

VALLEY ELECTRIC ASSOCIATION, INC.

Corporate Policy #114

ENERGY RISK MANAGEMENT (ERM) POLICY

Dated: **June 29, 2017**
Supersedes Date: **November 30, 2012**
Formerly: Policy #122

I. POLICY PURPOSE

The purpose of this document is to formalize the policies of Valley Electric Association, Inc. ("VEA") regarding managing its energy risks. Accordingly, this policy will set forth VEA's:

- risk management objectives,
- risk governance structure and responsibilities,
- scope of business activities governed by this policy,
- And the list of associated ERM guidelines and policy documents.

VEA intends that risk management will support the advancement of its strategic business plan, and will properly manage its business and financial risks through:

- prudent oversight,
- adequate mitigation of risks consistent with VEA's defined risk tolerance, and
- Sufficient internal controls and procedures.

Managing the energy risks of VEA's business entails the coordination of resources and activities among multiple departments within VEA.

II. RISK MANAGEMENT OBJECTIVES

VEA exists to provide competitive and stable priced, reliable electric service to its members. Managing VEA's risk is consistent with that goal, and serves the following objectives:

- to maintain risk within desired tolerances for a defined period in the future,
- to mitigate price volatility to the members,
- to enhance the value of VEA's assets/resources
- to leverage opportunities to increase the value of VEA to its members,
- to participate in commodity markets and derivative instruments for hedging and not for speculative purposes, and
- to develop a risk management culture.

III. RISK GOVERNANCE STRUCTURE AND RESPONSIBILITIES

Risk governance will follow a top-down approach whereby the Board of Directors ("Board") identifies VEA's risk management objectives and provides risk management oversight. Supporting controls, policies and procedures will be implemented and aligned throughout the risk governance structure, with distinct roles and responsibilities that result in a risk control environment. Governance and controls include the organizational structure, policies, reporting process and procedures that support VEA's business models, risk tolerances, power supply objectives, and segregate responsibilities appropriately.

A. BOARD DUTIES

- Has a basic understanding of energy risk management.
- Approves VEA's risk management objectives, and the staff and ACES Power Marketing authority limits to conduct risk management transactions.
- Approves no less than annually a resolution of the energy supply goals (e.g. power supply cost) and risk tolerance guidelines around such goals. These goals and risk tolerance guidelines shall be consistent with the Board's desired risk management objectives, time horizons, and risk tolerance for managing energy risk.
- Approves, periodically reviews, and makes recommended changes to the Energy Risk Management Policy that establishes an overall framework for evaluation, management, and control of risk.
- Approves participation in specific commodity markets and derivative instruments.
- Reviews and approves any new commodity products, locations, or markets.
- Oversees the energy risk management activities of VEA.
- Establishes scope and frequency for management reporting to the Board.
- Periodically reviews risk exposures and compliance with policies and procedures.
- Discusses VEA's major energy risk exposures and the steps management has taken or will take to mitigate, control, and monitor such exposures.
- Approves management staff to serve as members of an Internal Risk Management Committee ("IRMC").
- Receives reports by the independent risk management function on VEA's compliance with its risk policies.
- Reviews and approves the energy risk identification and exposure management guidelines (Appendix A).
- Reviews compensation policies to ensure that they are structured so as to avoid incentives for excessive risk taking.

B. CEO – RISK MANAGEMENT RESPONSIBILITIES AND DUTIES

- Recommends staff to serve as members of the IRMC.
- Has authority to transact within the limits set by the Board in the Trading Authority Policy.
- Approves proper organization, separation, or consolidation of functional risk management activities.
- Assures prudent administrative procedures are established for execution of commodity and derivative transactions, contract controls, credit controls, trading

controls, risk monitoring and measurement, settlement controls, and other energy risk management activities.

- Ensures that the identification and quantification of risks and related risk mitigation strategies are integrated into the strategic planning process.
- Establishes and maintains an effective working relationship with ACES Power Marketing ("APM").

C. IRMC – RESPONSIBILITIES AND DUTIES

Membership shall be comprised of 5 voting committee members:

1. CEO
2. Chief Operating Officer
3. Executive Chief Financial Officer
4. Executive Chief Planning & Regulatory Officer
- 5.
6. Manager of Power Resources

The **Executive Chief Financial Officer** shall serve as the IRMC Chairperson. The Chairperson shall be responsible for keeping, or causing to be kept, a true and complete record of the proceedings. Other non-voting participants shall participate in the meetings as determined by the voting committee members.

