

VALLEY CLEAN ENERGY ALLIANCE

Staff Report – Item 18

TO: Board of Directors

FROM: Gordon Samuel, Assistant General Manager & Director of Power Services

SUBJECT: Wholesale Energy Risk Management update

DATE: February 9, 2023

RECOMMENDATION

Informational. No action requested.

BACKGROUND

Load serving entities (LSEs), such as VCE, conduct business within the framework of enterprise risk management (ERM) policies. In 2018, VCE established an ERM policy and has been working under this policy since launch (<https://valleycleanenergy.org/wp-content/uploads/Reso-2018-006-Adopt-Ent.Risk.Mngmnt.Plcy.pdf>). In addition, since 85%+ of VCE's budget is related to energy procurement, VCE established several additional policies specifically related to energy risk. Examples of these policies are the [procurement plan](#), [directives and delegations](#) and the [wholesale energy risk management policy with amendment #1](#). The overall business enterprise can have additional risk areas associated with regulatory, reputational, programs, etc., but the focus for CCA's is typically the energy component since that comprises such a significant percentage of its annual budget.

NEXT STEPS

Staff, with the assistance from The Energy Authority (TEA), is proposing to update the ERM as well as the energy policies described above. This staff report and the attached draft Wholesale Energy Procurement Risk Management Program consolidates the energy policies noted above into one document that will be a large portion of the updated ERM. Staff is seeking Board feedback on the attached draft procurement risk document and will bring a complete revised ERM to a future meeting for Board consideration.

CONCLUSION

As VCE approaches its five-year anniversary much in the energy sector has evolved during that time which can impact the approach to managing risk. The regulatory landscape continues to change, VCE's power portfolio is taking shape, and numerous other areas that impact VCE's business are evolving. Therefore, staff has initiated an update of the ERM as a whole and specifically the wholesale energy component.

ATTACHMENT

1. Draft - Wholesale Energy Procurement Risk Management Program



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Valley Clean Energy Wholesale Energy Procurement
Risk Management Program

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Table of Contents

1. Program Overview	4
1.1 Background and Purpose	4
1.2 Statement of Risk Appetite	4
2. Wholesale Energy Procurement Risk Management Roles and Responsibilities.....	6
2.1 Wholesale Energy Procurement Risk Management Organizational Structure.....	6
2.2 Board of Directors.....	6
2.3 Enterprise Risk Oversight Committee	6
2.4 Wholesale Energy Provider.....	8
2.4.1 Wholesale Energy Provider – Front Office.....	8
2.4.2 Wholesale Energy Provider – Middle/Back Office	8
3. Delegation of Authority	10
3.1 Delegation of Transaction Authority.....	10
3.2 Monitoring, Reporting, and Instances of Exceeding Risk Limits	10
4. Position Tracking and Management Reporting	11
5. Business Practices	12
5.1 Channels for Procurement and Trading Practices	12
5.2 Transaction Type, Region, and Markets.....	13
5.3 Credit Policy and Counterparty Suitability.....	13
5.4 System of Record	14
5.5 Transaction Valuation	14
5.6 Stress Testing	14
7. Authorized Transaction Types or Products.....	15
8. Energy Risk Procurement Strategy.....	16
8.1 Energy Risk Procurement Strategy Overview	16
8.2 Energy Hedging Strategy and Targets.....	17
8.2.1 Energy Hedging Overview	17
8.2.2 Energy Hedging Targets	17
8.2.3 Summer Assessment.....	19
8.2.4 Power Charge Indifference Adjustment (“PCIA”) Exit Fee and Hedging with Fixed Price Energy	19
8.3 Congestion Revenue Rights	20

8.4 Compliance and Goal-Driven Procurement 20

 8.4.1 Renewable Procurement 20

 8.4.2 Carbon-Free Procurement 21

 8.4.3 Carbon Allowances..... 22

 8.4.4 Resource Adequacy Capacity 22

 8.4.4 Long-Term Mandated Procurement 23

8.5 CAISO Market Energy 23

8.6 Energy Risk Procurement Strategy Metrics 23

9. Definitions 25

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1. Program Overview

1.1 Background and Purpose

Valley Clean Energy (“VCE”)’s Wholesale Energy Procurement Risk Management Program (“Program”) provides a structured, disciplined, and consistent approach to wholesale energy procurement risk management that facilitates risk-informed decision making in wholesale energy activities, which makes up more than 85% of VCE’s annual budget. The Program supports VCE in aligning its strategy, processes, people, and technology for the purpose of evaluating and managing energy procurement uncertainties inherent to the energy industry and power procurement. By strategically managing risk associated with power procurement activities, VCE can proactively reduce the chance of loss, identify and take advantage of procurement opportunities, create greater financial stability, and protect its resources to support its mission and create value for its members.

The ultimate purpose of the Program is to support VCE’s achievement of its goals by specifying management responsibilities, organizational structures, risk management standards, and the operating controls and limits necessary to appropriately identify, evaluate, and manage VCE’s exposure to wholesale energy procurement risk.

Embedded within the above overarching objective of the Program are a number of risk management goals for VCE, including:

- Provide the VCE Board of Directors (“Board”) with transparency and insight into power procurement risks that could impact the ability to execute VCE’s mission
- Implement well-defined wholesale energy risk management process, tools, and techniques
- Identify current and emerging electricity market risks, and prioritize and develop response plans when necessary
- Increase the likelihood of success in achieving VCE’s power procurement objectives
- Build credibility and sustain confidence in VCE’s governance by all stakeholders including private, federal, state, and local partners
- Improve the understanding of interactions and relationships between wholesale energy procurement risks for VCE by the Board, VCE Staff (“Staff”), and third-party service providers
- Establish clear accountability and ownership of wholesale energy procurement risk
- Develop the capacity for continuous monitoring and periodic reporting of power procurement risks

1.2 Statement of Risk Appetite

VCE’s approach to wholesale energy procurement risk is to conservatively manage its exposure to financial, legal, compliance and regulatory, operational, strategic, and reputational impacts while accepting and balancing risk-taking in pursuit of its mission and objectives. It recognizes that its appetite for risk varies according to the activity undertaken, that acceptance of risk is subject to ensuring that

