

# Vermont Public Power Supply Authority

## Advisory and Risk Management Committee Meeting

May 8, 2019

**9:30 a.m.**

VPPSA Board Room

5195 Waterbury-Stowe Road, Waterbury Center, VT

**CALL IN NUMBER: 1-773-231-9226 MEETING ID: 802 244 7678#**

### COMMITTEE DIRECTORS

Reg Beliveau, Swanton	Stephen Fitzhugh, Northfield	Jim Pallotta, Ludlow
-----------------------	------------------------------	----------------------

### AGENDA

*Allotted number of minutes set forth in bold type after each item*

1. Call to Order
2. Consideration of changes/modifications to agenda (**3**)
3. Public comment (**3**)
4. Consideration of the Committee Meeting Minutes – November 14, 2018 (**3**)
5. Retirement/457 Plan Presentation/Review (**20**)
  - a. Resolution 2019-03 Investment Policy Statement
  - b. Investment Fund Recommendation
6. Northview Weather LLC Presentation (**30**) – 10:00am time certain
7. Virtual Peaker Contract (**15**)

### Executive Session

None

8. Other Business

### cc:

Evan Riordan, Barton	Tin Barton Caplin, Barton	Jonathan Elwell, Enosburg
Gary Denton, Enosburg	Mike Sullivan, Hardwick	Carol Robertson, Hyde Park
Riki French, Hyde Park	Pam Moore, Jacksonville	Mac Butova, Jacksonville
Meredith Birkett, Johnson	Phil Wilson, Johnson	Vacant, Ludlow
Bill Humphrey, Lyndonville	Clay Bailey, Lyndonville	Craig Myotte, Morrisville
Penny Jones, Morrisville	Jeff Schulz, Northfield	John Morley III, Orleans
Marilyn Prue, Orleans	Lynn Paradis, Swanton	

**DRAFT**

**Vermont Public Power Supply Authority**  
**ADVISORY & RISK MANAGEMENT BOARD COMMITTEE**  
**MEETING MINUTES**  
 November 14, 2018

*Committee Directors present (X indicates in person, P indicates by phone):*

P	Reginald Beliveau, Swanton	Steve Fitzhugh, Northfield
P	James Pallotta, Ludlow	

*Other Directors present:*

John Morley III, Orleans	
--------------------------	--

*Alternates present:*

None	
------	--

*Others present:*

Ken Nolan, VPPSA	Paul Lambert, EVT (phone)	Amy Parah, VPPSA
Crystal Currier, VPPSA	Barry Hulce, EVT (phone)	

(numbers in bold type correspond with agenda item numbers)

- (1) The meeting was called to order at 9:30 a.m. at the office of the Authority, located at 5195 Waterbury-Stowe Road, Waterbury Ctr., Vermont.
- (2) The General Manager asked if there were requests for changes and/or modifications to the current agenda. There were none.
- (3) The General Manager asked if there were public comments and/or individuals who would like to address the Board. There were no public comments.
- (4) Director Morley made a motion to accept the Committee Meeting Minutes of September 12, 2018. The motion was seconded by Director Pallotta. The motion was approved.
- (5) The General Manager reminded the committee that about a year ago VPPSA began a collaboration with EVT and noted that Paul Lambert and Barry Hulce from Efficiency Vermont were on the call as invited guests. During the collaboration efforts EVT conducted Member site visits, and during those visits it became evident that the Members were interested in information related to the EEC charges submitted to EVT and the efficiency measures implemented in each Member's service territory. Mr. Lambert and Mr. Hulce were invited to speak about various reporting tools that VPPSA and EVT have worked on over the last several months. It was noted that the effort and primary objective is to provide a reporting structure that would give the Members greater insight in to the efficiency work performed in their respective service territories and how each Member's EEC funds are being spent. A detailed review of a composite report for



**DRAFT**

the aggregate of all VPPSA Members was provided and the committee was asked for feedback regarding whether the structure, once individualized, would meet their needs.

The General Manager questioned the breakdown of the various cost in proportion to other utilities (for example the cost per total calls for VPPSA members vs. cost per total calls for GMP). Other questions that were raised include the type of projects EVT provides to customers and ownership of Tier 3 (and other program) credits.

The committee indicated that the layout was appealing; however, the committee is eager to see the individualized reports as the data will be easier to relate to.

(6) The General Manager presented the second draft of VPPSA's operational budgets. The changes implemented since the first draft were a result of Board and Member feedback received over the last month. The primary changes include:

- a. Updates to the VPPSA's operational cost
  - i. Updated employee salaries/overheads
  - ii. Added UTC membership
  - iii. Updated HP dues to reflect membership through November
  - iv. Removed BED from Strategic membership
- b. Updated McNeil with operating and capital costs received from BED
  - i. Lower fuel costs in 2019
  - ii. Includes \$500K for analysis and repairs to the water wall
  - iii. 2018 capital reserves credited to 2019 revenues
- c. Updated P10 fuel cost and estimated market revenues
- d. Updated Net Metering to only include VPPSA's internal effort to upgrade existing software

The General Manager noted that he heard from some members about Trustee concerns with the increase in the 2019 budgets and how that might occur again after Hyde Park's departure. The General Manager provided a summary of the consolidated budget costs (VPPSA organizational costs *and* all project budgets) and noted that while member fees are increasing, the total budgeted costs overall are decreasing. The members seeing the largest decrease are those members that participate in the McNeil project since that project is seeing a large decrease in costs for 2019.

The committee was supportive of the consolidated budget and felt that it told a good story. Director Beliveau provided support for the staff and encouraged the General Manager to move forward with the budget with the inclusion of the new staff addition. That position was echoed by the other Directors present.

(7) The General Manager reminded the committee that when VPPSA and the municipal utilities met with the PUC and DPS to discuss areas of concern to the municipals, one of the topics that came up was the struggle related to the approval requirements for municipal utilities when obtaining Section 108 approvals for financing. Subsequently, VPPSA has been working with Bill Ellis (McNeil, Leddy & Sheahan) and Jamie Feehan (Primmer, Piper & Eggleston) to



**DRAFT**

develop proposed legislative language to change the Section 108 approval requirements for both municipal utilities and VPPSA.

The proposed changes were reviewed with the committee and it was noted that VPPSA will be sharing the language with other stakeholders over the next several weeks in preparation for the legislative session. The committee was supportive of the proposed changes.

(8) The General Manager reminded the Board that when he attended the Hometown Connections Inc. (HCI) annual meeting, he was able to connect with the managing partner of Wortham Insurance, which is a subsidiary of Marsh Company. They offered to review VPPSA's existing insurance policies to see if any savings could be achieved. This effort resulted in Wortham providing a proposal several weeks ago that we have been considering. The primary savings will be realized in the Project 10 property coverage (generation is an area in which they have expertise); however, there are other positive attributes to the potential coverages that we do not have currently. In addition, Wortham made several other suggestions such as the fact that VPPSA could consider creating a VPPSA pool of insurance products where VPPSA and all of the VPPSA members could pool property to achieve economies of scale related to insurance costs, and VPPSA could participate in APPA's pooled health plan when it becomes available. Wortham had noted that they provided a similar property insurance pool to Southern Minnesota Public Power Agency (SMMPA) and had been able to achieve roughly \$10,000/year savings for each member.

The General Manager noted that this insurance review represents the first direct benefit to VPPSA from its HomeTown Connections Inc. investment, and that given the size of savings indicated and the clear expertise demonstrated by Wortham with regard to generation insurance he was inclined to make the switch. However, the committee was reminded that VPPSA's policies are currently with Denis Ricker and Brown (local agent in Montpelier). A change of this nature would replace VPPSA's longtime relationship with Denis Ricker and Brown, so the committee was requested to provide feedback regarding their thoughts on making this move before it occurred. The General Manager did note that not all policies need to be moved to Wortham. An alternative would be to move several of the primary policies (including the P10 property) to Wortham/Marsh and to leave several of the smaller policies with the local agent (such as workers comp, auto, Waterbury property, etc). This would retain the local relationship and would provide significant savings with several policies.