The IRMC establishes a forum for discussion of VEA's significant risks and must develop guidelines required to implement an appropriate risk management control infrastructure; this includes implementation and monitoring of compliance with VEA's ERM-related policies. The IRMC executes its risk management responsibilities through direct oversight and prudent delegation of its responsibilities to the independent risk management function, as well as to other company personnel.

Responsibilities include:

- Reviews and approves the energy risk management related policies and oversees enforcement by the independent risk function.
- Ensures that risk management objectives, risk tolerance guidelines, and authority limits are employed throughout VEA.
- Receives reports by the independent risk management function concerning VEA's compliance with its risk policies, controls, and procedures, in accordance with established policies, controls, and procedures.
- Recommends to the CEO the proper organizational structure, separation or consolidation of functional risk management activities
- Reviews and approves proposed risk management strategies for strategic fit, risk exposure consistent with risk tolerance, and reporting and control requirements. The IRMC shall ensure that approved strategies be consistent with VEA's approved strategic business plan, risk management objectives, approved risk tolerance guidelines, and compliance with risk policies.

- Periodically reviews VEA's risk management program (a detailed review at least once a year) in light of recent changes in business practices, improved procedures, VEA's philosophy and strategy, or market changes; and ensures continued compliance with its established guidelines.
- Formulates risk management strategy, policy or procedures necessary for new product or market implementations.
- Requires and reviews regular risk reports provided by the independent risk function.
- Periodically engages an independent audit (internal and/or external) of risk control policies and procedures.
- Holds formal IRMC meetings at least quarterly. Standing agenda items should include, but not be limited to, current commodity market strategies, power cost uncertainty, environmental strategies and exposures, control requirements/enhancements, counterparty contract and credit exposure, and policy and procedural violations, outsource relationships with ACES Power Marketing (APM), and Arizona Electric Power Cooperative (AEPCO).
- For market transactions executed within VEA, performs an annual review of transaction compliance with policies and procedures.
- Reviews the infrastructure supporting risk management and ensures that it meets the requirements for risk oversight and compliance.

D. INDEPENDENT RISK MANAGEMENT FUNCTION – RESPONSIBILITIES AND DUTIES

This function shall be the responsibility of the **Executive Chief Financial Officer**, who is organizationally **NOT** independent of functions whose activities initiate or directly participate in managing most of the energy risk of VEA. Therefore, various individuals and outsource companies will provide this function with reports or information required for risk assessment and analysis on a regular or periodic basis.

Responsibilities include:

- Performs responsibilities delegated by the IRMC.
- Organizes and conducts the IRMC meetings.
- Engages the IRMC in discussions regarding events or developments that could expose VEA to potential losses.
- Develops, recommends, and administers risk management processes and procedures; provides input to tools to assist in risk management
- Provides risk management education/training to board, staff and management.
- Reviews risk management activities, risk controls, and recommends modifications of controls to meet changing business needs.
- Reviews adequacy and accuracy of reports, and reports any deficiencies to the IRMC.
- Assesses risks to VEA in aggregate and by material business activity.
- Performs periodic internal audits of risk control policies and procedures to ensure that VEA complies with its risk policies.
- Reports any violation of VEA's risk policies to the IRMC and the Board.

- Recommends changes to the risk management policies and procedures, as appropriate.
- Reports regularly to the IRMC, at a minimum, but not limited to:
 - Portfolio model risk measures (1-36 months)
 - Power cost projections and confidence intervals
 - Credit and contract risk exposures
 - Policy and procedural violations
 - Status of policy exemptions and exceptions
- Reports to the IRMC and Board on VEA's compliance with its risk policies and risk management in accordance with the policies.
- Reviews and evaluates proposed risk management transactions to be executed by VEA, and ensures adequate analysis has been performed with proper assessment and mitigation of any such risk consistent with risk management objectives and risk tolerance guidelines, and compliance with risk management policies, including the financial, legal, credit, and operational impacts.

E. APM – ROLES AND RESPONSIBILITIES

VEA is a client of APM and will use this alliance to obtain selected energy risk management and transaction execution services. In accordance with the agreements between VEA and APM, APM is authorized to and shall:

- Periodically provide VEA with an audit report of APM's trading controls from an independent auditor.
- Execute transactions on behalf of VEA in accordance with established delegations of authority and compliance requirements set forth by the Board and/or CEO.
- Administer counterparty contracts and manages credit in compliance with the Credit Policy according to the types of agreements the VEA CEO or the Manager of Power Resources, as delegated by the CEO, authorizes APM to administer.
- Provide VEA with daily reports on individual transaction details, commodity positions, and counterparty credit positions for transactions executed by APM.
- Provide VEA with quarterly risk profile reports addressing its energy risk and recommend hedging strategies within the time horizon specified by VEA for assessment, but typically within the 1-60 month horizon.
- Capture VEA's energy supply transactions in APM's risk management systems.
- Monitor compliance of transactions with terms beyond 1 month with VEA's Trading Authority policy.
- Mark to market forward energy supply transactions for credit exposure purposes.