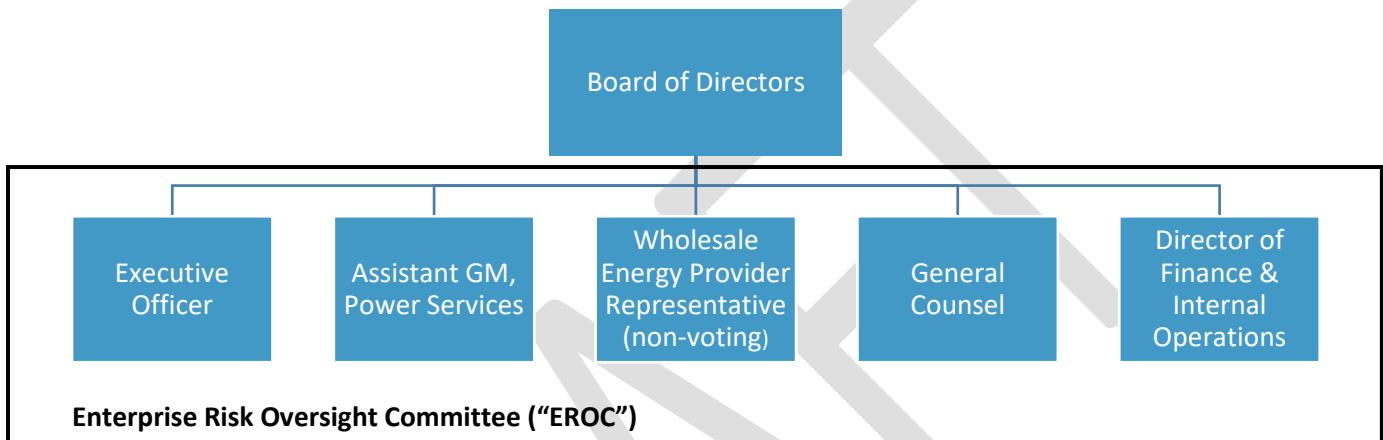
potential benefits and risks are fully understood before taking action, and that sensible measures to mitigate risk are established.

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2. Wholesale Energy Procurement Risk Management Roles and Responsibilities

2.1 Wholesale Energy Procurement Risk Management Organizational Structure

Below is a high-level organization chart describing VCE's risk management governance.



2.2 Board of Directors

The VCE Board of Directors has the responsibility to review and approve the VCE Wholesale Energy Risk Management Program. With this approval, the Board assumes responsibility for understanding the risks VCE is exposed to due to wholesale energy procurement activity and how the policies outlined in this document help VCE manage the associated risks. The Board of Directors is also responsible to:

- Determine VCE strategic direction in energy procurement
- Understand the procurement strategy employed
- Approve risk exposures beyond the EROC's authority
- Approve voting Members of the EROC

2.3 Enterprise Risk Oversight Committee

The EROC is responsible for implementing, maintaining, and overseeing compliance of the Program. The voting members of the EROC shall be Board-approved VCE staff members. Additionally, a representative of VCE's Wholesale Power Manager will serve as a non-voting member of the EROC. The current voting members of the EROC are:

- Executive Officer
- Assistant General Manager, Director of Power Services

- General Counsel
- Director of Finance & Internal Operations

The primary responsibility of the EROC is Risk Management: to ensure that risks, particularly those related to procurement activities, are managed to create value for VCE members in a manner consistent with the Program and Board directives. In addition to this, the EROC is also responsible for Risk Monitoring: establishing VCE's risk appetite and risk tolerance levels and overseeing the development and implementation of processes used to analyze, prioritize, and address risks across VCE, particularly those related to procurement activities. Risk Monitoring may include proposing recommendations to adjust the Wholesale Energy Risk Management Program when conditions dictate.

The EROC maintains the Wholesale Energy Risk Management authority and responsibility to:

- Approve and ensure that all procurement strategies are consistent with the Program
- Determine if changes in procurement strategies are warranted
- Approve new transaction types, regions, markets, and delivery points
- Understand all financial and risk models used by VCE and any third-party service providers
- Understand counterparty credit review models and methods for setting and monitoring credit limits
- Meet to review actual and projected financial results and potential risks
- Authorize individual transactions that exceed an individual staff member's authority, as indicated in Section 3 below
- Escalate to the Board any risks beyond the EROC's authority

The Assistant General Manager, Power Services & Programs is the staff person that will own the Wholesale Energy Risk Management processes.

The EROC maintains the Wholesale Energy Procurement Risk Monitoring authority and responsibility to:

- Work with the Board to develop and establish a list of high priority wholesale energy procurement risks that will be monitored on an ongoing basis
- Approve Program processes and risk appetite and risk tolerance guidelines
- Receive and review reports as described in the Program
- Conduct and coordinate any actions identified as risk mitigation for the management of specific wholesale energy procurement risks
- Review summaries of limit violations
- Review the effectiveness of VCE's wholesale energy procurement risk measurement methods
- Maintain the Program
- Monitor regulatory and legislative activities related to wholesale energy procurement
- Perform any other activities consistent with the Program and governing laws that VCE's Board determines are necessary or appropriate

The Director of Finance & Internal Operations is the staff person that will own the Wholesale Energy Procurement Risk Monitoring process.

2.4 Wholesale Energy Provider

VCE's Wholesale Energy Provider ("WEP") is responsible for maintaining a strong segregation of duties, also referred to as "separation of function", that is fundamental to manage and control the risks outlined in the Program as well as the WEP's internal Energy Risk Management Policy. The WEP provides information to the EROC on the risk and credit models, methods, and processes that it uses to fulfil its obligations under its own Risk Policy as well as meet VCE's Program. Staff members at the WEP responsible for legally binding VCE to a transaction will not also perform confirmation or settlement functions. With this in mind, the WEP's responsibilities are divided into front-, middle-, and back-office activities, as described below.

2.4.1 Wholesale Energy Provider – Front Office

The WEP's Front Office has overall responsibility for:

- Managing all commodity and transmission activities related to procuring and delivering resources needed to serve VCE's load
- Analyzing fundamentals affecting load and supply factors that determine VCE's net position
- Transacting within the limits of the Program, and associated policies, to balance loads and resources and maximize the value of VCE's assets through the exercise of approved optimization strategies.

Other duties associated with the WEP's Front Office include:

- Assisting in the development of risk management hedging products and strategies, and bringing recommendations to the EROC
- Preparing each month a monthly operating plan for the prompt months that gives direction to the day-ahead and real-time trading and scheduling staff regarding the bidding and scheduling of VCE's resource portfolio in the California Independent System Operator ("CAISO") market
- Forecast and monitor day-ahead and real-time loads
- Keep accurate records of all executed transactions

2.4.2 Wholesale Energy Provider – Middle/Back Office

The WEP's Middle Office provides independent market and credit risk oversight. The Middle Office is functionally and organizationally separate from the Front Office. The WEP's Back Office provides support with a wide range of administrative activities necessary to execute and settle transactions and support the risk control efforts (*e.g. transaction entry and/or checking, data collection, billing, etc.*) consistent with both the WEP's Risk Policy as well as VCE's Program. The Back Office is also functionally and organizationally separate from the Front Office.