Director Morley expressed interest in the pooled property coverage and requested that VPPSA explore this concept. The Committee did not express any concerns with making the move in its entirety.

(9) Other Business: NONE

The meeting was adjourned at 11:40 a.m.  
Respectfully submitted,

*Crystal Currier*

Crystal Currier, Secretary



# VPPSA Retirement/457

Investment Policy Statement

Fee Disclosure

## Review



# Contents

- ▶ **General Overview of Plans**
- ▶ **Overview of Investment Policy Statement**
- ▶ **Review Fee Disclosure Reports**
- ▶ **Review Existing Plan Investment Options**
- ▶ **New Investment Recommendation**

# General Overview of VPPSA Plans

- ▶ **General**
  - ▶ **Trustee –Appointed by the Board of Directors**
    - ▶ Currently - Chair of the Board
  - ▶ **Administrator –Appointed by the Board of Directors**
    - ▶ Currently –The General Manager
  - ▶ **Employer (VPPSA) - provides the tools, information and investment options**
  - ▶ Employees make personal elections
- ▶ **Retirement Plan**
  - ▶ Employer Contributions
  - ▶ 5%of Gross Salary
  - ▶ 3%Match to 457 plan contributions
- ▶ **457 Plan**
  - ▶ Employee Contributions



# Investment Policy Statement

The Investment Policy Statement includes the following:

- ▶ The Plan and its Purpose
- ▶ Purpose of the Investment Policy Statement
- ▶ Investment Objectives
- ▶ Roles and Responsibilities
- ▶ Selection of Investments
- ▶ Monitoring and Reporting
- ▶ Participant Education and Communication



# The Plan and Purpose of Investment Policy Statement

## ▶ The Plan(s):

- ▶ As an employer, VPPSA sponsors a Retirement and a 457 Plan for the benefit of its employees, so they can benefit from the long-term accumulation of retirement savings (both employer and employee contributions)

## ▶ The Purpose of the Investment Policy Statement:

- ▶ Identifies fiduciary roles
  - ▶ Affirmation of the Investment Policy Statement “reaffirms” the fiduciary roles of “Trustee” and “Administrator”
- ▶ Provides guidance for certain fiduciary responsibilities and to assist the Plan’s fiduciaries by ensuring that they make investment-related decisions in a prudent manner
- ▶ Reviewed annually to ensure the plan is current with changes in capital markets, plan participant objectives, or other factors relevant to the plan



# Objectives & Roles and Responsibilities

## ▶ **Objectives:**

- ▶ The Plan should offer a balanced portfolio of investment funds (cash, equity, fixed income, etc.)

## ▶ **Roles and Responsibilities:**

### ▶ Board of Directors

- ▶ Adopts the Investment Policy Statement (annually)
  - ▶ Affirms the Trustee and Administrator
- ▶ Annual Review of Plan investment offerings

### ▶ Trustee & Administrator

- ▶ Hires Investment Manager (Poulos Investment Advisors)
- ▶ Hires Recordkeeper (Future Planning Associates)
- ▶ Management and Administration of the Plan's investments
- ▶ Selecting Plan Options

### ▶ Participants

- ▶ Responsible for individual investment decisions
- ▶ Provides participants with capabilities to make investment decisions



# Managers, Monitoring, Reporting and Education

- ▶ Selection of Investments and Managers
  - ▶ Provides minimum criteria for selection of Investment Manager
- ▶ Investment Monitoring and Reporting
  - ▶ Administrator – annual review of Investment Manager
  - ▶ **Board** – annual review of Plan investment offerings
- ▶ Participant Education and Communication (Employer responsibility)
  - ▶ Communicate to Employees
    - ▶ How to control their investments
    - ▶ Make Investment Changes
    - ▶ Education materials to make informed decisions



# Fee Disclosures

- ▶ Purpose – To ensure Service Providers (FPA, Poulos) “disclose” plan fees and investment information to Plan Sponsors (VPPSA) at least annually
  - ▶ Disclosure Summary
  - ▶ Service Provider Expenses
  - ▶ Internal Investment Fund Expenses
    - ▶ Internal expenses are NOT paid by VPPSA



# Existing Investment Plan Options

- ▶ The plans offer cash, fixed income and equity investment options, as well as risk-based asset allocation funds (based on risk tolerance)
  - ▶ See attachment, page 35



# Board of Directors Requested Action

- ▶ Approve Resolution 2019-03 Investment Policy Statement
  - ▶ Reaffirms the Chair of the Board as Trustee
  - ▶ Reaffirms the General Manager as Administrator
  
- ▶ Approve Addition of Investment Options
  - ▶ SWPPX – Schwab S&P 500 Index
  - ▶ SWMCX – Schwab US Mid-Cap Index
  - ▶ SWISX – Schwab International Index



# Questions

**Ken Nolan**

General Manager

(802) 882-8500

**Crystal Carrier**

Controller

(802) 882-8501



## BOARD RESOLUTION 2019-03

### Investment Policy Statement

The Board of Directors (“Board”) hereby affirms that the Chairman of the Board (“Chairman”) acting in its capacity as Trustee and the General Manager acting in its capacity as Administrator (“Administrator”) of the Vermont Public Power Supply Authority (“VPPSA”) Retirement Plan and 457 Plan (“Plan”), hereby adopt these guidelines for the selection and monitoring of appropriate Plan investment options so that participants may accumulate assets to provide for their retirement.

#### Part I. THE PLAN

VPPSA sponsors the Plan for the benefit of its employees. It is intended to provide eligible employees with the long-term accumulation of retirement savings through a combination of employee and employer contributions to individual participant accounts and the earnings thereon. It is the intent of this policy to provide a range of investment options that will enable participants to invest according to varying risk tolerance, savings time horizon, and other financial goals.

The Plan is a qualified employee benefit plan intended to comply with all applicable federal laws and regulations, including the Internal Revenue Code of 1986, as amended, and the Employee Retirement Income Security Act of 1974 (“ERISA”), as amended. The Plan is intended to comply with ERISA Section 404c and the choice disclosure required by the regulations will be met.

The Plan’s participants and beneficiaries are expected to have different investment objectives, time horizons and risk tolerances. To meet these varying investment needs, participants and beneficiaries will be able to direct their account balances among a range of investment options to construct diversified portfolios that reasonably span the risk/return spectrum. Participants and beneficiaries alone bear the risk of investment results from the options and assets mixes that they select.

#### Part II. THE PURPOSE OF THE INVESTMENT POLICY STATEMENT

The purpose of the document is to provide guidance in discharging certain fiduciary responsibilities. It creates no obligation to act in any way. The Trustee and Administrator will monitor all of the evaluation criteria as well as any other material issues when making decisions concerning the Plan's investment funds. This investment policy statement is intended to assist the Plan’s fiduciaries by ensuring that they make investment-related decisions in a prudent manner. It outlines the underlying philosophies and processes for the selection, monitoring and evaluation of the investment options and investment managers utilized by the Plan. Specifically, this Investment Policy Statement:

- Defines the Plan’s investment objectives.
- Defines the roles of those responsible for the Plan’s investments.
- Describes the criteria and procedures for selecting investment options and investment managers.
- Establishes investment procedures, measurement standards and monitoring procedures.
- Describes ways to address investment options and investment managers that fail to satisfy established objectives.
- Provides appropriate diversification within investment vehicles.