F. AEPCO – ROLES AND RESPONSIBILITIES

VEA is a class D member of AEPCO and will use this relationship to obtain selected energy risk management and transaction execution services. In accordance with the agreements between VEA and AEPCO, AEPCO is authorized to and shall:

- Provide Scheduling and Trading Services as per agreement dated 2/26/07

IV. SCOPE OF BUSINESS ACTIVITIES GOVERNED BY THIS POLICY

The scope of this policy is designed to address the management of the energy risk associated with VEA including but not limited to:

- Commodity price risk
- Volumetric risk
- Power and fuel delivery risk
- Operational risk
- Environmental and regulatory risk
- Counterparty contract and credit risk
- Organizational risk
- Board and Officer risk

V. ASSOCIATED ERM GUIDELINES AND POLICIES

Supporting guidelines and policies are required as outlined below. Responsibility for their approval, modification, oversight, and compliance shall be consistent with the governance section of this policy and unless otherwise stated does not require the approval of the Board of Directors.

Corp Policy 112 Trading Authority Policy (Energy supply commodities)

Corp Policy 113 Hedging Policy (Energy supply commodities)

Appendix A Energy Risk Identification and Exposure Management Guidelines

May 2008
APPENDIX A of the ENERGY RISK MANAGEMENT POLICY

1. Identification of Energy Risks

The energy portfolio of VEA is naturally exposed to the following primary risks:

- Commercial operational risk
 - Inadequate controls and procedures
 - Errors and fraud
- Commodity market price risk
 - Power
 - Fuels (potential future risk)
- Concentration risk (or lack of diversity)
 - Suppliers
 - Fuels (potential future risk)
- Counterparty Contract and Credit risk
 - Inadequate contractual language
 - Cash margin
 - Supplier bankruptcy (mark to market risk)
 - Large industrial bankruptcy
- Delivery risk
 - Transmission risk (aka congestion)
 - Fuel delivery risk (potential future risk)
- Operations risk
 - Generation unit outages (unit contingent power supply contracts)
 - Low Hydro availability
 - Transmission outages
- Regulatory and environmental risk
 - Federal and state regulatory changes
 - Environmental requirements (Renewable Portfolio Standards)
- Volumetric risk
 - Load forecast/ weather variability risk
 - Loss of load
 - Load Growth

Section 2 of this document defines these primary risks and other relevant definitions.

Section 3 identifies the tools and provides guidelines as to how risks shall be managed under most conditions.

Section 4 provides a description of VEA's power supply risk profile and why it differs from others engaged in the energy markets.

2. Definition of Risks

Commercial operational risk is the risk of loss due to inadequate or failed internal processes, people, and systems.

Commodity market price risk is the risk of loss due to potential fluctuations in the prices of an underlying energy commodity. In the wholesale power market, VEA has risk that commodity prices rise, spike or are generally high when it is short of meeting its firm supply obligations.

Commodity market price risk occurs across all tenors, from the hourly market to the long-term forward market (5 years +). VEA is exposed to commodity price risk for power and potentially coal, natural gas, emission allowance (SO₂ and NO_X), and fuel oil depending on the type of power supply contracts VEA enters. Some contracts contain escalators or indexed rates based on various fuels or emissions.

Contract risk or Counterparty performance risk is the risk of a potential adverse occurrence of a counterparty's ability to operationally perform on an agreement or due to contractual provisions that leave VEA with no recourse under an event of default.

Concentration risk is the risk of having large exposures to significant power supply components. Concentration risk can be found with suppliers (contract and credit risk), generation units (outage risk), unit technology (environmental), native load customers (large industrials).

Credit risk is the risk of a potential adverse occurrence of a counterparty's ability to pay its obligations (debts) to VEA or the suppliers declares bankruptcy and abrogates a supply contract that must be replaced during a time of higher commodity market prices.

Delivery risk is the risk that VEA cannot meet a firm supply obligation due to a transmission constraint. Delivery risk is natural to VEA in meeting its firm supply obligations and reliability of service.