The WEP's Middle and Back Offices have primary responsibility for trading control and for ensuring agreement with counterparties regarding the terms of all trades, including forward trading. The WEP's Middle and Back Offices have overall responsibility for:

- Estimating and publishing daily forward monthly power and natural gas price curves for a minimum of the balance of the current year through the next calendar year

- Calculating and maintaining the net forward power positions of VCE
- Ensuring that VCE adheres to all risk policies and procedures of both VCE and the WEP's in letter and intent
- Maintaining the overall financial security of transactions undertaken by the WEP on behalf of VCE
- Implementing and enforcing credit policies and limits
- Handling confirmation of all transactions and reconciling differences with the trading counterparties
- Reviewing trade tickets for adherence to approved limits
- Ensuring all trades have been entered into the appropriate system of record
- Ensuring that both pre-schedule and actual delivery volumes and prices are entered into the physical databases
- Carrying out month-end checkout of all transactions each month
- Reviewing models and methodologies and recommending EROC approval
- Providing supporting documentation for power supply audits

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3. Delegation of Authority

3.1 Delegation of Transaction Authority

By adopting the Program, the Board is explicitly delegating operational control and oversight to the EROC and the WEP, as outlined through the Program. Specifically, to facilitate daily operations of the CCA in its wholesale energy procurement function, the Board is delegating transaction execution authorities shown in the table below.

Position	Maturity Limit	Term Limit	Energy Transaction Volume Limit (MWh)	Capacity Transaction Value Limit (\$)
VCE Board of Directors	Any transaction that exceeds the Enterprise Risk Oversight Committee limits			
Enterprise Risk Oversight Committee	42 Months	36 Months	500,000	\$5,000,000
Executive Officer	36 Months	30 Months	375,000	\$3,000,000
Wholesale Energy Provider	30 months	24 Months	250,000	\$1,500,000

These authorities will be applied to wholesale power activity executed outside of the CAISO markets. These limits provide both VCE and its WEP needed authorities to manage risks as they arise. Transactions falling outside the delegations above require Board approval prior to execution. Activity with CAISO is excluded from this table due to the nature of the market, where prices for activities may not be known until after transactions are committed.

All procurement executed under the delegation above must align with any subsequent procurement strategies or financial management policies authorized by the Board and the Energy Risk Procurement Strategy (see Section 8).

3.2 Monitoring, Reporting, and Instances of Exceeding Risk Limits

The WEP Middle Office is responsible for monitoring, and reporting compliance with, all limits within the Program. If a limit or control is violated, the WEP Middle Office will send notification to the trader responsible for the violation and the EROC. The EROC will discuss the cause and potential remediation of the exceedance to determine next steps for curing the exceedance. VCE Power Resources staff are also responsible for monitoring transactions reported by the WEP and bringing to the EROC's attention any violations of limits within the Program that have not been noted by the WEP.

4. Position Tracking and Management Reporting

The WEP will assist the Director of Finance & Internal Operations in working with the EROC to establish an appropriate reporting format and metrics for VCE staff to use in reporting wholesale energy procurement risks to the EROC and the Board. The reports will show metrics, status and additional mitigations where appropriate. Emerging risk evaluation and discussion will be integrated into the reporting and monitoring process. In addition to risk-specific reporting, consolidated summary reporting on the status of all high priority wholesale energy procurement risks will be reported out as follows:

- **Daily Financial Model Forecast**
Latest projected power costs and financial performance, marked to current market prices and shown relative to financial goals provided to Staff daily
- **Monthly Net Position Report**
Forward net position report presented monthly to the EROC
- **Daily Credit Report**
A report showing credit exposure for the transactions that the WEP executes on VCE's behalf and passes through the WEP to VCE provided to Staff daily
- **Monthly Risk Analysis**
Cash flow at risk and stress testing of the financial forecast relative to financial goals presented monthly to the EROC
- **Quarterly Report to EROC**
A qualitative and quantitative report on the status of power procurement risks provided quarterly to the EROC
- **Semi-Annual Risk Report to the Board**
Staff will report semi-annually to the Board on the status of wholesale energy procurement risks

5. Business Practices

5.1 Channels for Procurement and Trading Practices

VCE's WEP will access power markets and transact on behalf of VCE using the following market channels:

- **Direct Solicitation**
The WEP will use its existing relationships to seek suitable bilateral agreements with counterparties directly, either through bilateral outreach or formal Requests For Offers ("RFOs")
- **Electronic Exchange Platforms**
The WEP will use its access to platforms such as ICE (Intercontinental Exchange) to research markets and transact
- **Electronic Auction Platforms**
The WEP will use its access to platforms such as EnerNoc to create and enter auctions for desired products
- **Brokers**
The WEP will use its existing agreements with brokers to help locate trade partners for desired products

Considerations for the channel(s) used include:

- Type of product
- Market liquidity
- Credit quality and availability
- Timing
- Cost/fees
- Existing counterparties and transactions
- Resource and counterparty diversity
- Market conditions

The approved scope of market participation by VCE is limited to those activities required to capture reasonably expected value and cost stability from VCE's resource portfolio without engaging in speculative or unauthorized trading activities. Staff and individuals at the WEP may exercise some discretion on trade timing and volumes subject to exigent conditions (such as unusual weather, periods of illiquidity, load/generation deviations, and/or power system circumstances). VCE procurement practices are intended to prohibit the acquisition of unwarranted or additional exposure to price and volume risk beyond that projected and associated within the efficient utilization and optimization of VCE's resource portfolio. If any questions arise as to whether a particular transaction constitutes speculation, the EROC shall review the transaction(s) to determine whether the transaction would constitute speculation.

5.2 Transaction Type, Region, and Markets

Authorized transaction types, regions and markets are listed in section 7 to the Program. These transaction types, regions and markets are and shall continue to be focused on supporting VCE's financial policies, including the approved procurement strategy in Appendix B. New or non-standard transaction types may provide VCE with additional flexibility and opportunity but may also introduce new risks. Therefore, transaction types, regions, and markets not included in Appendix A, or transactions within already approved transaction types that are substantially different from any prior transaction executed by VCE, must be approved by the EROC prior to execution.

