2/} which is the base value for establishing nomination limits. In the Monthly Allocation, the ALM, which is based on forecast load, sets the Monthly Eligible Quantity (MEQ).

The nomination of CRRs is conducted in rounds or tiers. The Annual Allocation consists of 3 tiers and the Monthly Allocation is conducted in 2 tiers. The nomination limits for each tier are based on the SEQ for the Annual Allocation and MEQ for Monthly Allocation.

^{1/} For example, the 2011 Annual Allocation CRRs, which were nominated in Fall 2010, used limits based on 2009 recorded load.

^{2/} SEQ = .75 x ALM.



2012 LONG TERM PROCUREMENT PLAN

The first tier of the Annual Allocation is known as the Priority Nomination Process (PNP) or PNP Tier. The PNP allows a Market Participant (MP) to renew CRRs from last year's CRR portfolio that was acquired through the Annual Allocation process. Prior to nominating CRRs in the PNP, the CAISO provides SDG&E with a list of the CRRs that can be renewed in the PNP by season and by Time of Use (TOU). The PNP renewal list excludes any Long-Term (LT) CRRs held by SDG&E in the prior year. The nomination limit in the PNP is the lower of: 1) two thirds of SEQ less any LT CRRs or 2) total renewable CRR quantity less any LT CRRs.^{3/} This is because only CRRs on the CAISO-provided renewal list can be renewed in the PNP.

Following the PNP, SDG&E will be allowed to convert any CRR awarded in PNP to LT CRRs. The converted CRR will apply for the same season and TOU for a 10-year term. The 10-year term includes the year of the original CRR before conversion plus 9 more years for a total of 10 years.^{4/} The limit on total LT CRRs is 50% of ALM.

The second tier (Tier 2) of the Annual Allocation is an open tier that allows a MP to nominate any source point. The nomination limit for Tier 2 is two thirds of SEQ less any LT CRRs and any CRR awarded in the prior PNP Tier. Because the Tier 2 limit uses the same base quantity as the PNP Tier (2/3 SEQ), it is possible in some cases to not have any Tier 2 nomination quantity if the full PNP Tier quantity was nominated and 100% of the nomination

^{3/} For example, ALM = 1000 , LT CRR = 10 , Renewable CRR = 450; SEQ = 1000 x .75 = 750, PNP Tier case 1 = SEQ x 2/3 - LT = 500 - 10 = 490. PNP Tier case 2 = 450 - 10 = 440. Therefore PNP Tier limit = 440.

^{4/} For example, if a 2010 Season 1 On Peak CRR was converted to Long Term, it would be effective for 2010 plus Season 1 On Peak for years 2011 -2019.



2012 LONG TERM PROCUREMENT PLAN

quantity was awarded. To ensure that CRR are available to nominate in the open Tier 2, a value lower than 2/3 SEQ should be nominated in the PNP Tier. If the PNP nomination limit is set by the quantity of renewable CRRs, then a Tier 2 nomination will be guaranteed, since that quantity will be less than 2/3 SEQ.

The third tier (Tier 3) of the Annual Allocation is also an open tier. The nomination limit for Tier 3 is the full SEQ less any LT CRRs and any CRRs awarded in the PNP Tier and Tier 2.

Following each round of CRR nominations, the CAISO conducts a SFT with all CRR nominations to determine which CRR will flow. Once the SFT is conducted, the CAISO makes available the following information to SDG&E: SDG&E nominations and awards, grid-wide binding constraints and grid-wide CRR award by MP.

In the Allocation Process, it is possible to nominate CRR sources at the Trading Hubs (SP15, NP15 or ZP26). In the network model, trading hub prices are reflective of a weighted average of the generation node prices that are within the boundaries of the trading hub. A trading hub can include between 200 to 300 generation nodes. For CRR purposes, when a trading hub is nominated as the source for a CRR, the ISO will allocate the feasible trading hub CRRs with corresponding non-feasible counterflow CRRs from the generation nodes which make up the trading hub as the sink and the DLAP as the source.^{5/} It is possible to nominate trading hubs in all three tiers of the Annual Allocation and both tiers in the Monthly Allocation.

^{5/} For example, suppose 250 generator nodes are included in a trading hub. A nomination of a 100 mw trading hub CRR, which fully cleared the SFT, would result in an award of a CRR at the trading hub and may also award 250 generator nodes in the trading hub with the quantity of 250 CRRs summing to 100 mw. The resultant net CRR hedge would be 0 MWs.



2012 LONG TERM PROCUREMENT PLAN

II. AUCTION PROCESS

Unlike the allocation process, which is limited to LSEs only and only CRR that sink at DLAPs, the auction process is open to all MPs. To participate in the CRR Auction, a MP only needs to register with the CAISO and post the required collateral. The auction process always follows the allocation process, and consequently, there is an Annual Auction and 12 monthly auctions per year. Whether annual or monthly, there is only one auction round. CRRs awarded in through the auction will have the same term as the preceding allocation, season or month.

In the auction process, an MP can buy or sell CRRs using any combination of source-sink paths. Instead of a nomination, which is used in the allocation, the auction uses MP bids, which are made up of MW quantity and bid price pairs. In the bid set, MW quantities must be greater than or equal to 0 and increasing, prices must be monotonically decreasing. Quantities are denominated in thousandths of MW and prices are denominated in \$/MW/period. Bid prices may be negative, which would be used to sell a CRR. To sell a CRR in the auction, a bid for the counter flow CRR is submitted with a negative price.^{6/} It is also possible to bilaterally buy or sell an existing CRR. Once the transaction is complete, the new holder of the CRR must be registered with the CAISO through the Secondary Registration System (SRS).

^{6/} For example, to sell 50 mw of a 100 mw CRR (source A, sink B) a negative priced bid for a 50 mw (source B, sink A) would be submitted into the auction. If the bid clears, the MP will hold a 100 mw A to B CRR and 50 mw B to A CRR, which will settle at a net 50 mw A to B CRR.



2012 LONG TERM PROCUREMENT PLAN

Since the auction process always comes after the allocation process, a significant portion of the grid capacity is already allocated. To insure that some grid capacity will be available in the auction, the CAISO will set aside some intertie capacity for the auction. In the annual process, after the Tier 1, Tier 2 and Tier LT allocations are complete, the CAISO sets aside 50% of the remaining import capacity at each intertie. Similarly, for the monthly process, after the Tier 1 allocations are complete, the CAISO sets aside 50% of the remaining import capacity at each intertie. If the entire capacity of an intertie is committed in the early allocation rounds, the set aside for that intertie will be 0 MW.

As with the allocation process, the CAISO uses the SFT to determine which auction bids can flow, given the prior-awarded CRRs. The CRRs with the highest auction bid up to the allowable flow quantity are awarded to the MP. Since the auction allows any combination of source-sink points, some auction bids may create counter flow on the grid that will allow CRR to flow in the auction that could not flow in the allocation.

At the end of each auction, annual or monthly, the CAISO will publish the prices of the CRRs awarded in that auction. The price set will be for all available source-sink points even though the point was not part of an auction-awarded CRR .

A. Full Network Model (FNM)

The CRR FNM is a mathematical representation of the CAISO grid. Access to the FNM requires a user to execute a Non-Disclosure Agreement (NDA). This is accomplished by signing Attachment A of the master CRR NDA between SDG&E and CAISO. The CRR NDA document is located on CAISO website.



2012 LONG TERM PROCUREMENT PLAN

The FNM data can be accessed through the CAISO Market Participant Portal website. The user download the FNM data files as they are revised by the CAISO. The CAISO provides a market notice whenever the FNM is updated along with zipped file password.

Contained in the FNM data file is:

- a) Mapping by bus name and number for all network pricing nodes
- b) Mapping of all generators by resource ID, Pmax, bus name and pricing node
- c) Weight factors by season and TOU for all aggregated price nodes (DLAP, CLAP, TH)
- d) Intertie interface definitions (summer, winter)
- e) Intertie interface limits (summer, winter)
- f) ETC and TOR MW on interties
- g) Raw FNM data defining each node, transmission line and facility (transformer, etc.)

The FNM data is required for the Transmission Planning congestion cost forecast and to locate binding constraints. The FNM to be used in the Annual Allocation is typically published in July, two months before the first nominations are due.

B. Forecast Congestion Costs

Transmission Planning (TP) provides SDG&E a data set containing hourly congestion prices or Marginal Congestion Costs (MCC) for the selected nodes. This data set must be further processed in an Access data base to determine the per MW seasonal, on- and off-peak congestion cost^{Z/} for each node. The data set provided by TP selected node bus number

^{Z/} The formula for hourly congestion cost is sink MCC (*i.e.*, DLAP) – source MCC. The seasonal congestion cost is the sum of the hourly costs by season and TOU period. 8760 hourly costs yield 8 seasonal TOU costs (4 seasons with 2 TOU periods per season).



2012 LONG TERM PROCUREMENT PLAN

(column) by hour (row). To calculate congestion costs the source MCC data must be converted into a format with a single MCC price by data-time and bus number. This is accomplished through a union query which transposes the TP data. Since the selected nodes and associated bus number do not change much from year-to-year, the prior year union query can be edited to create the union query for the coming year. The DLAP MCC (sink) provided by TP is used to create a separate table, which can be used in the congestion cost calculation (see footnote below). Separate data, which relates date-time to season and TOU period, is also needed. The final congestion cost data results are seasonal on- and off-peak congestion costs for each selected node.

III. CRR STRATEGY

Any nodal market will create congestion costs as part of the congestion management process, which keeps power flows within physical line limits and charges those willing to pay “congestion rents” for the right to flow their power on congested lines. CRRs provide a means for LSEs to hedge (*i.e.* offset) the congestion cost associated with delivering energy from their supply resources to their customers.

The CRR process places limits on the CRRs that SDG&E can request. SDG&E’s strategy is to maximize the value of the limited number of CRRs that can be requested. The CRR limits come in the form of limits on nomination MWs and sources. Nomination MW limits are part of both the annual and monthly allocation processes and limit the total MW that SDG&E can nominate in any nomination round. Nomination MW limits are determined from the maximum allowable nomination quantity, based on forecast or historic peak load, and



2012 LONG TERM PROCUREMENT PLAN

existing CRRs already held either as LT CRRs or prior round awarded CRRs. Source nomination limits are part of the Priority Nomination Process (PNP), which source nomination to the set of CRRs held at the end of the prior year Annual Allocation.