Cash margin risk is the risk associated with inadequate cash flow resulting from margin requirements of a contractual agreement. For example, the EEI Master Agreement provides that counterparties may margin each other when they are exposed above credit thresholds that were negotiated between the parties when the agreement was executed. Credit exposures include replacement cost exposure on a mark-to-market basis when a counterparty's position is out-of-the money.

Operations risk is the risk associated with physical assets. This would include failures or outages associated with generation units, fuel delivery systems (weather or mechanical), generation step-up transformers, the transmission system, control systems, or other critical components associated with the production or delivery of electricity.

Volumetric risk is the risk that energy commodity volumes will vary from expected and result in a potential loss due to changing commodity market prices. The primary volumetric risks that VEA is exposed to are *load forecast/ weather variability risk (including Hydro availability), forced outage/ de-rate risk, loss of load, and transmission delivery risk.*

Load forecast/weather variability risk is a form of volumetric risk and is the risk that actual loads differ from forecasted loads due to the error in weather forecasts and load forecasts. This risk is natural to VEA's portfolio since it is a load serving entity. Since this risk will result in VEA being unintentionally long or short in the spot market, it naturally results in hourly market price risk.

Forced outage and de-rate risk is the risk that a generating unit does not perform when it is expected to be available, or when it performs below expected capability. This risk would occur in VEA's portfolio if it transacted power supply contracts that were contingent on a specific named generating unit (unit contingent contracts) to meet its load requirements. Since this risk will result in VEA being unintentionally short in the market, it also naturally results in market price risk.

Loss of load risk is the risk that VEA loses a significant portion of its load, for example a large industrial customer, and that the market price for electricity coincidentally falls below the sales price of the lost load and thereby creates a financial strain on the company. However, if market prices for electricity remain above the sales price of a potential lost load it would create a financial benefit to the company.

Congestion risk is the risk of negative price differentials between the location of power supplies and the demand location. If VEA needs to buy electricity and the transmission system is congested, it would pay a premium to secure the needed electricity, if it is available at all. If VEA has excess electricity to sell and the transmission system is congested, then it may not be able to sell the excess or may have to sell at a discounted price to a non-congested area. Congestion risk typically manifests itself in power commodity market price risk.

3. Guidelines and Tools to Manage Risk

Short/Intermediate Term Planning - Portfolio Model

Market price risks and volumetric risks will be managed in the near term planning cycle (1-60 months forward) utilizing a portfolio model. The portfolio model is a risk assessment of VEA's energy portfolio based on Monte Carlo simulation that provides a cumulative probability curve of VEA's variable costs in forward months, rolled up to years. The board's risk tolerance will be set at least annually using this model as one tool, which will include a stress test outside of reasonable expectations of commodity market prices and their volatilities, and load forecasts.

Long-Term Planning – Integrated Resource Planning Model

Long term portfolio alternatives and risks will be evaluated periodically through a strategic planning process that will be approved by the Board of Directors. For such evaluations, VEA shall engage a reputable firm to assist with long-term resource planning for a period of 6-20 years. This evaluation, along with the short/intermediate term portfolio model and VEA's financial forecasting model, will assist VEA in making appropriate long term capital investments, if any, to meet the needs of its membership.

Firm Transmission

Delivery risks will be managed by procuring firm transmission rights for no less than 100% of all forecasted monthly firm supply obligations 12 months in advance. In the event that adequate firm transmission is not available to meet the policy requirement, the Board will be formally notified as to recommended methods by which it will be managed.

Credit Policy

Credit risk and counterparty performance risk will be managed according to the credit controls, per the Credit Policy.

Contract Controls

Counterparty performance risks will be managed according to the Trading Authority Policy and supporting APM trading control procedures as requested by VEA.

Supply Diversity Management

VEA will manage its concentration risks on a rolling 12-month basis by diversifying its supply resources and its energy (fuel and power) purchase requirements based upon the diversity requirements found in the Hedge Policy.

Commercial Controls

VEA will manage its commercial operational risks according to trading authority limits to conduct market transactions. The trading authority limits to conduct commodity market transactions are approved by VEA board, and are included in the Trading Authority Policy. VEA will also manage its commercial operational risks to new products, instruments, or locations according to a control process for such as found in the Trading Authority Policy. Numerous other internal controls and procedures shall be in place at VEA to manage other purchasing activities and vendor relationships.

Hedging Policy

Commodity price risk, concentration risk, and volumetric risk will be managed according to the Hedge Policy and supporting internal execution strategies and control procedures.