The Investment Policy Statement will be reviewed at least annually, and, if appropriate, can be amended to reflect changes in the capital markets, plan participant objectives, or other factors relevant to the Plan.



### Part III. INVESTMENT OBJECTIVES

To maximize diversification and lessen risk to the extent possible, the Plan offers a balanced portfolio of investment funds composed of equity, fixed income, and cash equivalent securities, and, as such, is intended to be more aggressive than fixed income portfolios and less aggressive than purely equity-oriented portfolios.

The Plan's investment options will be selected to offer a broad range of diversified investments that will enable a participant to construct a portfolio with aggregate risk and return characteristics at any point within the participant's desired range. Adherence to the specific investment objectives and criteria contained herein will be evaluated over a full-market cycle, which historically has been five to seven years. ~~Upon approval of the Board, the Trustee and/or Administrator~~ ~~The Committee~~ may, from time to time as warranted, modify these objectives and criteria according to the ~~Trustee and/or Administrator's~~ ~~Committee's~~ discretion in consultation with such financial advisors as ~~they~~ deems appropriate.

### Part IV. ROLES AND RESPONSIBILITIES

Because participants in the Plan ultimately are responsible for their own investment decisions, the policy aims to provide participants with the following capabilities:

- To choose from a minimum of five diverse alternative investment fund categories, each with materially different risk and return characteristics, at least one of which will provide for a high degree of safety and capital preservation.
- Make investment decisions at least quarterly.
- Receive or have access to the following information in accordance with ERISA Section 404(c) (Please refer to ERISA Section 404(c) for a complete list of information that participants will receive), as updated:
  - A description of the investment alternatives available under the Plan including a general description of the investment objectives, risk and return characteristics, and type and diversification of assets comprising each alternative;
  - A description of any transaction fees or expenses charged to the participant's account, and information on fund costs and fees that reduce the rate of return to participants (expense ratios); and
  - Fund prospectuses, annual reports, and semiannual reports.
- A description of how, when and to whom participants may give investment instructions or identification of designated investment managers.
- Protection of capital gains to obtain a positive return over a given market-cycle.
- Asset growth, exclusive of contributions and withdrawals, should exceed the rate of inflation to preserve purchasing power.
- Obtain stable and consistent returns.

The ~~Chairman-Trustee~~ and Administrator are responsible for the management and administration of the Plan's investments, including:

- Establishing and maintaining the Investment Policy Statement.
- Periodically evaluating the Plan's investment performance and recommending investment option changes.
- Providing Plan participant investment education and communication.

Upon affirmation from the Board, the ~~Chairman-Trustee~~ and/or Administrator shall be responsible for:

- ~~Appointing the Plan's trustee(s), which is responsible for H~~holding and investing plan assets in accordance with the terms of the Trust Agreement.

- Hiring the investment managers, which are responsible for making reasonable investment decisions consistent with the stated approach of the Plan, and reporting investment results on a regular basis.
- Hiring the recordkeeper, which is responsible for maintaining and updating individual account balances as well as information regarding plan contributions, withdrawals and distributions.
- Selecting investment options.

## Part V. SELECTION OF INVESTMENTS AND MANAGERS

The Investment Manager must meet certain minimum criteria:

1. They must be a bank, insurance company or investment management company or an investment adviser under the Registered Investment Advisers Act of 1940.
2. They must be operating in good standing with regulators and clients, with no material pending or concluded legal actions.
3. They must provide detailed additional information on the history of the firm, its investment philosophy and approach, and its principals, clients, locations, fee schedules and other relevant information.

The investment manager will review the investment objectives and risk characteristics, historical performance, and expenses related to each available Plan investment option and choose a specific option based on these procedures and objectives. It is understood that risk, volatility, and the possibility of loss in purchasing power are present to some degree in all types of investment vehicles. While high levels of risk are to be avoided, the assumption of risk is warranted and encouraged to allow the opportunity to achieve satisfactory long-term results consistent with these procedures and objectives. The investment manager shall determine the investment options that best meet the objectives and recommend those to be included and/or removed from the investment options to the [Chair-Trustee](#) and/or Administrator.

## VI. INVESTMENT MONITORING AND REPORTING

The on-going monitoring of investments must be a regular and disciplined process. It is the mechanism for revisiting the investment option selection process and confirming that the criteria originally satisfied remain so and that an investment option continues to be a valid offering. While frequent change is neither expected nor desirable, the process of monitoring investment performance relative to specified guidelines is an on-going process.

Monitoring should occur on a regular basis (e.g., quarterly) and utilize the same criteria that were the basis of the investment selection decision. It will include a formal review annually. Further, unusual, notable or extraordinary events should be communicated by the investment manager immediately to the Chair and the Administrator. Examples of such events include portfolio manager or team departure, violation of investment guidelines, material litigation against the firm, or material changes in firm ownership structure, or announcements thereof.

The Administrator will review periodically the investment managers' progress in meeting the Plan's investment objectives on at least a quarterly basis and the Board will review the Plan's investment offerings at least once per year.

If overall satisfaction with the investment options are acceptable, no further action is required. If areas of dissatisfaction exist, the investment manager, the [Chair-Trustee](#) and the Administrator must take steps to remedy the deficiency. If over a reasonable period the manager is unable to resolve the issue, termination may result.

## VII. INVESTMENT OPTION AND/OR MANAGER TERMINATION

Generally, all investment options are expected to perform as well as or better than their prescribed performance standards, net of fees. In any case, once the decision to terminate an investment option is made, asset transfer and liquidation should be handled to the best advantage of the plan using one of the following approaches:

- Remove and replace (map assets) with an alternative option.
- Freeze the assets and direct new assets to a replacement option.

The Board shall have full discretion and reserves the right to terminate the Investment Manager, for any reason. Once the decision to terminate is made, the manager shall be removed in one of the following manners:

- Phase out the manger over a specific time period.
- Continue the manager but add a competing manager.
- Remove the manager and provide a replacement manager.

Replacement of a terminated manger would follow the criteria outlined in Part V, Selection of Investments and Managers.

## Part VIII. PARTICIPANT EDUCATION AND COMMUNICATION

The Plan will communicate to employees that they control their own investments; permit investment changes at least quarterly; and, provide effective educational materials allowing employees to make informed decisions.

In developing a continual participant investment education program, the Plan will select funds and provide supporting material with consideration for the following:

- The number of funds offered should be limited to promote participant understanding without sacrificing the objectives set forth in this policy.
- The Plan Sponsor should provide general information relating to the economy and capital markets as part of the investment education program.
- Participants should be encouraged to select an appropriate asset allocation (based on their risk tolerance, their time until retirement and other factors relating to their personal financial status) and avoid attempts to time the market.
- The Plan Sponsor should educate participants on the relative risk and return of investing in different asset classes and how diversified investing can reduce the risk of investing.

## Part IX. COORDINATION WITH THE PLAN DOCUMENT

Notwithstanding the foregoing, if any term or condition of this investment policy conflicts with any term or condition in the Plan, the terms and conditions of the Plan shall control.

Adopted this 57th day of February~~June~~, 20189.

Certified By:

Crystal Currier  
Secretary of the Board of Directors

# Fee Disclosure Report

VPPSA RETIREMENT PLAN  
AS OF OCTOBER 17, 2018

Sponsor: Vermont Public Power Supply Authority

Primary contact: Administrator Plan



This report contains information regarding the investments and fees in your plan.

Fees are based on current funds, balances, number of participants and other estimates. As such, your fees may vary from the enclosed values.

If any of the enclosed information is incorrect, or should you wish to discuss further, please contact your representative.

## Fee Disclosure Overview

---

Under the new U.S. Department of Labor (DOL) regulations, referred to as Section 408(b)(2), covered service providers are now required to disclose plan fee and investment information to plan sponsors at least annually. Additionally, plan sponsors and fiduciaries are required to review the fees assessed to the plan and determine if they are reasonable. The enclosed reports are designed to address both of these needs.