The first step for any CRR nomination cycle is to determine the relative value of CRRs at the source points in existing and potential portfolio resources. This can be accomplished by using CRR valuation data, weather forecast, or historical prices. Typically, the Annual Allocation process will rely on forecast CRR value for resource ranking. The Monthly Allocation will typically rely on market and recorded CRR values for ranking, although forecast value can also be used.

The next step is determination of which CRRs will be nominated in a particular round. While nomination MW limits increase with each round, the award of nominated CRR tends to decrease with each round as because of prior awarded CRRs in the SFT. Resources with the highest CRR value should be nominated before those of lower value. Resource with very low or negative CRR value can be excluded from CRR nomination. If a large resource has a low projected CRR value, such as Palomar Energy Center, it should be considered for nomination to hedge against valuation errors.

The final step is a determination of the MW quantity of each resource selected for nomination. Nomination quantity should be based on the expected resource schedule for the TOU period. Resources with predictable schedules are easier to hedge than those whose output varies with market conditions. The lack of a resource schedule on any trade day does not impact CRR settlement, since prices will still be produced for that resource node.



2012 LONG TERM PROCUREMENT PLAN

However, without a resource schedule, there will be no offsetting congestion cost. The sum of source MW nominations cannot exceed the CAISO-published MW limits for that round. It is not necessary to nominate the full MW quantity in any round.

The most complicated nomination round in allocation process is PNP in the first round of the Annual Allocation. Renew nominations are limited to those CRRs (source and MW) awarded in the prior year Annual Allocation. Nominations are also limited by a PNP MW limit, based on ALM. If the total quantity of CRRs available for renewal is lower the PNP MW limit, the renewal MW quantity (Sink Upper Bound) applies. If the total renewal quantity is higher than the PNP MW limit, the PNP MW limit applies.

In cases where the CRR quantity available for renew exceeds the PNP MW limit (*i.e.* PNP MW limit applies), SDG&E may choose to under nominate the CRR to avoid have no CRRs to nominate in Tier 2, when any source can be nominated. The MW limit in the PNP and Tier 2 are both based on the same percentages of ALM (*i.e.* $ALM \times .75 \times 2/3$). When the PNP MW limit set the maximum MW that can be nominated in the PNP tier, it is possible to be awarded 100% of nomination. When this happens, the Tier 2 nomination limit will be 0 MW because Tier 2 MW limits less LT CRR and less PNP awarded CRRs is 0. By under-nominating in the PNP Tier, SDG&E is assured to have a greater volume available which SDG&E can use in Tier 2 for new or additional high value sources that were not part of the PNP.



2012 LONG TERM PROCUREMENT PLAN

It is possible to renew a TH (SP15, NP15, ZP26) CRR in the renewal. It is also possible to just renew certain TH source CRR, such as the Mexicali generators, which can serve as SWPL proxy CRRs.

The Tier 2 and Tier 3 nominations in the Annual Allocation are “open” nominations, meaning that any CRR source can be nominated. Prior to these nominations the CAISO publishes the CRR award results from the PNP renewal and any binding constraints. From the CRR award file, it is possible to discover the existing quantity of CRR award for any source and from that information, it can be implied what remaining quantities of CRR might be available to SDG&E in the next nomination round. The binding constraint file shows lines and branch groups that were binding in the prior SFT. Any additional CRR nominations that would increase flow over a previously constraint will not be awarded.

In the Monthly Allocation, both Tier 1 and Tier 2 are “open” nominations. Like the Annual Allocation, the CAISO publishes the MW limits for both tiers. While the Monthly Allocation uses the full grid capacity (annual process only uses 75% of grid capacity), the FNM is already encumbered with both LT and Annual Allocation CRRs. If high value CRRs were obtained in the Annual Allocation, the monthly process is only needed to round out the CRR portfolio with mid to low value CRRs; otherwise SDG&E will attempt to utilize remaining unallocated CRRs at the most strategic locations based on its model runs to secure the highest value CRRs remaining to be allocated. Since the CAISO does not publish the amount of unallocated CRRs, similar to the annual process SDG&E will review, the CAISO published binding constraints after Tier 1 nominations are awarded to help determine whether CRRs may



2012 LONG TERM PROCUREMENT PLAN

still be available along various paths. Any monthly nomination that increases flow on a binding constraint will not be awarded.

SDG&E has limited its participation in the CRR auction process since CRRs not available in the allocation process will likely not be available through the auction, with the possible exception of the intertie CRRs. SDG&E will evaluate the likelihood of availability of intertie CRRs and may participate in the auction process if it determines a need for and likely availability of intertie CRRs. The CAISO does set aside some intertie capacity for the auction processes. It is possible to “sell” a CRR position in auction by buying the counter flow CRR.



Appendix E

Convergence Bidding

I. OVERVIEW

Convergence Bidding (CB), also referred to as Virtual Bidding,^{1/} is a common market design element in ISO electric markets that the CAISO market implemented in February 2011. Convergence bids are transactions that permit market participants to arbitrage prices between two financially binding energy markets, in CAISO's case, the Day-Ahead (DA) Market (DAM) and the Real-Time (RT) Market (RTM). The DA and RT markets each have their own energy settlement prices and traders will seek to buy in the lower price market and sell in the higher price market. If a virtual bid clears in the DAM, the transaction is automatically reversed in the RTM with the opposite transaction. The settlement of this transaction (sales revenue – purchase cost) is determined by the difference between the two market prices and the awarded quantity. For example, a virtual demand bid that clears the DAM would be profitable if the RTM sale price was higher than the DAM purchase price. Conversely, a virtual supply bid that clears the DAM would be profitable if the RTM purchase price was lower than the DAM sales price. The arbitrage of these two markets by market participants through virtual bidding is expected to “converge” the two markets – *i.e.*, to minimize the spread between DA and RT market clearing prices.

^{1/} The terms “convergence bidding/bids” and “virtual bidding/bids” are used interchangeably herein.



2012 LONG TERM PROCUREMENT PLAN

Under the CAISO's implementation of CB, market participants will be able to submit virtual bids at interties, aggregated pricing nodes (APNs) and most Pnodes. Physical and virtual bids for supply and demand will both be included in the set of bids used in the DA IFM. IFM results will be processed as they are now and awards for supply and demand will be a combination of physical and virtual resources. When the Residual Unit Commitment (RUC) process is run after the IFM, CAISO will only consider physical resources in determining what additional physical capacity must be reserved for reliability purposes to cover forecast demand. In real-time, the CAISO will dispatch balancing energy from physical resources, as is done today. Initially a 10% position limit will be imposed on any Pnode, with those limits gradually expiring as CB matures. To participate in the CAISO market with virtual bids, a participant only needs to meet the CAISO credit requirements, since the CB product is purely financial with no physical delivery requirement.

II. APPLICATIONS OF CB

SDG&E intends to use CB as a tool to provide cost reduction or risk mitigation benefits to ratepayers, rather than increasing risk through speculative trading between the DA and RT markets. SDG&E's proposed applications of CB can be grouped into two categories – operational enhancements and defensive price arbitrage. These categories are explained in detail below.

A. Operational Enhancements

As noted above, CB allows market participants to buy the DAM price against the RTM price or sell the DAM price against the RTM price. This mechanism can be used to shift the



2012 LONG TERM PROCUREMENT PLAN

price exposure of market awards for physical supply resources and demand, regardless of the market in which the awards were issued. If generation is typically sold in the DAM but the market participant wants to receive the RTM price for the award, a virtual demand bid in the DAM can accomplish this objective by offsetting the DA physical sale with the virtual purchase, netting a RT virtual sale. Likewise, generation that normally receives a RTM award can effectively be settled at DAM prices using a virtual supply bid in the DAM.

SDG&E intends to avail itself of the ability to control market exposure through Convergence Bidding and has identified three targeted applications for CB to enhance its day-to-day scheduling practice:

1. Virtual Sale of Wind Generation in DA Market

Currently, SDG&E has approximately 255 MW^{2/} of wind resources under contract, which are scheduled only into the RTM to comply with PIRP and PPA requirements. Since wind generation is settled at the real-time price, it is currently not possible to financially balance this supply with SDG&E's demand, since demand is primarily scheduled and settled in the DAM. Also, the scheduling of wind generation in the RTM leaves a significant amount of must-take energy out of the IFM, resulting in higher DAM clearing energy prices.

CB would provide SDG&E with a mechanism to effectively "shift" some or all of its wind generation into the DAM where it can more effectively offset SDG&E's Day-Ahead load schedule. This shift would be achieved through a virtual sale of the expected wind generation quantity in the DAM. The resulting buy-back of the virtual sale in the RTM would then be hedged

^{2/} Based on nameplate capacity.



2012 LONG TERM PROCUREMENT PLAN

by the underlying physical wind generation schedules. For this wind generation application, SDG&E plans to make virtual sales into the DAM in an amount up to, but not exceeding, the day-ahead forecast of wind generation. SDG&E's primary source of the day-ahead forecast will be PIRP; should the day-ahead PIRP forecast be unavailable or provide inaccurate values, SDG&E would apply technical judgment to develop a proxy day-ahead forecast.

2. Mitigation of DA Awards on Generation Returning to Service

Most of SDG&E's resource portfolio is bid in and awarded in the DAM. Each resource is then obligated to deliver the cleared Day-Ahead quantity at the DAM price for each hour. However, there are instances where the generator's ability to meet its Day-Ahead obligation is uncertain. For example, a risk arises when a unit returns to service from an extended period of shutdown resulting from lack of market awards or maintenance outage. During these events, the plant can encounter start-up problems or delays. If the plant cannot perform in accordance with the award received in the DAM, SDG&E would be required to buy back the Day-Ahead awarded sales quantities at RTM prices.