Risk Management Transactions

Numerous transactions may be entered into to mitigate risk consistent with the board approved power supply cost goal and risk tolerance. Several hedging instruments and commodities are used to manage VEA enterprise risks, which include purchases or sales of physical commodities, financial instruments, fuel transportation, power transmission, power generation capacity, and fuel storage. The following hedging instruments and commodities may be permitted to be transacted when used consistent with this policy and its supporting controls, policies and procedures:

- Physical Transactions
 - Forward power, natural gas, and coal
 - Options on power, natural gas, and coal
 - Spot market power, natural gas, and coal
 - Power transmission and ancillary services
 - Coal and natural gas transportation and ancillary services
- Financial Transactions
 - Futures contracts for power, natural gas, and coal

- Swap contracts for power, natural gas, coal
- Options on power, natural gas, and coal
- Weather protection transactions
- Unit outage protection transactions

4. VEA Energy Supply Risk Profile

VEA operates its power supply function under a different business model than merchant energy companies, and therefore has a different risk profile, requiring a different approach to risk management.

- VEA is in business to provide competitive and stable priced, reliable electric service to its member distribution systems and has the following risk supply profile:
- VEA is not in the energy business to trade speculatively (buy low – sell high), or to initiate energy risk positions.
- VEA is not in the energy business to take at-risk positions in merchant generation.
- VEA by nature has significant volumetric risk that results from: 1) long-term load serving obligations, 2) the supply hedges used to meet those obligations (hydro, generation, forwards, options, demand side management, etc), and 3) the volumetric differences that occur between numbers 1 and 2 ('unmatched positions').
- VEA participates in the forward term electric market *defensively* to hedge the risk of its forward load serving obligations (short positions) based on monthly or seasonal forecasted peak loads, plus a capacity planning reserve. There are about 730 hours in each calendar month, and due to the unpredictability of the weather, it is impossible to know when the peak load hour will be. Consequently, VEA's forward short and long positions are measured in both MW and MWh.
- Sometimes VEA also has forward positions that are net long after meeting its firm load obligations, and they will participate in the forward term electric market to hedge that risk by selling.
- VEA participates in the balance-of-month/weekly/daily/hourly electric market to balance its unmatched positions at the market price in real time, and in the near term timeframe of predictable weather trends.
- VEA may also participate in both the short-term and long-term energy markets to hedge its anticipated fuel price exposure, financially or physically.
- VEA is not in the practice of mark-to-market revenue recognition.¹ Revenues from rates to their member distribution systems are cost based, without variability for mark-to-market fluctuations.
- Unlike managing a portfolio of only standard traded electric products (e.g. 5X16 Firm LD at a pricing hub) that protect the parties financially from volumetric risk, VEA's energy portfolio typically has significant volumetric risk, because:
 - Its load obligations are obviously not flat in volume, they fluctuate hour-by-hour, minute-by-minute.
 - Its loads can be difficult to predict (weather forecasts, weather correlation).

¹ Under the GAAP principle of matching revenues and expenses, even the required FAS 133 marks on derivatives are usually deferred from affecting VEA's statement of revenue and expense since the revenue recovery for option premiums will occur in the period(s) that the option can deliver energy.

- It may take ownership in generation, which is subject to forced outages and derates.
 - Some of their supply resources are not financially firm (hydro allocations, unit contingent purchases, non-firm purchases, etc.).
 - It has physical transmission delivery risks.
- Unlike managing a portfolio of only standard traded electric products (e.g. 5X16 Firm LD at a pricing hub) which are generally liquid, it would be very time consuming to liquidate the entire forward risk in a typical VEA energy portfolio. It is not unusual for VEA to have unmatched positions of load obligations (short) and supply resources (long) that extend out in forward time for 20 to 30 years. In order to 'flatten' VEA's book of unmatched risk positions to a risk neutral position, it would usually require a lengthy time period for a request for proposal ("RFP") and negotiation process to obtain a tailored physical 'wrap-around' alliance deal. Even then, because of the uncertainty of forward electric prices beyond about four years, these types of deals are usually limited to the next 5 or 10 years forward, not 20 to 30.
- Typical derivative risk metrics, such as Value at Risk (VaR), do not factor in volumetric risk, and are therefore inadequate to reflect the full risk that is inherent to VEA's business.
- Native load does not behave according to any derivative that can be loaded into a risk system.
- The proper risk measurement and decision support tool for most of VEA's risks, is a risk model that incorporates both market price risk and volumetric risk together, and provides for a correlation of native load demand to market prices.