### What's Included

In this report package, you will find the following reports:

- Summary of all investment and plan fees
- Investment Expenses details
- Plan Administration Expenses details
- Additional Notes to discuss
- Glossary of Terms to help clarify technical phrases
- Disclaimer related to third-party data sources

### Calculation of Fees

Fees in your plan can be calculated in four ways:

- Asset-based, meaning the plan balance determines the amount of the fee, generally reported as a percentage or basis points (bps).
- Base fee, meaning that the plan is charged a flat fee for that particular service.
- Per-participant, meaning that the fee is charged for each participant in the plan.
- Per transaction, meaning that the fee is only charged when a transaction occurs (e.g. distribution, loan distribution, etc.)

Additionally, fees can be calculated in step rates:

- Step rate, meaning fees are charged incrementally for each rate band (e.g. \$25 for first 50 participants, \$20 for each additional).
- Exclusive, meaning based on a certain value, fees will all be charged based on that rate band.

### What's Next?

- Review this packet to ensure the information provided is consistent with other statements and fee schedules you've received.
- Should you have any questions regarding the contents of this report, please contact your representative.
- Also under 408(b)(2), plan fiduciaries are required to compare fees charged by other service providers. This report package will help you accomplish this goal.

**Fee Disclosure Summary**

**Summary of Plan Assets**

As of date	10-17-2018
Total plan assets	\$1,804,902.71
Number of participants	14
Average participant balance	\$128,921.62
Trading platform	Charles Schwab Bank

**Summary of Plan Expenses (annualized)**

Investment expenses	\$9,281.06
<i>Fund expenses</i>	\$12,932.48
<i>Revenue sharing*</i>	(\$3,651.43)
<i>Sub-TA*</i>	\$0.00
<i>12b-1*</i>	\$0.00

*\*Included in Fund expenses*

Advisory **	\$7,219.61
Administration **	\$3,355.00
Custodial **	\$1,763.43
Recordkeeping **	\$0.00
Trustee **	\$0.00
Other **	\$0.00

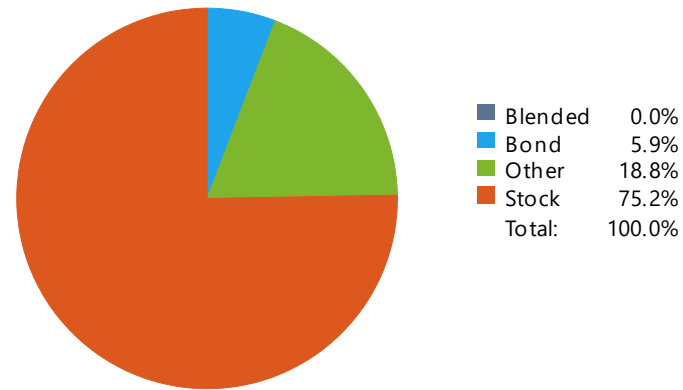
**Estimated Annual Totals:** **\$21,619.10**

*\*\*May include revenue sharing, 12b-1s and/or sub-ta fees received from investments as detailed above. A detailed breakdown is provided on the next page.*

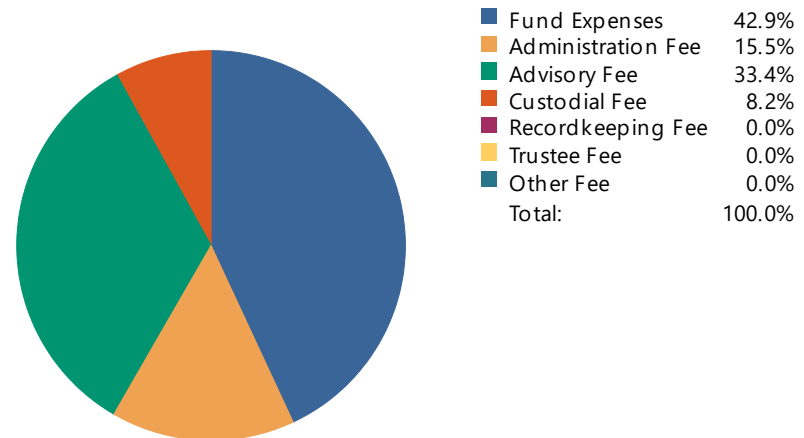
**Cost as % of assets** **1.20%**

**Average cost / participant** **\$1,544.22**

**Plan Asset Allocation**



**Plan Expense Allocation**



**Service Provider Expenses**

Fee Type	Description	Method	Amount (\$ or bps)	Number of Participants	Number of Units	Fee Basis	Estimated Annual Total	Paid By
<b>Charles Schwab Bank</b>								
Custodian	Base Fee	Base fee	\$500.00				\$500.00	Sponsor
Custodian	MV Fee	Basis points	7.00			\$1,804,902.71	\$1,263.43	Sponsor
<b>Subtotal</b>							<b>\$1,763.43</b>	
<b>Future Planning Associates, Inc.</b>								
TPA	Base Fee	Base fee	\$3,000.00				\$3,000.00	Sponsor
TPA	Distribution Fee	Per unit	\$75.00		1		\$75.00	Sponsor
TPA	Participant Fee	Per participant	\$20.00	14			\$280.00	Sponsor
<b>Subtotal</b>							<b>\$3,355.00</b>	
<b>Poulos Advisors, Inc.</b>								
Advisor	Investment Advisory	Basis points	40.00			\$1,804,902.71	\$7,219.61	Sponsor
<b>Subtotal</b>							<b>\$7,219.61</b>	
<b>Revenue Sharing</b>								
Revenue sharing	offsets Custody & TPA fees	Calculated from plan assets					\$(3,651.43)	
<b>Subtotal</b>							<b>\$(3,651.43)</b>	
<b>Total Estimated Fees</b>							<b>\$8,686.61</b>	

## Investment Expenses

Ticker	Fund Name	Market Value \$	% of Plan Assets	Net Expense Ratio %	Fund Expense Totals	Revenue Sharing*	12b-1*	Sub-TA *	Total*	Sub-TA** (\$ per head)	Fund Rebate Totals
<b>Stock</b>											
<b>Diversified Emerging Mkts</b>											
ODMAX	Oppenheimer Developing Markets A	\$121,381.13	6.73%	1.32%	<b>\$1,602.23</b>	0.48%	0.00%	0.00%	0.48%	\$0.00	<b>\$582.63</b>
<b>Foreign Large Blend</b>											
OAKIX	Oakmark International Investor	\$0.00	0.00%	0.95%	<b>\$0.00</b>	0.33%	0.00%	0.00%	0.33%	\$0.00	<b>\$0.00</b>
TIVRX	Thornburg International Value R5	\$137,390.15	7.61%	0.99%	<b>\$1,360.16</b>	0.38%	0.00%	0.00%	0.38%	\$0.00	<b>\$522.08</b>
<b>Foreign Large Growth</b>											
OIGYX	Oppenheimer International Growth Y	\$85,432.46	4.73%	0.85%	<b>\$726.18</b>	0.23%	0.00%	0.00%	0.23%	\$0.00	<b>\$196.49</b>
<b>Global Real Estate</b>											
IGLAX	Voya Global Real Estate A	\$72,770.71	4.03%	1.30%	<b>\$946.02</b>	0.48%	0.00%	0.00%	0.48%	\$0.00	<b>\$349.30</b>
<b>Health</b>											
PRHSX	T. Rowe Price Health Sciences	\$35,283.02	1.95%	0.77%	<b>\$271.68</b>	0.13%	0.00%	0.00%	0.13%	\$0.00	<b>\$45.87</b>
<b>Large Blend</b>											
AMEIX	American Century Equity Growth I	\$106,248.30	5.89%	0.47%	<b>\$499.37</b>	0.03%	0.00%	0.00%	0.03%	\$0.00	<b>\$31.87</b>
JPIEX	JPMorgan US Research Enhanced Equity L	\$366,900.65	20.33%	0.45%	<b>\$1,651.05</b>	0.08%	0.00%	0.00%	0.08%	\$0.00	<b>\$293.52</b>
<b>Large Growth</b>											
JAMRX	Janus Henderson Research T	\$110,358.04	6.11%	0.83%	<b>\$915.97</b>	0.33%	0.00%	0.00%	0.33%	\$0.00	<b>\$364.18</b>
JENSX	Jensen Quality Growth J	\$7,187.08	0.40%	0.88%	<b>\$63.25</b>	0.38%	0.00%	0.00%	0.38%	\$0.00	<b>\$27.31</b>
TIGRX	TIAA-CREF Growth & Income Instl	\$106,624.64	5.91%	0.41%	<b>\$437.16</b>	0.00%	0.00%	0.00%	0.00%	\$0.00	<b>\$0.00</b>
<b>Mid-Cap Blend</b>											
HIMDX	Hennessy Cornerstone Mid Cap 30 Instl	\$88,947.06	4.93%	0.97%	<b>\$862.79</b>	0.08%	0.00%	0.00%	0.08%	\$0.00	<b>\$71.16</b>
<b>Mid-Cap Growth</b>											
ACRNX	Columbia Acorn Inst	\$119,570.89	6.62%	0.86%	<b>\$1,028.31</b>	0.38%	0.00%	0.00%	0.38%	\$0.00	<b>\$454.37</b>