It is the responsibility of the WEP's Front Office to ensure that relevant departments have reviewed the proposed transaction and that material issues are resolved prior to submittal to the EROC for approval. If approved, Appendix A to the Program will be updated to reflect the new transaction type.

5.3 Credit Policy and Counterparty Suitability

All procurement activities executed by the WEP on behalf of VCE, using the WEP's counterparty agreements, will be subject to the credit policies and procedures outlined in the WEP's Energy Risk Management Policy. The WEP's credit policy requires that all counterparties be evaluated for creditworthiness by the WEP Middle Office prior to execution of any transaction and no less than annually thereafter. Additionally, counterparties shall be reviewed if a change has occurred, or perceived to have occurred, in market conditions or in a company's management or financial condition. This evaluation, including any recommended increase or decrease to a credit limit, shall be documented in writing and includes all information supporting such evaluation in a credit file for the counterparty. A credit limit for a counterparty will not be recommended or approved without first confirming the counterparty's senior unsecured or corporate credit rating from one of the nationally recognized rating agencies and/or performing a credit review or analysis of the counterparty's or guarantor's financial statements. The WEP's credit analysis shall include, at a minimum, current audited financial statements or other supplementary data that indicates financial strength commensurate with an investment grade rating. Trade and banking references, and any other pertinent information, may also be used in the review process.

Counterparties that do not qualify for a credit limit or wish to enter into a transaction exceeding their credit limit must post an acceptable form of credit support or prepayment prior to the execution of any transaction. A counterparty to the WEP may choose to provide a guarantee from a third party, provided the third party satisfies the criteria for a credit limit as outlined in the WEP's Energy Risk Management Policy.

The WEP Middle Office will establish continuous monitoring of the current credit exposure for each Counterparty with whom the WEP transacts on behalf of VCE and include such information in the Current Counterparty Credit Risk Report.

The WEP will provide a credit review and recommendation for any counterparty with whom VCE contracts directly.

5.4 System of Record

The WEP's Middle Office will maintain a set of records for all transactions executed in association with VCE procurement activities. The records will be maintained in US dollars and transactions will be separately recorded and categorized by type of transaction. This system of record shall be auditable.

5.5 Transaction Valuation

Transaction valuation and reporting of positions shall be based on objective, market-observed prices. Open positions should be valued (marked-to-market) daily, based on consistent valuation methods, and data sources. Whenever possible, mark-to-market valuations should be based on independent, publicly available market information and data sources.

5.6 Stress Testing

In addition to limiting and measuring risk using the methods described herein, stress testing shall also be used to examine performance of the VCE portfolio under adverse conditions. Stress testing is used to understand the potential variability in VCE's projected procurement costs, and resulting retail rate impacts and competitive positioning, associated with low probability events. The WEP's Front and Middle Offices will collaborate on performing stress-testing of the portfolio as needed and distribute results. The EROC will provide guidance to the WEP as needed regarding what parameters should be stress tested and to what degree.

7. Authorized Transaction Types or Products

All transaction types listed below must be executed within the limits set forth in the Program.

- CAISO Market Products
 - Day-ahead and Real-time Energy
 - Congestion Revenue Rights
 - Convergence Bidding
 - Inter-Scheduling Coordinator Transactions
 - Tagging into and out of CAISO
 - Ancillary Services
- Physical Power Products
 - Short- and Long-Term Power
 - Physical OTC Options
- Resource Adequacy
 - System, Local, and Flexible Resource Adequacy
 - Existing Contract Import Capability
- Physical Environmental Products
 - Renewable Energy Credits
 - Specified Source Power
 - Carbon Allowances and Obligations
- Transmission Access Charges
- Energy Generation
 - Energy Storage, including time-based arbitrage
 - Demand Response

The point of delivery for all products must be at a location within the CAISO service area.

8. Energy Risk Procurement Strategy

8.1 Energy Risk Procurement Strategy Overview

This Energy Risk Procurement Strategy (“Strategy”) provides a roadmap of how VCE procures the power supply requirements of its customers during the current calendar year plus next two calendar years. This is not a resource plan, insofar as a resource plan deals with issues such as the long-term resource goals of VCE. Ultimately long-term resource goals will be incorporated into shorter term procurement activity. The Strategy details procurement schedules (or where appropriate justifies the decision not to set schedules) for attaining wholesale, market-based products required by the CCA. Specific focus is on procurement of the following products:

- Fixed Price Energy (also known as system power or energy hedges)
- Portfolio Content Category 1 Renewable Energy
- Portfolio Content Category 2 Renewable Energy
- Carbon Free Energy
- Resource Adequacy Capacity
- Congestion Revenue Rights

As discussed above, in addition to market-based transactions entered into pursuant to this Strategy, VCE will also procure assets, enter into long-term power purchase agreements (PPAs), and/or enter into other long-term contracts (*e.g. stand-alone energy storage*) pursuant to statutory and regulatory requirements and VCE program goals as established by the Board.

The overall goals of the Strategy are to identify exposure to commodity prices, quantify the financial impact that variability in commodity prices, load requirements, and generation output may have on the ability of the VCE to meet its financial program goals, and then manage the associated risk.

To help ensure long-term viability for the CCA, VCE has outlined the following goals in developing its power portfolio to establish metrics used for modeling and measuring risk exposures of VCE:

- VCE will target meeting all applicable Federal, regional, and local standards and regulatory requirements, including:
 - Meet CPUC Resource Adequacy requirements
 - Meet CAISO Tariff and Business Practice Manual requirements
 - Meet RPS Compliance Period energy content standards
- VCE will consider its overarching fiscal goals and concerns, such as maintaining competitive retail rates and funding financial reserves in balance with procurement decisions
- VCE will target procurement of the power portfolio product mix of renewables and non-RPS clean energy as directed by Board goals
- VCE will adhere to risk mitigating directives and delegations of the EROC

All procurement activities will be conducted to achieve results consistent with the above goals, regulatory compliance obligations, and to meet the power supply requirements of VCE’s customers. Any

transaction that cannot be directly linked to a requirement of serving VCE's customers, or that does not serve to reduce risk as measured by the Cash Flow at Risk Metric described below, is prohibited.

8.2 Energy Hedging Strategy and Targets

8.2.1 Energy Hedging Overview

The time horizon for the energy hedging program for VCE will be several years (see below). The energy hedging schedules described below provide a disciplined approach to procurement by mandating targeted hedge levels to be achieved by definite dates. This commonly utilized approach is intended to mitigate speculation of future wholesale market prices while also spreading procurement over a multi-year period.