To mitigate this risk, SDG&E could make a virtual purchase in the DAM for a portion of the unit's expected DAM award. The bid would cover the expected hours and quantity where risk is heightened. The Day-Ahead virtual purchase would be offset by a corresponding virtual sale in the RTM, which would hedge the potential under-delivery of energy from the unit returning to service. For this CB application, SDG&E plans to use virtual bids in the DAM on a case-by-case basis up to the expected DAM award expected on the unit at risk until reliable operation has been established.



2012 LONG TERM PROCUREMENT PLAN

3. Mitigation of Bundled Load Forecast Uncertainty

SDG&E employs Commission-approved processes and tools to forecast demand. However, uncertainties in the forecasted temperature, humidity and weather/load correlation naturally result in some load forecast error. The potential for larger deviations is especially pronounced during the initial and final stages of heat waves or other sudden weather changes. Holidays also present a challenge to load forecasting because the limited availability of comparative historical data increases the uncertainty of the correlation between the weather and load forecasts.

In the CAISO Market, demand can only be bid and awarded in the DAM; residual demand requirements are then settled in the RTM. The inability to adjust Day-Ahead forecasts of demand, hour-ahead logically results in larger forecast errors in the CAISO Market.

CB provides a tool to explicitly manage demand forecast uncertainty. SDG&E may submit a virtual bid to purchase energy above its physical Day-Ahead load award, or a virtual bid to sell energy below its physical Day-Ahead load award, to mitigate load exposure in the RTM. The same result may be achieved by modifying the physical demand bid or schedule in the DAM; however, virtual bids would make transparent the intent of SDG&E's DAM awards to serve physical customer demand based on Day-Ahead forecasted loads while hedging demand forecast uncertainty. This distinction provides operational benefits, for example preserving initial demand forecast data (prior to load forecast adjustments) for after-the-fact analysis. SDG&E plans to limit virtual bids for demand forecast hedging to the potential variability between the Day-Ahead forecast and actual load in any hour. Such virtual bids will



2012 LONG TERM PROCUREMENT PLAN

be submitted at SDG&E's Default Load Aggregation Point (DLAP) delivery point to match physical demand awards.

B. Defensive Price Arbitrage

The intent of CB is to enable market participants to arbitrage the DAM and RTM, forcing convergence of pricing between these two markets via efficient bidding behavior. Because CB will open new trading opportunities to existing and new market participants, SDG&E believes it is prudent to guard against unintended price impacts through the use of defensive CB strategies, as described herein.

CB activity pursued by other market participants may result in potentially harmful outcomes for SDG&E ratepayers. For example, since virtual and physical bids compete head-to-head in the IFM, virtual supply bids could displace physical resources in the DAM, potentially impacting the CAISO's power flow solution and leading to Pnode-specific price divergence. There may be other factors that cause DAM/RTM price distortions that, depending on severity, location, frequency, etc., could increase costs to SDG&E's ratepayers. Because such distortions cannot be accurately predicted prior to actual implementation of CB, SDG&E believes enabling IOUs to respond as such events arise would be prudent.

Contrary to the three operational applications of CB described earlier, defining or predicting how SDG&E would utilize CB to address the price distortion risk, on a day-by-day basis, is not possible until the specific market anomaly has been identified. However, SDG&E proposes certain standards that should be met in order to use CB for defensive price arbitrage:



2012 LONG TERM PROCUREMENT PLAN

1. SDG&E will monitor market prices to determine whether Pnodes prices within its portfolio appear reasonable or exhibit anomalous behavior.
2. If such price anomalies are identified, SDG&E may implement defensive price arbitrage CB to mitigate the affect of such anomalies. This activity would be applied at Pnodes within SDG&E's DLAP or those that correlate to resources in its portfolio.
3. SDG&E will establish a quantity limit for this application of CB at each Pnode corresponding to its perceived exposure.

As SDG&E gains experience observing the market impact of CBs and/or develops further beneficial uses for its portfolio, SDG&E could seek approval to expand the use of CB by modifying its LTPP via an advice letter.



Appendix F

Greenhouse Gas/AB 32 Compliance Plan

I. INTRODUCTION

AB 32 establishes a goal of reducing California's GHG emissions to the 1990 level by 2020. The statute grants CARB broad authority to regulate GHG emissions to reach this target. CARB's Scoping Plan includes a recommendation that California adopt a portfolio of emissions reduction measures, including a California GHG cap-and-trade program that can link with other programs to create a regional market system.^{1/}

In October, 2011, CARB released its *Final Regulation Order*, which was approved by its Board and by the Office of Administrative Law in December, 2011.^{2/} The CARB regulations created a GHG emissions allowance cap-and-trade system, with compliance obligations in the electricity sector applicable to "first deliverers of electricity." Generally, first deliverers of electricity are electricity generators inside California that emit more than 25,000 metric tons of GHGs and importers of electricity from outside of California. The regulation requires that first deliverers of electricity, except publicly-owned utilities, purchase all of the allowances and offsets required to meet their compliance obligations. The CARB regulations became effective January 2012 and the GHG emissions allowance

^{1/} CARB Resolution 11-32 at 3.

^{2/} The CARB documents referenced are available at:
<http://www.arb.ca.gov/regact/2010/capandtrade10/capandtrade10.htm>.



2012 LONG TERM PROCUREMENT PLAN

cap-and-trade system (the “Cap-and-Trade Program”), compliance obligation began January 1, 2013.

Due to implementation of the Cap-and-Trade Program, SDG&E faces GHG cost exposure for its UOG combined cycle generation facilities and peaking generation facilities that exceed 25,000 metric tons of emissions. In addition, SDG&E has GHG obligations for imported electricity purchased under existing long-term contracts and imported spot market purchases. Lastly, SDG&E has contractual obligations for GHG compliance responsibility for some bilateral contracts including generation tolling agreement contracts.

II. COMPLIANCE OBLIGATION

A. Requirements

Every November following an entire year covered by the program, SDG&E and all participants in the GHG Cap-and-Trade Programs must surrender compliance instruments covering at least 30% of their respective emissions for the previous calendar year. Additionally, the November following the final year of a compliance period, SDG&E must surrender the balance of compliance instruments equal to the remainder of its actual GHG emissions for the full compliance period.

B. Compliance Periods

Compliance periods are currently established as follows:

- 2013-2014 (electricity and industrial only)
- 2015-2017 (fuel providers added)
- 2018-2020



2012 LONG TERM PROCUREMENT PLAN

C. Allowance Accounts

SDG&E has three accounts containing its GHG allowances:

- Limited Use Holding Account: The Limited Use Holding Account holds allowances allocated to SDG&E by CARB that are required to be sold in the auctions.
- Holding Account: Allowances and offsets acquired by SDG&E are held in its Holding Account. Allowances are transferred from the Holding Account into SDG&E's Compliance Account to meet its GHG obligations.
- Compliance Account: Allowances in the Compliance Account are "retired" and can no longer be traded. SDG&E must meet its obligation for each multi-year Compliance Period by acquiring allowances and offsets and retiring them, with at least 30% of its annual obligation retired in November following each compliance year.

Any additional allowances remaining in SDG&E's Holding Account after its GHG emissions obligations have been met can be sold to other parties or "banked" for future use – *i.e.*, unused allowances are carried forward to the next compliance period for use for future compliance.

III. PRODUCTS FOR MEETING GHG OBLIGATIONS

CARB has identified two types of tradable instruments that it may issue: (i) California GHG Emission Allowances (allowances); and (ii) California Offset Credits (offsets). These compliance instruments are matched against emissions to satisfy a compliance obligation. SDG&E plans to purchase allowances and offsets using various methods as listed here and discussed below: the CARB Auctions, the CARB Price Containment Reserves, allowance futures, allowance forwards, offset forwards and bilateral transactions through an RFO. SDG&E may also sell allowances and/or offsets as needed.



2012 LONG TERM PROCUREMENT PLAN

A. Allowances

Allowances will effectively serve as permits to emit GHGs. All allowances are distributed by CARB to compliance entities or placed into the auction to be procured by entities.

SDG&E will receive free allowances through the life of the Cap-and-Trade Program, but the allowances distributed to SDG&E, like other California IOUs, must be consigned from the Limited Use Holding Account to be sold in the auctions, and SDG&E must use the proceeds to benefit its ratepayers.

B. Offsets

An offset is a credit for a verified emission reduction from a source outside the Cap-and-Trade Program, with the intention of reducing emissions in sectors not captured in the Cap-and-Trade Program. These offsets can be in California or in North America in non-covered sectors such as agriculture, forestry, and consumer products. CARB has developed procedures to demonstrate verified emission reductions; once approved, an offset can be used in lieu of allowances.

There currently exist five compliance offset protocols included within the Cap-and-Trade Program.

1. Livestock Manure (Digester) Projects Protocol
2. Urban Forest Projects Protocol
3. U.S. Ozone Depleting Substances Projects Protocol
4. U.S. Forest Projects Protocol
5. Mine Methane Capture Projects Protocol



2012 LONG TERM PROCUREMENT PLAN

CARB has set a limit of 8% of a participating entity's GHG compliance period obligation that can be met with offsets.

At any time, SDG&E plans to limit its purchase to the five offset types above plus any additional types of offsets that have been formally approved by CARB. Utilities are allowed to purchase offset types that are CARB approved and may purchase a new offset type if/when it becomes CARB-approved without the requirement of an advice letter filing to the CPUC. In addition SDG&E's purchase of offsets is conditioned on: (a) the purchase contract must require the seller of the offsets to assume the risk of invalidation and (b) the seller of the offsets must post appropriate collateral for the transaction(s).^{3/}

IV. PRODUCTS FOR HEDGING AND PROCURING GHG OBLIGATIONS

SDG&E may choose to use any of the following instruments to hedge its GHG obligations.

A. Current and Future Vintage Allowances

Auctions in years 2013-2017 contain an Advance auction in addition to the Current auction. The Current auction sells the current year's Vintage. The Advance auction makes available future vintages equal to current year plus 3. These future vintage allowances may not be used for compliance until that year. For example, 2015 allowances were auctioned in 2012, however, these allowances may not be used for compliance before 2015. As such, SDG&E may choose to purchase allowances if the vintage is within 3 years of the current year.

^{3/} D.12-04-046. *mimeo*, pp. 43, 44, Ordering Paragraph 8.