## Investment Expenses

Ticker	Fund Name	Market Value \$	% of Plan Assets	Net Expense Ratio %	Fund Expense Totals	Revenue Sharing*	12b-1*	Sub-TA *	Total*	Sub-TA** (\$ per head)	Fund Rebate Totals
<b>Bond</b>											
<b>Bank Loan</b>											
EVBLX	Eaton Vance Floating Rate A	\$44,414.73	2.46%	1.04%	\$461.91	0.38%	0.00%	0.00%	0.38%	\$0.00	\$168.78
<b>Emerging Markets Bond</b>											
PEBIX	PIMCO Emerging Markets Bond Instl	\$10,104.09	0.56%	0.84%	\$84.87	0.00%	0.00%	0.00%	0.00%	\$0.00	\$0.00
<b>High Yield Bond</b>											
MHCAX	MainStay MacKay High Yield Corp Bd A	\$40,334.44	2.23%	0.98%	\$395.28	0.48%	0.00%	0.00%	0.48%	\$0.00	\$193.61
<b>Intermediate-Term Bond</b>											
LIGRX	Loomis Sayles Investment Grade Bond A	\$0.00	0.00%	0.78%	\$0.00	0.43%	0.00%	0.00%	0.43%	\$0.00	\$0.00
<b>Ultrashort Bond</b>											
SNGVX	Sit US Government Securities	\$21,970.75	1.22%	0.80%	\$175.77	0.36%	0.00%	0.00%	0.36%	\$0.00	\$79.09
<b>World Bond</b>											
PFORX	PIMCO International Bond (USD-Hdg) Instl	\$9,957.57	0.55%	0.56%	\$55.76	0.00%	0.00%	0.00%	0.00%	\$0.00	\$0.00
TPINX	Templeton Global Bond A	\$24,101.46	1.34%	0.96%	\$231.37	0.38%	0.00%	0.00%	0.38%	\$0.00	\$91.59
<b>Other</b>											
<b>Commodities Broad Basket</b>											
PCRRX	PIMCO Commodity Real Ret Strat Admin	\$78,077.37	4.33%	1.49%	\$1,163.35	0.23%	0.00%	0.00%	0.23%	\$0.00	\$179.58
<b>Not Available</b>											
WGI35	Galliard Retirement Income Fund 35	\$217,848.17	12.07%	0.00%	\$0.00	0.00%	0.00%	0.00%	0.00%	\$0.00	\$0.00
<b>Totals:</b>		<b>\$1,804,902.71</b>		<b>0.72%</b>	<b>\$12,932.48</b>	<b>0.20%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.20%</b>	<b>\$0.00</b>	<b>\$3,651.43</b>

\*Included in the Net Expense Ratio of the fund.

\*\*Based upon the number of participants in this fund and not included in the above calculations.

**Additional Notes**

---

## Glossary of Terms

---

### 12b-1 Fee

Included in the net expense ratio, fees charged to the shareholders related to servicing, distribution and marketing expenses.

### Administration Fees

Fees paid to a third party administrator (TPA) for required compliance testing and government filings.

### Advisory Fees

Fees paid to a plan advisor, often an investment advisor, for services related to advising the plan sponsor(s) on investment lineups, plan document setup, etc.

### Covered Service Provider

Generally, persons and companies that can reasonably expect to receive \$1,000 or more in compensation for providing services for the plan.

### Custodial Fees

Fees paid to an institution for holding the plan investments on behalf of the plan.

### Net Expense Ratio

Generally reported as a percentage of assets, the annualized amount paid to a fund for operational expenses incurred by the fund company, such as fund manager fees.

### Recordkeeping Fees

Fees paid to a company for maintaining plan records, including calculating eligibility and balances, processing transactions and providing participant services (e.g. participant website, call center support, etc.).

### Revenue Sharing

Monies that are paid to a broker/dealer by a fund affiliate to compensate for expenses incurred in selling the shares. Revenue sharing can either be collected as income or reinvested back into the plan.

### Trustee Fees

Fees paid to an individual or company for serving as the plan trustee; in return, some fiduciary responsibility may shift from the plan sponsor to the trustee(s).

## Disclaimer

© 2016 Morningstar, Inc. All Rights Reserved. The information contained herein (including information contained in the Licensee Fact Sheets): (1) is proprietary to Morningstar and/or its content providers; (2) may not be copied or distributed; and (3) is not warranted to be accurate, complete or timely. Neither Morningstar nor its content providers are responsible for any damages or losses arising from any use of this information. Past performance is no guarantee of future results.

### Morningstar Rating

For each fund with at least a three-year history, Morningstar calculates a Morningstar Rating™ based on a Morningstar Risk-Adjusted Return™ measure that accounts for variation in a fund's monthly performance (including the effects of sales charges, loads, and redemption fees), placing more emphasis on downward variations and rewarding consistent performance. The top 10% of funds in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. (Each share class is counted as a fraction of one fund within this scale and rated separately, which may cause slight variations in the distribution percentages.) The Overall Morningstar Rating for a fund is derived from a weighted average of the performance figures associated with its three-, five- and ten-year (if applicable) Morningstar Rating metrics. Morningstar Rating is for this share class only; other classes may have different performance characteristics.

### ETFs

The Morningstar Rating™ is provided for those exchange-traded funds ("ETFs") with at least a three-year history. Ratings are based on the ETF's Morningstar Risk-Adjusted Return measure which accounts for variation in monthly performance, placing more emphasis on downward variations and rewarding consistent performance. An ETF's risk-adjusted return includes a brokerage commission estimate. This estimate is intended to reflect what an average investor would pay when buying or selling an ETF. PLEASE NOTE, this estimate is subject to change and the actual brokerage commission an investor pays may be higher or lower than this estimate. Morningstar compares each ETF's risk-adjusted return to the open-end mutual fund rating breakpoints for that category. Consistent with the open-end mutual fund ratings, the top 10% of ETFs in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. The overall rating for an ETF is based on a weighted average of the time-period ratings (e.g., the ETF's 3,5, and 10 year rating).. The determination of an ETF's rating does not affect the retail open end mutual fund data published by Morningstar.