The purpose of these hedging transactions is to reduce variability of power supply costs by gradually increasing the amount of energy hedged as the date of consumption approaches. Time driven strategies avoid the inherent impossibility of trying to consistently and accurately "time the market" when making hedging decisions. Additionally, VCE needs to spread its procurement efforts over time to effectively manage the potential negative price impacts of procuring a large volume of energy over a short period of time in an illiquid market.

Fixed price energy products, including block energy and shaped energy are used to manage the electricity commodity price risk that VCE faces as a CCA. Fixed price energy provides for the supplier to deliver a predetermined volume of energy, at a constant delivery rate, for a fixed price. Specific to VCE's customers, fixed price energy hedges are used to provide cost certainty and rate stability. A key goal of the CCA program is to reduce energy price uncertainty for the upcoming operating year(s) by procuring at least 70 percent and up to 100 percent of its energy needs with fixed price contracts thereby mitigating exposure to unexpected price movement.

8.2.2 Energy Hedging Targets

When assessing its requirements for fixed price energy, VCE will forecast the monthly energy requirements of its customers during heavy and light load hours¹ each month as well as the forecasted output from resources in its portfolio. Changes in regulatory, load, supply, and market dynamics may warrant occasional under- or over-hedging and subsequent remarketing of over-procured products.

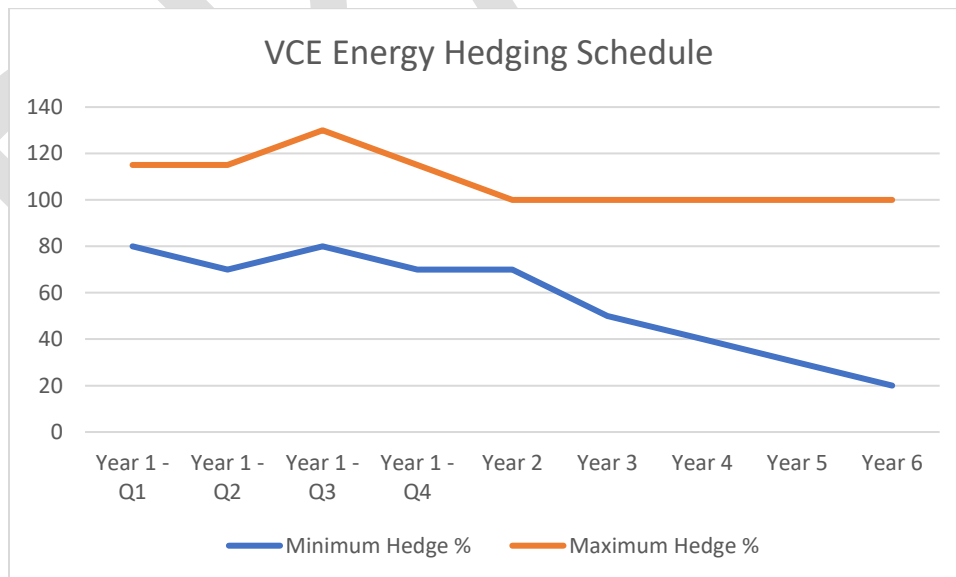
The targets below describe minimum and maximum percent hedge targets for identified future time periods. The definition of "Hedge %" in this context is the total fixed price megawatt hours (MWh) procured in the period divided by the total forecast load in MWh inclusive, as applicable, of the energy forecast to be provided by PPAs and other long-term resources within VCE's portfolio during respective time periods.

¹ Heavy Load (On-Peak) Hours in current wholesale energy markets are 6am to 10pm, Monday through Saturday, excluding New Years, Memorial Day, 4th of July, Labor Day, Thanksgiving and Christmas. All other hours during the year are considered Light Load (Off-Peak) Hours.

VCE will observe the following schedule when hedging its Fixed Price Energy requirements:

Time Period	Minimum Hedge %	Maximum Hedge %
Prompt Month (Jan -March/Q1)	80%	115%
Prompt Month (April-June/Q2)	70%	115%
Prompt Month (July-Sep/Q3)	80%	130%
Prompt Month (Oct-Dec/Q4)	70%	115%
Prompt Calendar Year (PCY)	70%	100%
PCY +1	50%	100%
PCY +2	40%	100%
PCY+3	30%	100%
PCY+4	20%	100%

The hedge schedule for the Prompt Month will be measured five calendar days prior to the first day of the particular month (e.g. on January 27, 2024, VCE will have hedged 80 to 115 percent of its projected energy requirements during February 2024, which is in Q1). The hedge schedule for the Prompt Calendar Year (PCY), as well as subsequent four calendar years, will be measured ten calendar days prior to each new calendar year (e.g. on December 21, 2024, VCE will have hedged at least 70 percent of its forecast energy requirements for CY 2025, 50 percent of its forecast energy requirements for CY 2026, and 30 percent of its forecast energy requirements for CY 2027, CY2028, and CY2029). This is shown visually in the chart below.



The targets described above represent total fixed-price MWh procured compared to total MWh load forecasts. They are intentionally not prescriptive regarding diurnal periods (HLH/LLH or Peak/Off Peak) which allows flexibility in procurement strategy given rapidly evolving market dynamics. Historically

Peak/HLH periods contain the most price risk. **Accordingly, VCE additionally requires HLH periods to be procured to a minimum 100% hedged level, using the same definition above, for Prompt Months.**

Hedging decisions to reach targets between the minimum and maximum hedge levels are based on price-driven or opportunistic strategies. The purpose of these strategies is to capitalize on market opportunities when conditions are favorable. VCE bases its decision to execute opportunistic hedges on the impact to projected power supply costs and the resulting reduction in cash flow at risk (CFaR). Opportunistic hedges may be executed when energy price levels are favorable to lowering the cost of power relative to established program goals and financial projections. Alternatively, opportunistic hedges can be executed in adverse market conditions relative to financial goals in order to reduce the potential negative impact of continued upward trending commodity prices relative to established goals.

In executing this strategy, fixed price energy hedges may be purchased, sold, or moved from one month to another for the purpose of maintaining hedge coverage that matches changes in forecasted electric load. This includes the ability of the VCE to purchase standard products to hedge average loads over a defined time period and then later modify its portfolio by purchasing or selling more granular products to more precisely match load.

VCE does not set programmatic procedures assigned to Renewable Portfolio Standard, Carbon Free Energy, or Resource Adequacy products. Procurement of these products is primarily driven by VCE Board-adopted goals and regulatory compliance requirements, which in many cases apply prescribed hedging schedules, as further described in the respective sections below.