2012 LONG TERM PROCUREMENT PLAN

B. Allowance Futures

Futures for GHGs are standardized contracts that obligate the seller to sell allowances. Because these contracts are standardized, they can be traded on exchanges and can be converted to allowances in the future. As with future vintage allowances, SDG&E may choose to purchase allowance futures only if they are within 3 years of the current year and transacted through a Commission-Approved Exchange.

C. Forwards of Offsets and Allowances

Forwards for offsets or allowances are also obligations to sell at a future date, but the contracts are not as standardized and would not be traded on exchanges. Forwards are an obligation to actually deliver allowances or offsets. As with futures products, forwards are not CARB transacted products and, as such, will depend on the market to develop these hedging products. SDG&E may enter into offset forwards if the contracts are structured such that SDG&E only pays after it receives the CARB-certified offsets. For purchasing either offset forwards or allowance forwards, SDG&E will conduct an RFO.

V. TRANSACTION METHODS

SDG&E plans to [REDACTED]

A. CARB Auction

CARB held its first auction for allowances in November 2012. Auctions have been held quarterly since then. Allowances sold in the auction may come from: (i) allowances consigned



2012 LONG TERM PROCUREMENT PLAN

by entities; and/or (ii) allowances not allocated to entities. Allowances sold in the Advance auction will come from unallocated allowances for future compliance periods.

Auction bidders submit sealed bids. The highest bids clear first, continuing to the next lowest bid until the demand for the accepted bids have been met or all the allowances have been sold. The price for all allowances purchased in the auction will be the lowest accepted bid. No bids will be accepted below the reserve price, which CARB has set at \$11.34/MTCO₂e for the 2014 Auctions. This reserve price will increase annually as provided for in CARB's Regulation.

To assure the availability of allowances, CARB maintains a reserve of allowances referred to as the Allowance Price Containment Reserve to be sold six weeks after each auction. For 2014, the reserves will be made available in three tiers: \$42.38, \$47.68, and \$52.98 (each of the prices of the three tiers will increase annually as provided for in CARB's Regulation.) The participants in the reserve auction would submit volumes in each tier. The reserves will be sold and the bidders in each tier will be awarded the bid volume, unless the volume of the tier is exceeded, in which case the allowances would be prorated amongst the bidders.

[REDACTED]

[REDACTED]

[REDACTED]



2012 LONG TERM PROCUREMENT PLAN

B. Exchanges

Exchanges ensure fair and orderly trading and allow for transparent price information. Exchanges act as an intermediary between buyer and seller, effectively becoming the counterparty for the transaction. This is the case for transactions executed through the exchange, as well as for transactions executed over-the-counter and then cleared through the exchange. Exchanges also provide protection against credit risk and alleviate both the need to extend credit and establish master trading agreements with individual counterparties. This increases the pool of potential counterparties. Thus, the ability to clear products through exchanges increases SDG&E's options in the execution of its GHG allowance strategy.

SDG&E plans to use previously Commission-approved Exchanges to purchase allowance futures. The list of Exchanges SDG&E will use for GHG products, are included in Table 1(e) in this LTPP. To the extent SDG&E wishes to transact with any additional viable and liquid exchanges, SDG&E may seek to add these to its list of approved exchanges through the submittal of a Tier 2 Advice Letter requesting authority to use that exchange to buy or sell allowances in accordance with D.12-04-046 issued April 19, 2012. SDG&E will utilize the additional exchanges as of the date it receives authorization to add the exchanges through either a Commission resolution or Energy Division letter approving the inclusion of such exchanges.



2012 LONG TERM PROCUREMENT PLAN

C. Brokers

Brokers are the manual equivalent of electronic exchanges in that brokers have access to a wide pool of buyers and sellers, and convey pricing information to all participants, thereby creating price transparency similar to what exists on exchanges.

One rationale for conducting transactions via a broker (or directly with counterparties, as discussed below) is that the volumes on an exchange are standardized and not customizable.

SDG&E will use brokers for purchases of allowances or offsets only if the transaction is conducted through an RFO. SDG&E would report these transactions to the PRG.

D. Direct Transactions

SDG&E may wish to transact directly with counterparties, when the pricing is equivalent or better than pricing offered through brokers or exchanges. This may be beneficial for non-liquid products that may be hard to find through a broker or exchange, or to save the transaction costs of using a broker. It is expected that offsets in the early years of the Cap-and-Trade Program will be developed mostly through brokers and direct transactions.

In the event that SDG&E finds it necessary to purchase bilaterally, (including bilateral transactions through a broker), SDG&E will issue an RFO soliciting the applicable product(s) and consult with their PRG as appropriate during the RFO process.

VI. EMISSIONS FORECASTING AND TRACKING

A. Emissions Forecasting

SDG&E regularly forecasts its expected energy supply dispatch needs and similarly tracks expected GHG requirements. SDG&E includes its GHG forecast in this filing and will



2012 LONG TERM PROCUREMENT PLAN

thereafter update its forecast as necessary. Updates will be filed via a Tier 2 advice letter and will be reported in the Quarterly Compliance Reports and at the quarterly PRG meetings.

In addition to the emissions from its UOG plants, some contracts, such as tolling agreements, may require that SDG&E procure compliance instruments on behalf of the generator.^{4/} [REDACTED]

[REDACTED]

[REDACTED]

As a first deliverer of electricity, SDG&E will also be responsible for *imported power that it procures out-of-state and brings across the California border*. These imports will have emission factors as outlined in the CARB’s Regulation for the Mandatory Reporting of Greenhouse Gas Emissions. Emissions rates will be set before the start of the compliance period and will remain the same for the entire compliance period.

SDG&E is not required to procure GHG for purchases for the following sources of power generated in CA: renewable generation, CA market purchases, CAISO market purchases, QFs, and small peakers whose emission production was less than 25,000 metric tons/year. Additionally, SDG&E is not required to procure GHG allowances for any imports delivered across state lines by other entities.

The forecast for SDG&E’s GHG emissions for years 2014 - 2017 is as follows:

^{4/} CARB is currently finalizing the rules regarding the procurement of allowances and offsets for the benefit of other generators.



2012 LONG TERM PROCUREMENT PLAN

SDG&E GHG Direct Compliance Forecast								
	Fuel (000 MMBtu)				GHG (000 Metric Tons)			
	2014	2015	2016	2017	2014	2015	2016	2017
Specified Resources								
Palomar- UOG								
Otay Mesa- PPA								
Desert Star- Out of State								
Cuyamaca- UOG *								
Miramar- UOG								
Pio Pico-PPA								
Orange Grove- PPA								
Escondido Energy Center-PPA**								
Jasmin-PPA								
Yuma- Out of State								
Specified Resource Total								
	GWh				GHG (000 Metric Tons)			
Unspecified Imports (GWh)	■	■	■	■	■	■	■	■
RPS Adjustment	(871)	(871)	(871)	(871)	(373)	(373)	(373)	(373)
Forecasted Demand					■	■	■	■
* Although Cuyamaca forecasts are below the 25,000 Metric Ton threshold, their 2012 actuals exceeded the threshold, putting it in compliance for at least the first compliance period. ** Escondido Energy Center is below the 25,000 MT Threshold, thus 0MT was used for its covered emissions.								

B. GHG Allowance Tracking System

SDG&E has implemented a GHG allowance tracking system, not only to track its expected need for allowances, but also to track the allowances and offsets SDG&E has procured and the resulting remaining open position. As with any other open position related to energy procurement, SDG&E will monitor the forward GHG allowance prices and the impact to overall procurement costs.



VII. ENERGY DISPATCH

Implementation of the Cap-and-Trade Program resulted in a modification of SDG&E's decision-making for energy dispatch. The cost of GHG is now an added component to generation costs of resources in SDG&E's portfolio, including its owned generation, generation from purchase power agreements and imported power. As the first deliverer of electricity, SDG&E is also responsible for GHG costs for energy it purchases outside of California and imports into the state. Accordingly, GHG costs will be included in decisions to purchase energy outside of the state.

In addition, the additional costs impact overall dispatch of SDG&E resources and impact the overall economics of generating facilities. For example, plants that have higher GHG emissions compared to other generating units being bid into the CAISO market may be less economic to run, and thus may be dispatched less often than they were prior to the Cap-and-Trade Program implementation. GHG costs will be reflected in SDG&E bids submitted to the CAISO, so that SDG&E's plants will only generate when they are economic (including the GHG costs) compared to other resources bid into the CAISO market.

SDG&E will use the forward market prices to calculate GHG costs. The forward costs will provide an indication of what SDG&E expects to pay for the GHG emissions associated with generation.

VIII. PROCUREMENT STRATEGY

Since the allowances allocated to SDG&E must be made available in the auction, SDG&E will need to procure the allowances required to meet the GHG obligations associated



2012 LONG TERM PROCUREMENT PLAN

with the energy needs of its bundled customers. [REDACTED]

[REDACTED]

[REDACTED] SDG&E’s overall GHG emissions allowance procurement strategy will continually be reviewed and updated periodically as required.

A. Product Mix

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

For the remainder of its compliance obligation, SDG&E will look to the products listed above and will procure the product(s) that provide the best price and method for reducing SDG&E’s exposure to GHG allowance prices. Since allowances can be carried forward, procurement of allowances effectively acts as a hedge against future prices.

B. Volumes and Limits

SDG&E will forecast its Compliance needs for current year through current year plus three and will generate the limits as described in the LTPP decision 12-04-046.

The SDG&E GHG procurement limit is calculated with the following formula as required in D.12-04-046 issued April 19, 2012.

$$LCY = A + 100\%*(FDCY) + 60\%*(FDCY+1) + 40\%*(FDCY+2) + 20\%*(FDCY+3)$$

^{5/} The “incremental and over time” hedging program involves layering on hedges over time so as to reduce overall portfolio risk.



2012 LONG TERM PROCUREMENT PLAN

Where “L” is the maximum number of GHG compliance instruments an IOU can purchase for purposes of meeting their direct compliance obligation.