### Morningstar Rating for Load-Waived A-Shares

For each fund with at least a three-year history, Morningstar calculates a Morningstar Rating™ based on how a fund ranks on a Morningstar Risk-Adjusted Return measure against other funds in the same category. This measure takes into account variations in a fund's monthly performance after adjusting for sales loads (except for load-waived A shares) redemption fees, and the risk-free rate, placing more emphasis on downward variations and rewarding consistent performance. The top 10% of funds in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. The Overall Morningstar Rating for a fund is derived from a weighted average of the ratings for the three-, five- and ten-year (if applicable) time periods. Load- waived A share star ratings do not include any front-end sales load and are intended for those investors who have access to such purchase terms (e.g., plan participants of a defined contribution plan). Not all A share mutual funds for which Morningstar calculates a load-waived A share star rating may actually waive their front-end sales load. Therefore, Morningstar strongly encourages investors to contact their investment professional to determine whether they are eligible to purchase the A share without paying the front load . The Morningstar Rating may differ among share classes of a mutual fund as a result of different sales loads and/or expense structure.

### Morningstar Rating based on Extended Performance

Please note, some of the Morningstar proprietary calculations, including the Morningstar Rating™, are not customarily calculated based on adjusted historical returns. The evaluation of this investment does not affect the retail mutual fund data published by Morningstar . For each retail mutual fund with at least a three-year history, Morningstar calculates a Morningstar Rating™ based on a Morningstar Risk-Adjusted Return measure that accounts for variation in a fund's monthly performance (including the effects of sales charges, loads, and redemption fees), placing more emphasis on downward variations and rewarding consistent performance. The top 10% of funds in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. (Each share class is counted as a fraction of one fund within this scale and rated separately, which may cause slight variations in the distribution percentages.) The Overall Morningstar Rating for a retail mutual fund is derived from a weighted average of the performance figures associated with its three-, five- and ten-year (if applicable) Morningstar Rating metrics. This investment's independent Morningstar Rating metric is then compared against the retail mutual fund universe breakpoints to determine its hypothetical rating.

## Disclaimer

The Morningstar Rating for separate accounts, commonly called the star rating, is a measure of a separate account's risk-adjusted return, relative to other separate accounts in the same Morningstar Category. Separate accounts are rated from 1 to 5 stars, with the best performers receiving 5 stars and the worst performers receiving 1 star. Separate accounts are rated for up to three periods (three, five, and 10 years), and ratings are recalculated each quarter. The Morningstar Rating for separate accounts uses an enhanced risk-adjusted return measure, which accounts for all variations in a separate account's monthly performance, with more emphasis on downward variation. Separate accounts are ranked against others in the same category and stars are assigned as follows: Top 10% 5 stars, Next 22.5% 4 stars, Middle 35% 3 stars, Next 22.5% 2 stars, Bottom 10% 1 star. Fees for separate accounts can vary widely and are negotiated between the asset manager, the separate account program sponsor or advisor, and the investor. Morningstar has chosen to employ the AIMR-approved standard of gross-of-fees performance (before fees have been taken out) to compare separate accounts. Net-of-fees calculations often deduct the highest theoretical fees that an investor may pay. The Morningstar Rating uses an enhanced risk-adjusted return measure based on "expected utility theory," which accounts for all variations in a separate account's monthly performance, with more emphasis on downward variation. Morningstar will not calculate ratings for categories or time periods that contain fewer than five separate accounts. Each investor in the same separate account can experience slightly different total returns, because investors have different account preferences and restrictions. Therefore, all separate account performance data is reported to Morningstar as a "composite" of similarly managed portfolios. Separate accounts that do not have ratings can be divided into two groups: those that do not qualify to be rated and those that did not participate. A separate account will not get a Morningstar Rating if: It is less than three years old, the firm is not AIMR-compliant, the category contains fewer than five separate accounts that are eligible for a rating.

### Morningstar Rating for Group Variable Annuities

The Morningstar Rating™ is provided for those group variable annuities with at least a three-year history. Ratings are based on the group variable annuity's Morningstar Risk-Adjusted Return measure which accounts for variation in monthly performance, placing more emphasis on downward variations and rewarding consistent performance. Morningstar compares each group variable annuity's risk-adjusted return to the open-end mutual fund rating breakpoints for that category. The group variable annuity Morningstar Rating does not affect the retail mutual fund data published by Morningstar. Consistent with the open-end mutual fund ratings, the top 10% of group variable annuities in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. The Overall Morningstar Rating for each group variable annuity is derived from a weighted average of the performance figures associated with its three-, five- and ten-year (if applicable) Morningstar Rating metrics.

### Morningstar Style Box™

The Morningstar Style Box™ reveals a fund's investment strategy. For equity funds the vertical axis shows the market capitalization of the stocks owned and the horizontal axis shows investment style (value, blend or growth). For fixed-income funds the vertical axis shows the average credit quality of the bonds owned, and the horizontal axis shows interest rate sensitivity as measured by a bond's duration (short, intermediate or long).

### Morningstar Ownership Zone™

The Morningstar Ownership Zone™ provides detail about a portfolio's equity investment style by showing the range of stock sizes and styles. A portfolio's Ownership Zone™ is derived by plotting each stock in the fund's portfolio within the proprietary Morningstar Style Box™. The shaded area represents the center 75% of the fund's assets, and it provides an intuitive visual representation of the area of the market in which the fund invests. A "centroid" plot in the middle of the Ownership Zone represents the weighted average of all the fund's holdings. A fund that is concentrated will have a small ownership zone relative to the area of the style box, and broadly diversified fund will have an ownership zone that stretches across many sizes and style. Over a period of time, the shape and location of a fund's ownership zone may vary.

VPPSA 457 PLAN  
AS OF OCTOBER 17, 2018

Sponsor: Vermont Public Power Supply Authority



This report contains information regarding the investments and fees in your plan.

Fees are based on current funds, balances, number of participants and other estimates. As such, your fees may vary from the enclosed values.

If any of the enclosed information is incorrect, or should you wish to discuss further, please contact your representative.

## Fee Disclosure Overview

---

Under the new U.S. Department of Labor (DOL) regulations, referred to as Section 408(b)(2), covered service providers are now required to disclose plan fee and investment information to plan sponsors at least annually. Additionally, plan sponsors and fiduciaries are required to review the fees assessed to the plan and determine if they are reasonable. The enclosed reports are designed to address both of these needs.

### What's Included

In this report package, you will find the following reports:

- Summary of all investment and plan fees
- Investment Expenses details
- Plan Administration Expenses details
- Additional Notes to discuss
- Glossary of Terms to help clarify technical phrases
- Disclaimer related to third-party data sources

### Calculation of Fees

Fees in your plan can be calculated in four ways:

- Asset-based, meaning the plan balance determines the amount of the fee, generally reported as a percentage or basis points (bps).
- Base fee, meaning that the plan is charged a flat fee for that particular service.
- Per-participant, meaning that the fee is charged for each participant in the plan.
- Per transaction, meaning that the fee is only charged when a transaction occurs (e.g. distribution, loan distribution, etc.)

Additionally, fees can be calculated in step rates:

- Step rate, meaning fees are charged incrementally for each rate band (e.g. \$25 for first 50 participants, \$20 for each additional).
- Exclusive, meaning based on a certain value, fees will all be charged based on that rate band.

### What's Next?

- Review this packet to ensure the information provided is consistent with other statements and fee schedules you've received.
- Should you have any questions regarding the contents of this report, please contact your representative.
- Also under 408(b)(2), plan fiduciaries are required to compare fees charged by other service providers. This report package will help you accomplish this goal.