8.2.3 Summer Assessment

VCE will complete a Summer Assessment of market risk and hedging plan by June 1 of each year. This work product will be shared in draft form with the EROC in May of each year and will include:

- Analysis of summer exposure
- Fundamental analysis of market conditions
- Hourly load/resource balance forecast for June-September
- Recommendations on products and target hedge levels designed to mitigate peak hour and daily HLH exposure

Although compliance with the Fixed Price Energy schedule above will be measured monthly, **VCE shall endeavor to complete all Q3 hedging prior to June 15 of each year**, subject to and allowing for true-ups as load and generation profiles fluctuate throughout the summer season.

8.2.4 Power Charge Indifference Adjustment (“PCIA”) Exit Fee and Hedging with Fixed Price Energy

Under the current PCIA construct, departing load is responsible for costs associated with procurement that the incumbent utility has already done on behalf of that load. At the time of departure, the applicable vintage portfolio² then serves as a hedge for the departing load in that as market prices

² The vintage portfolio is generally all contracts and utility-owned generation that was procured while the departing load was still receiving bundled service.

increase, the departing load charges decrease, thereby reducing costs to CCA customers relative to bundled customers. Similarly, if market prices decrease, the departing load charges increase, due to more of the vintage portfolio being above market costs.

One impact of the PCIA on VCE is, therefore, the way it serves as a “lagging hedge” against energy price volatility. Increased market prices in one year will result in an all-else-equal lower PCIA in subsequent years, and vice versa, although the exact impact will depend on market-sensitive PG&E data that VCE does not have access to. In lieu of better quantitative data, hedging decisions will be made with the qualitative understanding that the PCIA may serve from a 5% to 20% “lagging hedge” on VCE’s portfolio, dependent on market conditions and seasonality.

8.3 Congestion Revenue Rights

RTO markets such as the CAISO expose entities to financial basis risks between the point a seller supplies power (a “source” node) and the location where the buyer has load (a “sink” node). In order to manage this risk CAISO offers a financial product known as congestion revenue rights (“CRRs”) which can be allocated to an entity or purchased via the CAISO CRR Auction. VCE will use both mechanisms to acquire necessary congestion hedges in on and off-peak periods to reduce risk between generation or fixed price energy purchase locations and VCE’s load point. CRRs are limited in that they are designed to cover energy flows that are blocked into on-peak and off-peak periods and are not shapeable. As VCE’s CRRs are used to manage a source-sink relationship consistent with utility hedging, exposure created by the CRR must be reasonably expected to have an offsetting effect on cashflow associated with the positions that necessitated the CRR in the first place across the period. It is acknowledged however that due to discrepancies in granularity, these cashflows will never be fully symmetric.

The WEP will calculate a Total Dollar Stop-Loss designed to limit the amount of capital that could be consumed taking into consideration both realized and unrealized gains. For CRRs, the WEP monitors a five percent outcome for CFaR for inclusion in the Total Dollar Stop-Loss value. Once the Total Dollar Stop-Loss reaches the limit outlined in the WEP’s Energy Risk Management Policy all open position trading at the WEP on behalf of VCE is ceased and positions are liquidated if needed.

8.4 Compliance and Goal-Driven Procurement

This section covers procurement undertaken primarily to meet compliance requirements set by regulatory authorities and/or to meet Board-adopted goals.

8.4.1 Renewable Procurement

VCE has a compliance mandate to procure sufficient renewable energy to meet the state of California’s RPS requirements, based on multi-year compliance periods, as well as Board-adopted goals regarding the sourcing of its portfolio from renewable and/or carbon-free sources. VCE will meet all current Board adopted goals and state compliance mandates in its renewable energy procurement.

A large portion of VCE's renewable energy supply will consist of Portfolio Content Category 1 ("PCC1") renewable energy. PCC1 renewable energy is sourced from a renewable generator either located inside of California or from a generator that is directly interconnected to the CAISO or other California Balancing Authority. 75% of the renewable energy used to meet VCE's RPS compliance requirement must be sourced from PCC1 renewable energy.

Additional renewable procurement can come from Portfolio Content Category 2 ("PCC2") renewable energy. PCC2 energy is sourced from renewable generators located outside the state of California and is "firmed and shaped" for reliable delivery into California. PCC2 purchases have historically been less expensive and shorter in term than PCC1, so they can provide a cost-effective and flexible method of augmenting VCE's renewable energy purchases to meet renewable portfolio content compliance requirements and goals. However, under the greenhouse gas emissions accounting methodology of the California Energy Commission's Power Source Disclosure Program PCC2 renewable energy is ascribed the same carbon-intensity as "unspecified" system power unless matched one-to-one with carbon-free energy. The procurement strategy of this product is thus dependent on the combined price of PCC2 and carbon-free energy to meet VCE's total carbon-free goals, compared to the direct procurement of PCC1 energy, which receives a lower or zero carbon-intensity rating, dependent on fuel type. PCC2 purchases also require increased oversight of deliveries and compliance reporting, which further reduces the attractiveness of this product over PCC1 energy.

VCE will not target any procurement of Portfolio Content Category 3 ("PCC3") renewable energy, which takes the form of a credit "unbundled" from the energy production of a renewable asset, and can be procured from both in-state and out-of-state renewables. However, PCC3 is reserved for use to make up any shortfalls in renewable energy content in a given year stemming from volumetric changes in forecast versus actual load or volumetric changes in deliver of renewables. This could occur if VCE's load in a given year is greater than forecast. PCC3 would only be used as insurance that VCE meets its desired power mix for a year when additional procurement of PCC1 and PCC2 is not feasible. No more than 10% of the renewable energy used to meet VCE's RPS compliance requirement can be sourced from PCC3 renewable energy.

As part of VCE's Renewable Procurement Plan, filed annually with the CPUC, VCE staff and consultants undertake an annual assessment of the entirety of the program's renewable energy procurement activities with respect to both state compliance goals and Board-adopted goals. This analysis, which includes qualitative and stochastic risk assessment, feeds into VCE's renewable procurement timelines as well as its annual RPS compliance filing. The analysis is updated on an ad hoc basis throughout the year as a function of changing market dynamics or new procurement mandates. This assessment provides guidance and guardrails to VCE's renewable procurement strategy, similar to the energy hedging targets described above.

8.4.2 Carbon-Free Procurement

In pursuit of its goal to develop a clean and renewable energy portfolio, VCE shall procure incremental carbon-free energy in addition to the renewable procurement described above. Carbon-free energy generating facilities are typically hydroelectric resources located in California that are too large to qualify as Eligible Renewable Resources (greater than 30 MW) or located outside of California. Similar to

PCC2 renewable energy contracts, carbon-free energy purchases are typically short-term, most frequently one to three years in length.