“A” is the utility’s net remaining compliance obligation to date, calculated as the sum of the actual emissions for which the utility is responsible for retiring allowances (or purchasing on behalf of a third party) up to the Current Year,^{6/} minus the total allowances or offsets the utility has purchased up to the Current Year that could be retired against those obligations. This term in the calculation ensures the IOUs are always able to buy sufficient allowance to cover any prior years’ shortfalls, given that actual emissions may end up being less than forecast and/or prior decisions about how much procurement to do.

“FD” is the utility’s forecasted compliance obligation”, the projected amount of emissions for which the utility is responsible for retiring allowances, or responsible for purchasing on behalf of a third party, calculated using an implied market heat rate (IMHR) that is two-standard deviations above the expected IMHR consistent with the approach described by PG&E.

“CY” is the current year, i.e., the year in which the utility is transacting in the market.^{7/}

Below are the projected emissions calculated using an implied market heat rate 2 standard deviations and the associated limit for 2014.

^{6/} This would be compliance instruments with vintage years prior to the current year.

^{7/} As stated in Appendix 1 of D. 12-04-046



2012 LONG TERM PROCUREMENT PLAN

SDG&E GHG Direct Compliance Limit Forecast *									
	Fuel (000 MMBtu) based on IMHR plus 2-Sdev				GHG (000 Metric Tons)				
	2014	2015	2016	2017	2013 Actuals **	Forecasted Compliance Obligations "FDyyyy"			
Specified Resources						FD ₂₀₁₄	FD ₂₀₁₅	FD ₂₀₁₆	FD ₂₀₁₇
Palomar- UOG									
Otay Mesa- PPA									
Desert Star- Out of State									
Cuyamaca- UOG									
Miramar- UOG									
Pio Pico-PPA									
Orange Grove- PPA									
Escondido Energy Center-PPA***									
Jasmin-PPA									
Yuma- Out of State ****									
Boardman- Out of State									
Specified Resource Total									
	GWh				GHG (000 Metric Tons)				
Imports (GWh)									
RPS Adjustment	(871)	(871)	(871)	(871)	(387)	(373)	(373)	(373)	(373)
2013 Actuals & 2014- 2017 Forecasted Compliance Obligations "FDyyyy"									
Vintage 2013 Allowances Purchased									
Vintage 2013 Offsets Expected Purchases by Dec 2013									
"A" Net Remaining Compliance Obligation to date									
SDG&E Limit for 2014 ("L₂₀₁₄")									

* As per Appendix 1 of D. 12-04-046, SDG&E used an implied market heat rate plus 2-Standard Deviations to produce the forecast in this table. Specifically to derive the GHG limit, SDG&E employed a method consistent with the capacity limits methodology used in the LTPP Track 2 compliance filing. SDG&E calculated historical implied market heat rates, (IMHR), using SoCal Border gas price and SP-15 on and off peak forward curves from Nov, 2012- Oct, 2013. The standard deviation of the IMHR was calculated. and Two standard deviations was then calculated by multiplying 1.645 times the standard deviation for a single-tail calculation. The result was added to the maximum IMHR value in the data set to derive the upper limit. The ratio of the upper limit to the IMHR was then applied to the current SP-15 forward curves to derive new forward price curves, used as input to the production cost model to generate a new dispatch and the GHG associated with the IMHR upper limit.
 $L_{2014} = A + 100\%*(FD_{2014}) + 60\%*(FD_{2015}) + 40\%*(FD_{2016}) + 20\%*(FD_{2017})$
 ** The 2013 Actuals are a blend of estimated actuals and forecasts for the balance of 2013.
 *** Escondido Energy Center is below the 25,000 MT Threshold, thus OMT was used for its covered emissions.
 **** The 2013 Forecast had listed Yuma as an Indirect GHG obligation.

The calculated limits and emission forecasts will be updated and filed via Tier 2 advice letter as necessary.



2012 LONG TERM PROCUREMENT PLAN

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. This strategy will further be adjusted year-to-year as necessary to reflect actual prices and volume of allowances procured; similar to what is done today for SDG&E's fuel and power hedging strategies.

C. Risks for Allowance positions

SDG&E procurement volumes are based on forecasts, and as such SDG&E may at times be either over or under-procured with respect to allowances and/or offsets. This could happen because the actual generation dispatch will not perfectly match the forecasted dispatch due to changes in demand, plant outages, dispatch of generation resources and/or energy market conditions. There are risks associated with having either a short or a long position. If SDG&E has a short position, SDG&E would be at risk of a price spike occurring at the end of the compliance period (2014 for the first compliance period). Also, if SDG&E were to fail to meet its obligations, the penalties for being short are four times the cost of short



2012 LONG TERM PROCUREMENT PLAN

allowances from the next compliance period plus any added CARB fines, which are currently not well-defined.

If SDG&E has a long position, in addition to the risk that prices could decline, there is a risk that federal legislation pre-empting the California Cap-and-Trade Program could be adopted, which might result in allowances in SDG&E's holding account becoming worthless. CARB has indicated that it will attempt to protect participants in the Cap-and-Trade Program in the event of passage of federal legislation, but there is nothing specific in the CARB regulations addressing federal preemption.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

D. Hedging GHG Exposure in the Price of Energy

SDG&E may also purchase and sell compliance instruments for the sole purpose of hedging their GHG exposure embedded in the price of energy. [REDACTED]

[REDACTED]



2012 LONG TERM PROCUREMENT PLAN

[REDACTED]

[REDACTED]

The SDG&E GHG financial exposure purchase limit is calculated with the following formula as required in D.12-04-046 issued April 19, 2012.

$$\text{FLCY} = 20\%*(\text{FECY}) + 10%*(\text{FECY}+1) + 5%*(\text{FECY}+2) + 2.5%*(\text{FECY}+3) - B$$

Where “FL” is the maximum number of GHG compliance instruments that a utility can purchase for purposes of hedging their financial exposure to GHG costs.

“FE” is an estimate of the utility’s financial exposure to GHG costs that will, or are anticipated to be, embedded in the price of energy, calculated based on the tons of CO2 for which a given IOU believes it will bear the costs through an embedded cost of carbon as reflected in energy prices. This amount does not include the costs the IOUs anticipate incurring as a result of their direct compliance obligation as “direct compliance obligation” is defined above.

“CY” is the current year, i.e., the year in which the utility is transacting in the market.

“B” is the utility’s net purchases of GHG compliance instruments to date for hedging purposes, calculated as the total purchases of GHG compliance instruments for purposes of hedging an IOU’s Financial Exposure up to the Current Year minus those GHG compliance instruments sold up to the Current Year. This term helps ensure that if the IOUs have hedged a lot in prior years and those hedges didn’t pay out (e.g. the price they saw in the market for carbon stayed below what they paid for a compliance instrument and so they didn’t sell the



2012 LONG TERM PROCUREMENT PLAN

instrument) that gets factored into the amount of additional hedging they are allowed to undertake.^{8/}

[REDACTED]

[REDACTED]

[REDACTED]

^{8/} As stated in Appendix 1 of D. 12-04-046



2012 LONG TERM PROCUREMENT PLAN

SDG&E GHG Financial Exposure Limit Forecast *									
GWh					GHG (000 Metric Tons)				
2014	2015	2016	2017	"B" Net Purchases to date	FE ₂₀₁₄	FE ₂₀₁₅	FE ₂₀₁₆	FE ₂₀₁₇	
Market Purchases									
Existing GHG Purchased Hedges									
Existing GHG Hedges Sold									
Sub Total									
SDG&E Limit for 2014 ("FL₂₀₁₄")									
* FL ₂₀₁₄ = 20%*(FE ₂₀₁₄) + 10%*(FE ₂₀₁₅) + 5%*(FE ₂₀₁₆) + 2.5%*(FE ₂₀₁₇) - B									



Appendix G

Independent Evaluator Consultation Processes

I. OVERVIEW

In D.04-12-048, the Commission ordered the use of an IE for RFOs that included “affiliates, IOU-built, or IOU-turnkey bidders.”^{1/} Further, in D.06-10-019, Finding of Fact 19, Conclusion of Law 19 and Ordering Paragraph 19, the IOUs were ordered to utilize an IE in the conduct of any renewables negotiations that involved renewables procurement from an affiliate. In D.07-12-052, the Commission further defined the parameters utilization of IEs by the IOUs.

In D.08-11-008, the Commission modified its requirements related to use of an IE and ordered: (i) that IEs be utilized for all RFOs seeking products of greater than two years in duration; and (ii) that IEs continue to be utilized for all solicitations that involve affiliate transactions regardless of length of the product sought. The Commission defines when the contract duration clock begins as: (1) at the time the contract resources begin delivery or the product is made available, if delivery or availability of the product occurs within one year of contract execution; or (2) at the time of contract execution, if delivery or availability does not begin within one year of contract execution. Further, to ensure that an IE is retained in such cases, SDG&E will address the possibility of affiliate bids by designating at the outset of an RFO whether such bidders are allowed to participate. If SDG&E does not wish to make such a

^{1/} D.04-12-048, *mimeo*, Ordering Paragraph 26i.



2012 LONG TERM PROCUREMENT PLAN

determination up front, SDG&E will either require that all parties that intend to participate in an RFO submit a notice of intent early in the RFO process such that an IE can be retained before bids are received, or designate at the outset of the RFO that an IE will be used.

Potentially qualified IE candidates are interviewed by SDG&E's PRG members, Energy Division staff and SDG&E's representatives; existing IEs are typically not interviewed since SDG&E, the PRG and Energy Division Staff are already familiar with their qualifications. SDG&E accepts recommendations from its PRG and Energy Division participant's proposal to add new IEs to its existing IE pool. Once new IEs are selected, a letter proposing the new IE pool and requesting formal approval is submitted to the Energy Division. The new IE pool becomes effective upon final approval by the Energy Division.

SDG&E will periodically work with its PRG to validate the qualifications of its existing IEs and to identify additional IEs to potentially add to its pool. The Commission has adopted a detailed process for developing the pool of IE candidates (see D.07-12-052, *mimeo*, p. 137). SDG&E adopts and incorporates this process into its LTPP.