## Fee Disclosure Summary

### Summary of Plan Assets

As of date	10-17-2018
Total plan assets	\$977,865.50
Number of participants	13
Average participant balance	\$75,220.42
Trading platform	Charles Schwab Bank

### Summary of Plan Expenses (annualized)

Investment expenses	\$4,792.72
<i>Fund expenses</i>	\$6,680.66
<i>Revenue sharing*</i>	(\$1,887.94)
<i>Sub-TA*</i>	\$0.00
<i>12b-1*</i>	\$0.00

*\*Included in Fund expenses*

Advisory **	\$3,911.46
Administration **	\$2,875.00
Custodial **	\$1,282.29
Recordkeeping **	\$0.00
Trustee **	\$0.00
Other **	\$0.00

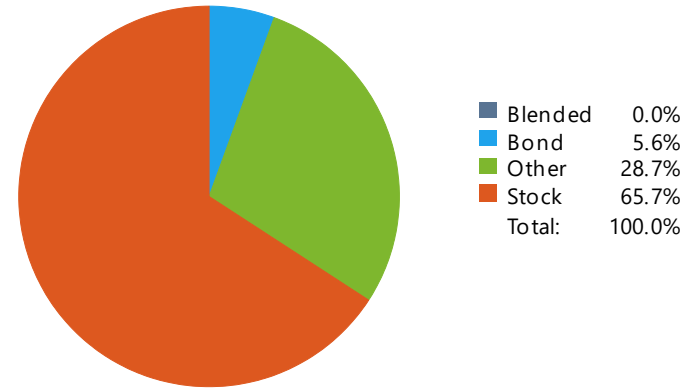
**Estimated Annual Totals:** **\$12,861.47**

*\*\*May include revenue sharing, 12b-1s and/or sub-ta fees received from investments as detailed above. A detailed breakdown is provided on the next page.*

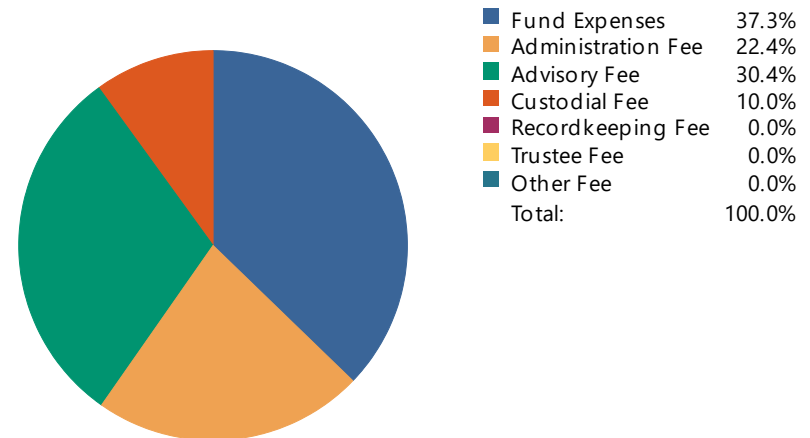
**Cost as % of assets** **1.32%**

**Average cost / participant** **\$989.34**

### Plan Asset Allocation



### Plan Expense Allocation





**Service Provider Expenses**

Fee Type	Description	Method	Amount (\$ or bps)	Number of Participants	Number of Units	Fee Basis	Estimated Annual Total	Paid By
<b>Charles Schwab Bank</b>								
Custodian	Base Fee	Base fee	\$500.00				\$500.00	Sponsor
Custodian	MV Fee	Basis points	8.00			\$977,865.50	\$782.29	Sponsor
<b>Subtotal</b>							<b>\$1,282.29</b>	
<b>Future Planning Associates, Inc.</b>								
TPA	Base Fee	Base fee	\$2,800.00				\$2,800.00	Sponsor
TPA	Distribution Fee	Per unit	\$75.00		1		\$75.00	Sponsor
<b>Subtotal</b>							<b>\$2,875.00</b>	
<b>Mutual Fund Revenue Sharing</b>								
Revenue sharing	offsets Custody & TPA fees	Calculated from plan assets					\$(1,887.94)	
<b>Subtotal</b>							<b>\$(1,887.94)</b>	
<b>Poulos Advisors, Inc.</b>								
Advisor	Investment Advisory	Basis points	40.00			\$977,865.50	\$3,911.46	Sponsor
<b>Subtotal</b>							<b>\$3,911.46</b>	
<b>Total Estimated Fees</b>							<b>\$6,180.81</b>	

## Investment Expenses

Ticker	Fund Name	Market Value \$	% of Plan Assets	Net Expense Ratio %	Fund Expense Totals	Revenue Sharing*	12b-1*	Sub-TA *	Total*	Sub-TA** (\$ per head)	Fund Rebate Totals
<b>Stock</b>											
<b>Diversified Emerging Mkts</b>											
ODMAX	Oppenheimer Developing Markets A	\$73,136.00	7.48%	1.32%	\$965.40	0.48%	0.00%	0.00%	0.48%	\$0.00	\$351.05
<b>Foreign Large Blend</b>											
TIVRX	Thornburg International Value R5	\$80,069.22	8.19%	0.99%	\$792.69	0.38%	0.00%	0.00%	0.38%	\$0.00	\$304.26
<b>Foreign Large Growth</b>											
OIGYX	Oppenheimer International Growth Y	\$51,588.50	5.28%	0.85%	\$438.50	0.23%	0.00%	0.00%	0.23%	\$0.00	\$118.65
<b>Global Real Estate</b>											
IGLAX	Voya Global Real Estate A	\$43,675.73	4.47%	1.30%	\$567.78	0.48%	0.00%	0.00%	0.48%	\$0.00	\$209.64
<b>Health</b>											
PRHSX	T. Rowe Price Health Sciences	\$21,427.81	2.19%	0.77%	\$164.99	0.13%	0.00%	0.00%	0.13%	\$0.00	\$27.86
<b>Large Blend</b>											
AMEIX	American Century Equity Growth I	\$64,686.93	6.62%	0.47%	\$304.03	0.03%	0.00%	0.00%	0.03%	\$0.00	\$19.41
JPIEX	JPMorgan US Research Enhanced Equity L	\$87,161.08	8.91%	0.45%	\$392.22	0.08%	0.00%	0.00%	0.08%	\$0.00	\$69.73
<b>Large Growth</b>											
JAMRX	Janus Henderson Research T	\$46,164.52	4.72%	0.83%	\$383.17	0.33%	0.00%	0.00%	0.33%	\$0.00	\$152.34
JENSX	Jensen Quality Growth J	\$3,123.15	0.32%	0.88%	\$27.48	0.38%	0.00%	0.00%	0.38%	\$0.00	\$11.87
TIGRX	TIAA-CREF Growth & Income Instl	\$64,915.14	6.64%	0.41%	\$266.15	0.00%	0.00%	0.00%	0.00%	\$0.00	\$0.00
<b>Mid-Cap Blend</b>											
HIMDX	Hennessy Cornerstone Mid Cap 30 Instl	\$53,111.91	5.43%	0.97%	\$515.19	0.08%	0.00%	0.00%	0.08%	\$0.00	\$42.49
<b>Mid-Cap Growth</b>											
ACRNX	Columbia Acorn Inst	\$53,373.44	5.46%	0.86%	\$459.01	0.38%	0.00%	0.00%	0.38%	\$0.00	\$202.82
<b>Bond</b>											
<b>Bank Loan</b>											
EVBLX	Eaton Vance Floating Rate A	\$21,828.13	2.23%	1.04%	\$227.01	0.38%	0.00%	0.00%	0.38%	\$0.00	\$82.95
<b>Emerging Markets Bond</b>											
PEBIX	PIMCO Emerging Markets Bond Instl	\$5,125.70	0.52%	0.84%	\$43.06	0.00%	0.00%	0.00%	0.00%	\$0.00	\$0.00
<b>High Yield Bond</b>											
MHCAX	MainStay MacKay High Yield Corp Bd A	\$20,622.55	2.11%	0.98%	\$202.10	0.48%	0.00%	0.00%	0.48%	\$0.00	\$98.99
<b>Intermediate-Term Bond</b>											
LIGRX	Loomis Sayles Investment Grade Bond A	\$0.00	0.00%	0.78%	\$0.00	0.43%	0.00%	0.00%	0.43%	\$0.00	\$0.00
<b>Ultrashort Bond</b>											
SNGVX	Sit US Government Securities	\$12,123.75	1.24%	0.80%	\$96.99	0.36%	0.00%	0.00%	0.36%	\$0.00	\$43.65
<b>World Bond</b>											
PFORX	PIMCO International Bond (USD-Hdg) Instl	\$5,051.15	0.52%	0.56%	\$28.29	0.00%	0.00%	0.00%	0.00%	\$0.00	\$0.00
TPINX	Templeton Global Bond A	\$11,962.41	1.22%	0.96%	\$114.84	0.38%	0.00%	0.00%	0.38%	\$0.00	\$45.46