The majority of VCE's renewable energy is also carbon-free, which means that the analysis that drives VCE's renewable procurement decisions also underlie VCE's supplemental carbon free energy procurement. For this reason, VCE staff and consultants will utilize the annual renewable procurement planning and analysis process to also plan for carbon-free energy procurement rather than utilizing programmatic hedging targets. The purchase of carbon-free energy is a voluntary goal set by the Board, who may elect to reduce the total quantity of carbon free energy included in VCE's portfolio as it seeks to balance multiple program objectives, including financial targets for reserves and retail rates.

8.4.3 Carbon Allowances

Procurement of out-of-state power can be structured in a way that creates a Carbon Cap and Trade compliance obligation which must be covered by carbon allowances. VCE expects to avoid this obligation by structuring any out-of-state power transactions (e.g. Pacific Northwest Large Hydro) such that it is not the First Importer of power into the state. Therefore, it is not anticipated that carbon allowances will need to be procured by VCE. Should it be potentially commercially advantageous to structure a transaction such that VCE is the First Importer of energy into California, VCE will factor in the expected cost of procuring carbon allowances and increased compliance burden in its procurement decision.

8.4.4 Resource Adequacy Capacity

VCE will use best reasonable efforts to comply with the filing requirements of the CAISO- and CPUC-administered Resource Adequacy (RA) program, currently:

- 90% of System and Flexible RA requirements procured prior to the year-ahead RA showing on October 31st of the year prior to the showing year
- 100% of System and Flexible RA requirements procured prior to the month-ahead RA showings, due 45 calendar days prior to the first day of the showing month

Starting in the 2023 RA compliance year, procurement of local RA is solely the responsibility of the Central Procurement Entity (CPE) in PG&E's service territory, the only territory in which VCE serves load. Therefore VCE no longer has a regulatory obligation to procure or show local RA to the state agencies. Instead, VCE has the option to self-show or sell its local RA capacity to the CPE to obtain some value for it, which also has a downside of reduction in VCE's RA portfolio flexibility to sell potential long RA positions.

RA is typically transacted via contracts that vary in length from one month to three years, and it is currently bought and sold via a bilateral market, which can result in cost-effective contracting opportunities but is also sometimes fragmented and volatile. Due to the nature of RA markets, monthly products are often bundled with other products or "strips" of multiple months of RA, which may result in over-procurement for one or more months as a necessary condition to satisfy compliance requirements in one or more other months. Execution of long-term PPAs or other contracts can also lead to over-procurement of RA products for future years, and inclusion of a defined hedging matrix for RA might require selling excess long-term RA to bring VCE into hedging compliance, even though such action may not be in VCE's best business and operational interest. Given these factors, as well as the fact

that compliance guardrails already exist for the RA program, VCE does not have programmatic hedging targets for RA capacity.

The RA program's potential restructuring, which could significantly impact VCE's RA compliance requirements, is currently part of an open proceeding at the CPUC for potential test implementation in the 2024 compliance year and full implementation in the 2025 compliance year.

8.4.4 Long-Term Mandated Procurement

CPUC-jurisdictional entities participate in regular Integrated Resource Planning cycles led by the CPUC, which can result in mandates to procure a share of the capacity needed to help ensure the long-term reliability of the California power grid. VCE will continue to target meeting all mandated capacity procurement requirements while attempting to procure low-cost resources that potentially provide additional energy products aligned with VCE's procurement goals.

8.5 CAISO Market Energy

Because VCE customers reside in the CAISO balancing authority, their load will be served physically by energy from the CAISO market. VCE is therefore subject to paying the price at the PG&E Default Load Aggregation Point (DLap) where it is assumed to take energy.

The WEP's CAISO Desk will create and analyze daily short-term load forecast profiles that take into account weather and other variables. Forecasted hourly loads for VCE will bid into the CAISO Day Ahead market by 10am the prior day. All awarded from the Day Ahead market will carry over to the Real Time market. Any deviations in VCE's actual load in Real Time from what is scheduled into the Day Ahead market will pay or be paid at the Real Time market prices.

8.6 Energy Risk Procurement Strategy Metrics

The success of the Energy Risk Procurement Strategy will be measured by realizing power supply costs in line with the budgeted power supply costs used to set customer rates, as well as by reducing VCE's exposure to commodity price risk. The following two metrics will be utilized to manage the Energy Risk Procurement Strategy:

- Current projected power supply costs will be compared to budgeted power supply costs where budgeted costs will be based on the assumptions used at the time customer generation rates are set. Current power supply costs shall use all fixed price contracts executed as of the date of the report. All open positions will be marked to market and compared to the budgeted power supply costs.
- Cash Flow at Risk (CFaR). CFaR represents a statistical view of what could happen to VCE's power supply costs and CRR portfolio assuming that no action is taken to manage its portfolio from the date of the analysis through the end of the period of time being analyzed. The potential CFaR will be calculated using a historical sampling methodology that considers on- and off-peak periods separately over the remaining life of the transactions. The CFaR calculation will

consider potential variability in load and generation supply. The CFaR will be calculated by rank ordering the portfolio cost and measuring the difference between the 95th percentile and the expected power cost outcome.

These metrics will be reviewed when making price-driven or opportunistic hedging decisions to ensure that the transactions are consistent with the goals of the Energy Risk Procurement Strategy. These metrics will be updated and reported by the WEP to the EROC on a monthly basis.

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9. Definitions

The following are definitions of commonly used energy procurement terms utilized in this document and in discussing energy procurement strategy and processes.

- **Back Office**
That part of a trading organization which handles transaction accounting, confirmations, management reporting, and working capital management.
- **Bilateral Transaction**
Any physical or financial transaction between two counterparties, neither of whom is an Exchange or market entity (e.g. CAISO).
- **Cash Flow at Risk**
A probability-based measure of the extent to which future cash flows may deviate from expectations due to changes in load, generation and/or market prices of energy. (For RCEA, the most relevant Cash Flow at Risk metric is a measure of the potential for net revenues to deviate from the current forecast.)
- **CAISO**
California Independent System Operator. CAISO operates a California bulk power transmission grid, administers the State's wholesale electricity markets, and provides reliability planning and generation dispatch.
- **CCA**
Community Choice Aggregator. CCAs allow local government agencies such as cities and/or counties to purchase and/or develop generation supplies on behalf of their residents, businesses, and municipal accounts.
- **Commodity**
A basic good used in commerce that is interchangeable with other goods of the same type. Commodities are most often used as inputs in the production of other goods or services. The quality of a given commodity may differ slightly, but it is essentially uniform across producers. When they are traded on an exchange, commodities must also meet specified minimum standards, also known as a basis grade.
- **Commodity Price or Market Price**
The price at which electricity, gas, capacity, and renewable attributes are bought and sold.
- **Confirmation Letter**
A letter agreement between two counterparties that details the specific commercial terms (e.g., price, quantity and point of delivery) of a transaction.
- **Congestion Revenue Rights**
Congestion Revenue Rights (CRR) are financial instruments used in the Day Ahead market to hedge the difference in price between two locations caused by congestion.
- **Counterparty Credit Risk**
The risk of financial loss resulting from a counterparty to a transaction failing to fulfill its obligations.
- **Customer Load**
A single customer's power usage that receives power from the electric system.