1. The IOU shall develop a list of prospective IEs via industry contacts, literature searches, PRG recommendations and similar methods, solicit information from the prospective IEs and circulate the list of candidates and their "resumes" to the PRG and Energy Division staff for feedback;
2. The IOU should rely on the guidance regarding IE expertise and qualifications provided in D.04-12-048. However, these qualifications should represent the minimum necessary for an IE to be effective, and the IOU and the PRG should include any additional relevant information that it has gained through its experiences implementing the IE requirements;
3. The IOU and PRG shall interview a subset of prospective candidates that the IOU, its PRG and Energy Division staff deem most suitable for the role (IOUs



2012 LONG TERM PROCUREMENT PLAN

should arrange for the PRG to conduct interviews with candidate IEs in isolation from the contracting IOU);

4. The PRG shall coordinate the development and submittal to the IOU its recommendations on each prospective candidate (including the general consensus and any opposition to the consensus). The IOU shall submit a written list of qualified IEs to Energy Division to add to the IOU's pool. The list must contain the recommendations of the PRG that were submitted to the IOU. Energy Division will evaluate the proposed IE's competencies based on the guidelines in D.04-12-048 as well as evaluating the IEs independence including any conflicts of interest. Energy Division shall give final approval for inclusion of an IE in the IE pool by letter to the submitting IOU;
5. Beyond the development of the initial IE pool, additional IE's may be added to the pool by following the same procedures listed above;
6. An IE may remain in the IE pool for three years^{2/}, after which he/she must go through a reevaluation process based upon the inclusion criteria to assure continued compliance. The reevaluation process will involve additional reviews of the IE candidate by the PRG, IOU and Energy Division staff, including additional interviews, if necessary; and
7. The IOUs shall develop a pro forma contract to be used each time it contracts with an IE. If deviations from the pro forma are necessary, the modifications must be fully supported by Energy Division staff when the IOU seeks final approval of the contract. This pro forma contract shall be submitted as part of the next LTPP filing and will be subject to Commission approval.

As part of the selection process, working with the PRG and Energy Division staff, SDG&E will develop comprehensive conflict of interest disclosure requirements for the IE. Also, SDG&E will report to its PRG, with regard to each RFO, the "the name and information of the IE for each IOU, the type of procurement solicitation the IE was used for and the amount of money involved in the procurement solicitation".^{3/}

^{2/} D.14-02-040, p. 68.

^{3/} D.07-12-052, *mimeo*, p. 140.



2012 LONG TERM PROCUREMENT PLAN

With respect to the role of the IE, SDG&E's IE is used to verify that the RFO process is carried out in a manner that is fair to all bidders, is not otherwise biased for or against any individual bidder, and is consistent with the process prepared prior to the receipt of bids. The IE reviews application of the evaluation criteria and analysis methodology used by SDG&E. The IE is brought into the RFO process early such that the goals, needs and objectives of the RFO are reviewed with the IE. Drafts of the RFO documents are reviewed by the IE prior to public release. SDG&E reviews and takes appropriate action on any comments or concerns expressed by the IE.

Similar to the development of the public RFO documents, SDG&E works with its IE to create evaluation and selection criteria for RFO bids received. The IE applies his/her expertise to check that evaluation criteria are properly applied and that models used to evaluate bids correctly reflect and incorporate the evaluation criteria. At all stages of the RFO process, the IE is available to SDG&E's PRG and to Energy Division staff to answer questions or express concerns.

The IE report prepared will follow the IE Report Template developed by Energy Division "through a public process which will allow for public comments and workshops, if needed," as directed by the Commission.^{4/} IE reports associated with solicitations of less than five years shall be filed with the QCR. When the IE report contains confidential information, SDG&E will file both confidential and public versions of the report. Any public IE reports shall be identical

^{4/} D.07-12-052, *mimeo*, p. 141.



San Diego Gas & Electric Company
San Diego, California

Original Sheet No. G-5

2012 LONG TERM PROCUREMENT PLAN

to the corresponding confidential IE report, except for the redaction of confidential material.

Public versions will show where redactions have been made.

Advice Ltr. _____ / Decision _____

Date Filed: XXXX, XXXX

Effective: XXXXXX, XX, XXXX



Appendix H Procurement Limits and Ratable Rates

I. OVERVIEW

Procurement position limits and maximum rates of transaction (referred to as “ratable rates”) apply to electrical capacity transactions for delivery months that occur two or more calendar years beyond the transaction year (*e.g.*, for transactions occurring in 2014, limits shall apply to contract deliveries in 2016 and beyond). SDG&E has no limits on its ability to meet its RA capacity requirements for the current calendar year and prompt calendar year (*i.e.*, the calendar delivery year immediately following the current year).

Delivery years two through ten shall have maximum annual position limits equal to the difference between (1) SDG&E’s forecast electrical capacity requirement to meet its RA requirement (*i.e.*, peak annual hour load using a 1-in-2 year load forecast multiplied by 117%), and (2) the forecast Net Qualifying Capacity (NQC) of SDG&E’s committed resources and planned for preferred resources. SDG&E’s procurement of electrical capacity as measured by the NQC of the resource, exclusive of preferred resources, cannot exceed the applicable annual position limit in years two through ten.

The maximum rate of transaction for the procurement of electrical capacity shall equal the annual position limit divided by the time difference between the applicable delivery year and transaction year. For example, the ratable rate for contract deliveries in Year 4 would be one-third of the annual position limit for Year 4 (*i.e.*, Year 4 annual position limit divided by the



2012 LONG TERM PROCUREMENT PLAN

annual time difference between Year 4 and Year 1). These ratable rates accumulate year-to-year, producing cumulative ratable rate limits for each delivery year equal to those defined in Table H-1 below. Furthermore, the ratable rate methodology allows for procurement of two times the ratable rate for delivery Year 2 through Year 5 (e.g., for transactions occurring in 2012, delivery years 2014-2017 are eligible for two times the ratable rate) when certain market conditions are present, subject to the corresponding delivery year's annual position limit. The operative ratable rate limit for delivery Year 2 through Year 5 shall be set as follows:

1. Two times the ratable rate if the prompt 12-month forward on-peak implied market heat rate is less than the two standard deviation historical high value contained in Table H-2 of Appendix H; and
2. One times the ratable rate if the 12-month forward implied on-peak market heat rate is greater than or equal to the two standard deviation historical high value contained in Table H-2 of Appendix H. The ratable rate limit for delivery Year 6 through Year 10 is one times the ratable rate.

II. TRANSACTION COMPLIANCE ACCOUNTING AND LIMIT UPDATES

Transactions will be deemed to be compliant with SDG&E's authorized position limits and ratable rate limits if, at time of purchase or sale, the transaction does not cause SDG&E to exceed its applicable position limit and ratable rate limit. A transition from a two-time ratable rate to one-time ratable rate will not cause any transaction activity that occurred prior to the transition date to be non-compliant with SDG&E's ratable rate limits, provided the subject transactions complied with the then applicable ratable rate limit when executed. SDG&E will file an annual (or more frequent, if necessary) update to its electrical capacity procurement



2012 LONG TERM PROCUREMENT PLAN

limits and ratable rates in a Tier 1 advice letter during years in which SDG&E does not file an updated conformed bundled procurement plan.

***Table H-1
Electrical Capacity Position Limit
and 1 x Ratable Rate (RR) in Megawatts (MW)***

(Confidential)

		Ratable Rates >>			
Delivery Year	Position Limit (MW)	1x RR in 2015	1x RR in 2016	1x RR in 2017	1x RR in 2018
2017	████	████	████	████	████
2018	████	████	████	████	████
2019	████	████	████	████	████
2020	████	████	████	████	████
2021	████	████	████	████	████
2022	████	████	████	████	████
2023	████	████	████	████	████
2024	████	████	████	████	████



Table H-2
Electrical Capacity Implied Market Heat Rate
Market Condition Measure
(Confidential)

Measure	Value
2 Standard deviation high	[REDACTED] BTU/KWHR



Appendix I

Glossary of Terms

Area Load

The electrical load in given geographic area irrespective of what LSEs are providing generation services to end-users within the area.

- **Service Area Load** is generally used to mean the load in an IOU distribution service area including loads served by IOUs through bundled service tariffs, loads served by ESPs under DA, and loads served by CCAs through the provisions of AB 117. In addition, for the SCE service area the generation and loads of MWD Metropolitan Water district included.
- **Planning Area Load** is generally used to mean Service Area Load plus the loads of publicly-owned utilities embedded within an IOU distribution service area or adjacent to the IOU distribution service area which collectively received transmission service from the PTO unit of an IOU.

PG&E and SCE provide transmission services to, and plan such services for, an extensive list of publicly-owned utilities in common with their own distribution service area customers. In contrast, SDG&E provides no such transmission services to publicly-owned utilities.

Base-load Unit

A power generating facility that is economic to run in all hours at full or near full capacity levels.

Bilateral Contracts

A two-party agreement for the purchase and the sale of energy and/or capacity products and services.

Booked-out Power

Rather than delivering equal and offsetting positions (*i.e.*, for the same operating hour and delivery point), two parties agree to not deliver the transaction quantity and instead settle the financial terms of the contract. The parties avoid scheduling and transmission charges.

Bundled Customers

Bundled customers are those customers of the IOU for whom the IOU provides a suite of "bundled" services, including procuring and supplying electricity, as well as providing



2012 LONG TERM PROCUREMENT PLAN

transmission, distribution and customer services.

Bundled Deliveries

Deliveries after from an RPS-certified generators that convey both energy and renewable energy credits (RECs), as defined under Commission decision D. 10-03-021.

Bundled Service

Electric power, transmission, distribution, billing, metering and related service provided by the IOU.

Capacity

The amount of electric power for which a generating unit, generating station, or other electrical apparatus is rated either by the user or manufacturer. Usually is measured in MW.

Community Choice Aggregation Service (CCA Service)

Community Choice Aggregation Service allows customers to purchase electric power and, at the customer's election, participate in additional EE or conservation programs from non-utility entities known as Community Choice Aggregators (CCAs). It is a form of DA.

Community Choice Aggregator

Any city, county, or city and county, or group of cities, counties, or cities and counties, whose governing board or boards elect to combine the loads of their residents, businesses, and municipal facilities in a community wide electricity buyers' program. (see PU Code § 331.5.) A CCA may also provide certain EE and conservation programs to its CCA customers.

Customer Class

A "Customer Class" refers to, in general, a group of customers with similar service requirements. Typical customer classes include residential, industrial, commercial and agricultural.

Demand Response Programs

"Demand response" refers to actions taken by end-users to reduce power demand during critical peak times or to shift demand to off-peak times. A demand response program provides customers with incentives for reducing load in response to an event signal. These incentives can take the form of a financial credit or their bill, a dynamic rate or exemption from rolling blackouts. Events can be called for economic or reliability reasons. Because demand response



2012 LONG TERM PROCUREMENT PLAN

programs are designed to operate only a few hours per event, they typically reduce capacity (kW) but not energy (kWh).

Direct Access

The ability of end-use customers located in the service territory of an IOU to purchase electricity from retail sellers other than their local utility.

Direct Access Customers

Customers located within the service territory of an IOU who purchases electricity from sellers other than their local utility. DA customers continue to receive and pay for delivery services from their local utility.

Direct Access-Eligible Customer

A customer located within the service territory of an IOU who is eligible for DA.

Distribution System

The substations, transformers and lines that convey electricity from high-power transmission lines to ultimate consumers, or for Electric Microuilities, the distribution lines that convey electricity from the generating units to the ultimate customer.

Distribution Lines

Overhead and underground facilities which are operated at distribution voltages, and which are designed to supply two or more customers.

DWR Contracts

Contracts for generating resource capacity and energy deliveries executed by the California Department of Water Resources during 2001 and allocated to the investor-owned utilities for contract administration purposes only.

EI Contract

Edison Electric Institute contract is a standard master agreement that provides the base terms and conditions for transactions executed between two parties of a particular master agreement.

Electric Microuility

Any electrical corporation that is regulated by the California Public Utilities Commission and



2012 LONG TERM PROCUREMENT PLAN

organized for the purpose of providing sole-source generation, distribution, and sale of electricity exclusively to a customer base of fewer than 2,000 customers. (Public Utilities Code § 2780.) An Electric Microutility is not connected to the ISO controlled transmission grid and thus has no relationship with the ISO nor any ability to import or export power.

Electric Service Provider (ESP)

An entity that is licensed by the COMMISSION to provide electric power service to DA Customers (see PU Code §§ 218.3 and 394). An end-use customer can act as its own ESP as long as it complies with all requirements of being an ESP. Also referred to as Energy Service Providers.

Electronic Quarterly Reports ("EQR"):

All FERC jurisdictional public utilities, including power marketers, must file EQRs, in which they:

- Summarize contractual terms and conditions in their agreements for all jurisdictional services, including:
 1. Market-based power sales;
 2. Cost-based power sales; and
 3. Transmission service
- Detail transaction information for short-term and long-term market-based power sales and cost-based power sales during the most recent calendar quarter.
- Tariff holders without effective contracts and transactions must file the ID Data portion of the EQR

Energy

Energy is the amount of electricity produced, flowing or supplied by generation, transmission or distribution facilities or consumed over time. Usually it is measured in units of watt-hours or standard multiples thereof, e.g., 1,000 Wh=1 kWh, 1,000 kWh=1MWh, etc.

Energy Efficiency

Programs and measures designed to reduce consumer energy consumption. Example of programs and measures include lighting retrofit, process redesign and appliance rebates which encourage consumers to purchase high-efficiency appliances.

Exchange Traded Contracts



2012 LONG TERM PROCUREMENT PLAN

Contract for electric capacity and energy executed through electronic and voice exchange markets under standard product terms and conditions. Products are generally for “standard products” (peak, on-peak or flat) and standard periods of duration (hourly, daily, balance of month, monthly, quarterly).

Heat Rate

A number that tells how efficient a fuel-burning power plant is. Measured by Btu/kWh. The heat rate equals the Btu content of the fuel input divided by the kWh or power output. The lower the heat rate of a generating unit, the more efficient the unit.

Intermediate Unit

A generator unit that is used for energy production as required with a capacity factor normally in the range of 15-60%.

Interruptible Service or Tariff

Electricity supplied under agreements that allow the supplier to curtail or stop services at times.

A service under which, upon notification from the Independent System Operator, the IOU requires the customer to reduce the demand imposed on the electrical system to firm service level (*i.e.*, a level below which the customer’s load will not be interruptible), and the customer must comply within 30 minutes.

Investor-Owned Electric Utility (IOU)

An investor owned utility (IOU) is a private company owned by stockholders that provides electric utility services to a specific service area. A designation used to differentiate a utility owned and operated for the benefit of shareholders from municipally owned and operated utilities and rural electric cooperatives. The investor-owned utility is regulated by the California Public Utilities Commission.

Load

Load is the amount of electric power supplied to meet end users’ needs. Load is also an end-use device of an end-use customer that consumes power. Load should not be confused with demand, which is the measure of power that a load receives or requires.

Load-Serving Entity (LSE)

An entity that provides electric power service to end-use customers. LSEs include but are not



2012 LONG TERM PROCUREMENT PLAN

limited to IOUs, ESPs, CCAs and public-owned utilities.

Mark-to-Market (MtM)

A measure of the fair value of accounts that can change over time, such as assets and liabilities.

Market Clearing Price

The price in a market at which supply equals demand. All demand prepared to pay at least this price has been satisfied and all supply prepared to operate at or below this price has been purchased.

Must-Take Generation

Utilities are mandated to take electricity from specific resources identified by the COMMISSION.

Except for Electric Microutilities, the receiver of must-take generation will pay for the electrical energy output of must-take resource even if they refuse to schedule and receive that energy. For this reason, these resources are always economic to receive and scheduled in order to minimize financial loss. Regulatory must-take generation include QF generating units under federal law, nuclear units and pre-existing power-purchase contracts that have minimum-take provisions.

New-World Contracts

IOU Contracts for electric capacity and energy executed after January 1, 2003 when utilities returned to procurement.

Old-World Contracts

IOU Contracts for electric capacity and energy executed prior to January 1, 2003 when utilities returned to procurement.

Off-peak

Periods of low demands. All the time outside the on-peak period.

On-peak

Periods of the highest demand.



2012 LONG TERM PROCUREMENT PLAN

Peak Demand

The electric load that corresponds to a maximum level of electric demand in a specified time period.

Peaking Unit

A power generating station that is normally used to produce extra electricity during peak load times. Typical peaking resources are fully dispatchable and deliver in approximately 10% of hours.

Price Curves:

- **Forward Curve** (or "futures price") - A forward curve is a term structure of forward prices observed in the market. Forward contracts, like futures, are agreements to buy or sell a commodity at a future time. Forward price is the price to be paid at delivery.
- **Price Forecast** - A price forecast is a projection of future price levels (these could be day-ahead prices, futures prices, monthly prices etc.) expressed either in nominal or a given year's dollars.

Qualifying Facilities (QFs)

"Qualifying facilities" (QFs) are non-utility cogeneration or other power producers that often generate electricity using renewable and alternative resources, such as hydro, wind, solar, geothermal, or biomass (solid waste). QFs must meet certain operating, efficiency, and fuel-use standards set forth by the FERC pursuant to PURPA (The Public Utility Regulatory Policies Act of 1978).

Reliability-Must-Run (RMR) Agreements

A Must-Run Service Agreement between the owner of an RMR Unit and the ISO within geographical areas identified via the Local Area Reliability Service (LARS) process.

Reliability Must-Run (RMR) Generation

Generation that the ISO determines is required to be on line to meet applicable reliability criteria requirements. This includes:

- i) Generation constrained on line to meet NERC and WECC reliability criteria for interconnected systems operation;
- ii) Generation needed to meet load demand in constrained areas; and
- iii) Generation needed to be operated to provide voltage or security support of the ISO or a local area.



2012 LONG TERM PROCUREMENT PLAN

Residual Net Long for Capacity (Surplus)

When the capacity resources under an LSE's control exceed the peak hourly demand (MW), including the required planning reserve margin, of the LSE's customers, the LSE is in a residual net long situation for capacity.

Residual Net Long for Energy

When the energy requirement (kWh or MWh) of the LSE's customers load, for a given period of time (*i.e.* hour, month, year, etc), is less than the total energy supply available to serve the LSE's customers, the LSE is in a residual net long situation for energy.

Residual Net Short for Capacity (Deficit)

When the peak hourly demand (MW), including the required planning reserve margin, of the LSE's customers exceeds the capacity resources under the LSE's control, the LSE is in a residual net short situation for capacity.

Residual Net Short for Energy

When the energy requirement (kWh or MWh) of an LSE's customer load, for a given time interval (*i.e.* hour, month, year, etc), is greater than the total energy supply available to serve the LSE's customers, the LSE is in a residual net short situation for energy.

Spark Spread

The difference between the market price of electricity and its cost of production for a specific natural gas fired generating plant.

Spot Market

A market in which transactions take place at most one day ahead of scheduled delivery.

Spot Price

The price for spot transactions.

System Net Energy Forecast

Energy used by IOU and DA customers, as measured at generation (includes T&D losses).

Tradable Renewable Energy Credits (TREC's)

Renewable energy credits that are delivered separately from the energy from a RPS-certified



2012 LONG TERM PROCUREMENT PLAN

generator or as defined under Commission decision D. 10-03-021, *et seq.*

Transmission & Distribution (“T&D”) Losses

Electric energy or capacity that is wasted in the normal operation of a power system. Some kilowatt-hours are lost in the form of waste heat in electrical apparatus such as substation transformers. Line losses are kilowatts or kilowatt-hours lost in transmission and distribution of electricity.

Tolling Agreements

In a tolling agreement, the buyer is also the fuel supplier, and instead of buying kilowatt hours, the buyer, in effect, buys the service of converting fuel into electric energy. The project owner still sells capacity and AS. However, instead of a sale of goods, a tolling agreement is more in the nature of a service contract, where the project owner sells fuel conversion services. The term "tolling agreement" derives from the fact that the project owner is charging the purchaser a "toll" for allowing the purchaser's fuel to pass through the owner's project.