- **Day-Ahead**
Refers to the day before actual power flow begins. For example, in the CAISO, the Day-Ahead market for Tuesday's flow date closes on Monday at 10am.
- **Default Load Aggregation Point (DLap)**
A set pricing nodes used in the CAISO market for the submission of demand bids and for settlement of demand. The purpose of a DLap is to collapse into a single pricing node, the various locations of a load serving entity's load that are distributed throughout the system.
- **Delivery Point**
The point at which a commodity will be delivered and received.
- **Energy Products**
Means all commodities and commodity related products, both physical delivery and financial instruments, related to meeting the wholesale energy, regulatory, hedging, and/or risk management needs of VCE. The types of products include, but are not limited to: Energy; Capacity; Resource Adequacy; Local Capacity; System Capacity; Ancillary Services; Environmental Attributes (including but not limited to RECs, Carbon Allowances, and other required environmental attributes); Forwards; Futures; Swaps; Options; Congestion Revenue Rights; and other energy and commodity related products as needed.
- **Financial Product**
A contract in which the value is derived from an underlying physical commodity but which does not require physical delivery or receipt of the commodity.
- **Front Office**
That part of a trading organization which solicits customer business, services existing customers, executes trades, and ensures the physical delivery of commodities.
- **Hedging Transaction**
A transaction designed to reduce the exposure of a specific outstanding position or portfolio; "fully hedged" equates to complete elimination of the targeted risk and "partially hedged" implies a risk reduction of less than 100%.
- **Illiquidity**
Occurs when an asset cannot easily and quickly be sold or exchanged for cash without a substantial loss in value.
- **Limit Structure**
A set of constraints that are intended to limit procurement activities.
- **Limit Violation**
Any time a defined limit is violated.
- **Liquidity**
Efficiency or ease with which an asset can be transacted without affecting its market price.
- **Long Position**
A long position means there is not an open or short position, and that excess supply exists. In addition, as load forecasts are updated, if an excess exists, that excess is also considered a long position. For the renewable power purchase example (see Open Position), if 60,000 MWh have been procured for a 50,000 MWh need, a long position of 10,000 MWh will exist.
- **Middle Office**
That part of a trading organization that measures and reports on market risks, develops risk management policies and monitors compliance with those policies, manages contract

administration and credit, and keeps management and the Board informed on risk management issues.

- **Non-Standard**

Any product that is not commonly transacted among market participants in forward markets. The nonstandard attribute of the product could be a function of a number of factors such as volume, delivery period and/or term.

- **Open Position**

For any given timeframe, any commodity requirement that is unfilled is considered to be an open position. For instance, if there is a requirement to procure 50,000 MWh of renewable power in a calendar year, until 50,000MWh of renewable power purchases have been secured, there will be an open position equal to the remaining MWh value needed to reach 50,000 MWh.

- **PCIA**

Power Cost Indifference Adjustment. The PCIA is intended to compensate Investor-Owned Utilities for their stranded costs when a bundled customer departs and begins taking generation services from a CCA.

- **Physical Product**

A contract which requires the seller to physically deliver, and the buyer to physically receive a given commodity.

- **Price Risk (also known as Market Price Risk)**

Price Risk is the risk that prices for power are different than have been assumed for financial planning and budgeting. Price Risk is hedged by procuring fixed-price forward contracts for power.

- **Portfolio**

The aggregation of commodity-related products (both physical and financial) procured to serve load and meet other policy goals.

- **Prompt**

The period immediately following the current period, e.g. in February the prompt month is March.

- **Real Time**

Refers to the actual day in which power flows. In the CAISO, the Real-time market opens at 1pm the day before flow date and closes for each hour 75 minutes prior to the start of scheduled flow.

- **Renewable Energy Certificate (REC)**

A REC is evidence of the production equal to one megawatt-hour of generation from a certified renewable energy resource.

- **Retail Load**

The summation of all customers' loads that receive power from the electric system.

- **Scheduling**

The actions of the counterparts to a transaction, and/or their designated representatives, of notifying, requesting and confirming to each other the quantity and type of product to be delivered on a given day.

- **Separation of Function**

Also referred to as "segregation of duties," part of a complete risk control framework.

Individuals responsible for legally binding the organization to a transaction should not also perform confirmation, clearance, or accounting functions.

- **Settlement**

Settlement is the process by which counterparties agree on the dollar value and quantity of a commodity exchanged between them during a particular time interval.

- **Short Position**

A short position is an open position. The volumetric value of a short position is determined by the shortfall in volume compared to the requirement. For the renewable power purchase example, if 30,000 MWh of the 50,000 MWh requirement has been procured, a short position of 20,000 MWh remains.

- **Specified Source**

A Specified Source is an out-of-state generator that meets the requirements of the California Air Resources Board such that the carbon intensity of that resource's emissions (typically zero, or lower than that of unspecified imports) can be declared by the California entity importing the power.

- **Stress Testing**

The process of simulating different financial outcomes to assess potential impacts on projected financial results. Stress testing typically evaluates the effect of negative events to help inform what actions may be taken to lessen the negative consequences should such an event occur.

- **System Load**

The summation of all customers' loads that receive power from the electric system. System Load includes applicable transmission and/or distribution losses.

- **Volumetric Risk**

The effect of fluctuations in demand for load or for production of generation from a generator.

- **Western Renewable Energy Generation Information System (WREGIS)**

The Western Renewable Energy Generation Information System (WREGIS) is an independent, renewable energy tracking system for the region covered by the Western Electricity Coordinating Council (WECC).

- **Wholesale Energy Provider**

An entity broadly responsible for managing the purchase and sale of energy commodity-related products in the commodity portfolio in an effort to serve load and meet other policy goals.