UDC (Utility Distribution Company)

An entity that owns a distribution system for the delivery of energy (to and from the ISO controlled grid) and that provides regulated retail electric service to eligible customers, as well as regulated procurement service to those end-use customers who are not yet eligible for DA, or who choose not to arrange services through another retailer. Electric Microutility is defined separately above and is not included in this definition.

Utility-Owned Generation

Resources owned by an investor-owned utility. Does not include resources that may be under contract or otherwise available to utilities.

Weather scenarios - 1:5, 1:10, & 1:20

Forecasts of expected highest demand (MW) under different weather scenarios. 1:2 means average weather conditions. 1:5, 1:10, 1:20 mean probability of hot temperature (one in every five, ten or twenty years).



Appendix J Acronym Glossary

Acronym	Term
AB	Assembly Bill
AL	Advice Letter
AS	Ancillary Services
BTS	Backbone Transportation Service
Btu	British Thermal Unit
CAISO	California Independent System Operator Corporation
CAM	Cost Allocation Mechanism
CAM PRG	Cost Allocation Mechanism Procurement Review Group
CARB	California Air Resources Board
CB	Convergence Bidding
CCA	Community Choice Aggregator



2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
CDWR or DWR	California Department of Water Resources
CEC	California Energy Commission
CHP	Combined Heat and Power
CO ₂	Carbon Dioxide
COB	California-Oregon Border
COD	Commercial Operations Date
CRR	Congestion Revenue Rights
CPCN	Certificate of Public Convenience and Necessity
CRT	Customer Risk Tolerance
D.	Decision
DA	Direct Access
DAM	Day-Ahead Market
DBE	Diverse Business Enterprises



2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
DG	Distributed Generation
DLAP	Default Load Aggregation Point
DR	Demand Response
DRP	Demand Response Program
EAP	Energy Action Plan
EAP II	Energy Action Plan II
ED	Exceptional Dispatch
EE	Energy Efficiency
EECC	Electric Energy Commodity Cost
EEl	Edison Electric Institute
E&FP	Electric & Fuel Procurement, SDG&E's energy procurement organization
EPC	Engineering, Procurement and Construction
EPRI	Electric Power Research Institute



2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
ERC	Emissions Reduction Credit
ERRA	Energy Resource Recovery Account
ET	Evaluation Team
FASB	Financial Accounting Standards Board
FEA	Financial Engineering Associates
FERC	Federal Energy Regulatory Commission
FiT	Feed-in Tariff
GDP-IPD	Gross Domestic Product Implicit Price Deflator
GHG	Greenhouse Gas
GRC	General Rate Case
GWh	Gigawatt-hour
HASP	Hour Ahead Scheduling Process
ICE	Intercontinental Exchange



2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
ID	Identification
IE	Independent Evaluator
IFM	Integrated Forward Market
IM	Instant Messaging
IST	Inter-SC trades
IOU	Investor-owned Utility
ISDA	International Swaps and Derivatives Association, Inc.
kW	Kilowatt
kWh	Kilowatt-hour
LCBF	Least-Cost, Best Fit
LCD	Least-Cost Dispatch
LCR	Local Capacity Resource
LGD	Losses Given Default



2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
LMP	Locational Marginal Price
LSE	Load-serving Entity
LT	Long Term
LTPP	Long-Term Procurement Plan
MMBtu	Millions of British Thermal Units
MRTU	Market Redesign and Technology Upgrade
MSG	Multi-Stage Generation
MtM	Mark to Market
MW	Megawatt
MWh	Megawatt-hour
NAESB	North American Energy Standards Board
NGBA	Non-Fuel Generation Balancing Account
NP15	North of Path-15



2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
NP26	North of Path-26
NQC	Net Qualified Capacity
NYMEX	New York Mercantile Exchange
OASIS	Open Access Same-time Information Systems
OFO	Operational Flow Order
OTC	Over-the-counter
OTC	Once-through Cooling
PCI	Power Cost Incorporated
PD	Probabilities of Default
PDR	Proxy Demand Response
PG&E	Pacific Gas and Electric Company
PIRP	Participating Intermittent Resource Program
PPA	Power Purchase Agreement



2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
PRG	Procurement Review Group
PRT	Pattern Recognition Technologies, Inc.
PSA	Purchase and Sale Agreement
PURPA	Public Utility Regulatory Policy Act of 1978
PV	Photovoltaic
QCR	Quarterly Compliance Report
QF	Qualifying Facility
QF/CHP Settlement	Qualifying Facility and Combined Heat and Power Settlement
R.	Rulemaking
RA	Resource Adequacy
RAR	Resource Adequacy Requirement
REC	Renewable Energy Credit
ReMAT	Renewable Market Adjusting Tariff



2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
RFB	Request for Bids
RFO	Request for Offer
RFP	Request for Proposal
RMR	Reliability Must-Run
RNS	Residual Net Short
RPS	Renewables Portfolio Standard
RTM	Real Time Market
RTO	<i>Regional Transmission Organization</i>
RUC	Residual Unit Commitment
SB	Senate Bill
SC	Scheduling Coordinator
SCP	Standard Capacity Product
SCE	Southern California Edison Company



2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
SDG&E	San Diego Gas and Electric Company
SP15	South of Path 15
SoCalGas	Southern California Gas Company
SONGS	San Onofre Nuclear Generating Station
SRAC	Short Run Avoided Cost
SWRCB	State Water Resources Control Board
TEVaR	To-expiration-Value-at-Risk
TREC	Tradable Renewable Energy Credit
TOU	Time-of-Use
UEG	Utility Electric Generation
UOG	Utility-owned Generation
U.S.	United States
URG	Utility Retained Generation

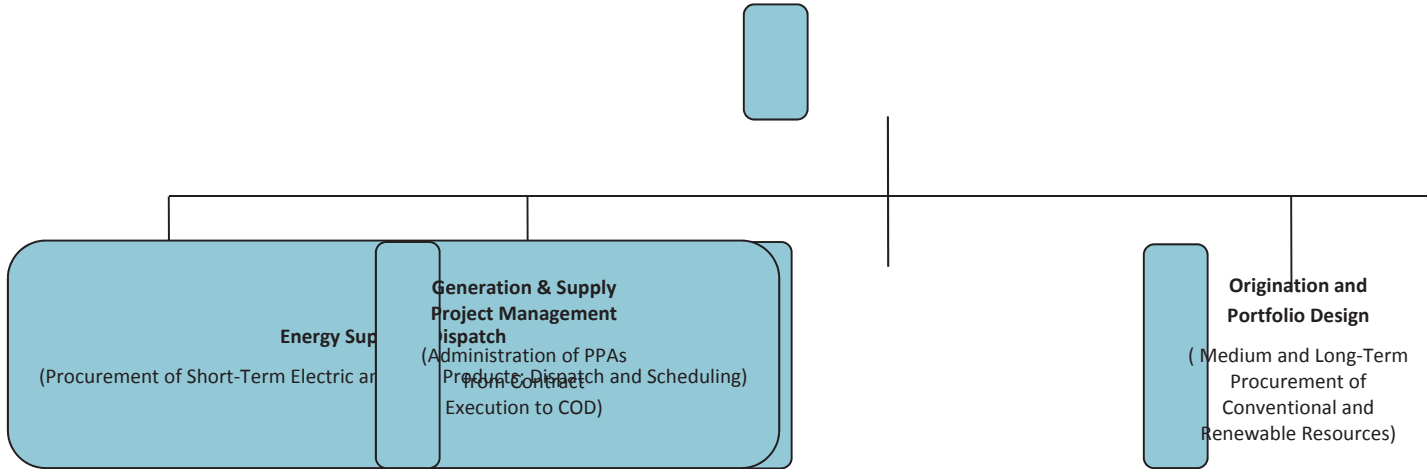


2012 LONG TERM PROCUREMENT PLAN

Acronym	Term
VAR	Value at Risk
VtE	VaR to Expiration
WECC	Western Electric Coordinating Council
WSP	Western System Power Pool



Appendix K Energy Procurement Organization



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

Order Instituting Rulemaking to Integrate and
Refine Procurement Policies and Consider
Long-Term Procurement Plans.

Rulemaking 13-12-010
(Filed December 30, 2013)

**SAN DIEGO GAS & ELECTRIC COMPANY (U902 E)
NOTICE OF AVAILABILITY OF
DRAFT 2014 LONG-TERM PROCUREMENT PLAN**

AIMEE M. SMITH
101 Ash Street, HQ-12
San Diego, California 92101
Telephone: (619) 699-5042
Facsimile: (619) 699-5027
amsmith@semprautilities.com

Attorney for
SAN DIEGO GAS & ELECTRIC COMPANY

October 3, 2014

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

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.

Rulemaking 13-12-010
(Filed December 30, 2013)

**SAN DIEGO GAS & ELECTRIC COMPANY (U902 E)
NOTICE OF AVAILABILITY OF
DRAFT 2014 LONG-TERM PROCUREMENT PLAN**

Pursuant to Rule 1.9(d) of the Rules of Practice and Procedure of the California Public Utilities Commission (the “Commission”), San Diego Gas & Electric Company (“SDG&E”) hereby provides notice that it has electronically filed with the Commission’s docket office its **SAN DIEGO GAS & ELECTRIC COMPANY DRAFT 2014 LONG-TERM PROCUREMENT PLAN** (“2014 Bundled Plan”).

The public version of the draft 2014 Bundled Plan filing is available on SDG&E’s website at the following link: <https://www.sdge.com/regulatory-filing/12406/sdge%E2%80%99s-draft-2014-bundled-procurement-plan>

The 2014 Bundled Plan filing may also be obtained by contacting:

Dean Kinports
Regulatory Case Administrator
SAN DIEGO GAS & ELECTRIC COMPANY
8330 Century Park Ct.
San Diego, CA 92123-1530
Phone: (858) 654-8679
DAKinports@semprautilities.com

Respectfully submitted this 3rd day of October, 2014.

/s/ Aimee M. Smith
AIMEE M. SMITH
101 Ash Street, HQ-12
San Diego, California 92101
Telephone: (619) 699-5042
Facsimile: (619) 699-5027
amsmith@semprautilities.com
Attorney for
SAN DIEGO GAS & ELECTRIC COMPANY