## Investment Expenses

Ticker	Fund Name	Market Value \$	% of Plan Assets	Net Expense Ratio %	Fund Expense Totals	Revenue Sharing*	12b-1*	Sub-TA *	Total*	Sub-TA** (\$ per head)	Fund Rebate Totals
<b>Other</b>											
<b>Commodities Broad Basket</b>											
PCRRX	PIMCO Commodity Real Ret Strat Admin	\$46,426.98	4.75%	1.49%	<b>\$691.76</b>	0.23%	0.00%	0.00%	0.23%	\$0.00	<b>\$106.78</b>
<b>Not Available</b>											
WGI35	Galliard Retirement Income Fund 35	\$212,291.40	21.71%	0.00%	<b>\$0.00</b>	0.00%	0.00%	0.00%	0.00%	\$0.00	<b>\$0.00</b>
<b>Totals:</b>		<b>\$977,865.50</b>		<b>0.68%</b>	<b>\$6,680.66</b>	<b>0.19%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.19%</b>	<b>\$0.00</b>	<b>\$1,887.94</b>

\*Included in the Net Expense Ratio of the fund.

\*\*Based upon the number of participants in this fund and not included in the above calculations.

**Additional Notes**

---

## Glossary of Terms

---

### 12b-1 Fee

Included in the net expense ratio, fees charged to the shareholders related to servicing, distribution and marketing expenses.

### Administration Fees

Fees paid to a third party administrator (TPA) for required compliance testing and government filings.

### Advisory Fees

Fees paid to a plan advisor, often an investment advisor, for services related to advising the plan sponsor(s) on investment lineups, plan document setup, etc.

### Covered Service Provider

Generally, persons and companies that can reasonably expect to receive \$1,000 or more in compensation for providing services for the plan.

### Custodial Fees

Fees paid to an institution for holding the plan investments on behalf of the plan.

### Net Expense Ratio

Generally reported as a percentage of assets, the annualized amount paid to a fund for operational expenses incurred by the fund company, such as fund manager fees.

### Recordkeeping Fees

Fees paid to a company for maintaining plan records, including calculating eligibility and balances, processing transactions and providing participant services (e.g. participant website, call center support, etc.).

### Revenue Sharing

Monies that are paid to a broker/dealer by a fund affiliate to compensate for expenses incurred in selling the shares. Revenue sharing can either be collected as income or reinvested back into the plan.

### Trustee Fees

Fees paid to an individual or company for serving as the plan trustee; in return, some fiduciary responsibility may shift from the plan sponsor to the trustee(s).

## Disclaimer

© 2016 Morningstar, Inc. All Rights Reserved. The information contained herein (including information contained in the Licensee Fact Sheets): (1) is proprietary to Morningstar and/or its content providers; (2) may not be copied or distributed; and (3) is not warranted to be accurate, complete or timely. Neither Morningstar nor its content providers are responsible for any damages or losses arising from any use of this information. Past performance is no guarantee of future results.

### Morningstar Rating

For each fund with at least a three-year history, Morningstar calculates a Morningstar Rating™ based on a Morningstar Risk-Adjusted Return™ measure that accounts for variation in a fund's monthly performance (including the effects of sales charges, loads, and redemption fees), placing more emphasis on downward variations and rewarding consistent performance. The top 10% of funds in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. (Each share class is counted as a fraction of one fund within this scale and rated separately, which may cause slight variations in the distribution percentages.) The Overall Morningstar Rating for a fund is derived from a weighted average of the performance figures associated with its three-, five- and ten-year (if applicable) Morningstar Rating metrics. Morningstar Rating is for this share class only; other classes may have different performance characteristics.

### ETFs

The Morningstar Rating™ is provided for those exchange-traded funds ("ETFs") with at least a three-year history. Ratings are based on the ETF's Morningstar Risk-Adjusted Return measure which accounts for variation in monthly performance, placing more emphasis on downward variations and rewarding consistent performance. An ETF's risk-adjusted return includes a brokerage commission estimate. This estimate is intended to reflect what an average investor would pay when buying or selling an ETF. PLEASE NOTE, this estimate is subject to change and the actual brokerage commission an investor pays may be higher or lower than this estimate. Morningstar compares each ETF's risk-adjusted return to the open-end mutual fund rating breakpoints for that category. Consistent with the open-end mutual fund ratings, the top 10% of ETFs in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. The overall rating for an ETF is based on a weighted average of the time-period ratings (e.g., the ETF's 3,5, and 10 year rating).. The determination of an ETF's rating does not affect the retail open end mutual fund data published by Morningstar.

### Morningstar Rating for Load-Waived A-Shares

For each fund with at least a three-year history, Morningstar calculates a Morningstar Rating™ based on how a fund ranks on a Morningstar Risk-Adjusted Return measure against other funds in the same category. This measure takes into account variations in a fund's monthly performance after adjusting for sales loads (except for load-waived A shares) redemption fees, and the risk-free rate, placing more emphasis on downward variations and rewarding consistent performance. The top 10% of funds in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. The Overall Morningstar Rating for a fund is derived from a weighted average of the ratings for the three-, five- and ten-year (if applicable) time periods. Load- waived A share star ratings do not include any front-end sales load and are intended for those investors who have access to such purchase terms (e.g., plan participants of a defined contribution plan). Not all A share mutual funds for which Morningstar calculates a load-waived A share star rating may actually waive their front-end sales load. Therefore, Morningstar strongly encourages investors to contact their investment professional to determine whether they are eligible to purchase the A share without paying the front load . The Morningstar Rating may differ among share classes of a mutual fund as a result of different sales loads and/or expense structure.

### Morningstar Rating based on Extended Performance

Please note, some of the Morningstar proprietary calculations, including the Morningstar Rating™, are not customarily calculated based on adjusted historical returns. The evaluation of this investment does not affect the retail mutual fund data published by Morningstar . For each retail mutual fund with at least a three-year history, Morningstar calculates a Morningstar Rating™ based on a Morningstar Risk-Adjusted Return measure that accounts for variation in a fund's monthly performance (including the effects of sales charges, loads, and redemption fees), placing more emphasis on downward variations and rewarding consistent performance. The top 10% of funds in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. (Each share class is counted as a fraction of one fund within this scale and rated separately, which may cause slight variations in the distribution percentages.) The Overall Morningstar Rating for a retail mutual fund is derived from a weighted average of the performance figures associated with its three-, five- and ten-year (if applicable) Morningstar Rating metrics. This investment's independent Morningstar Rating metric is then compared against the retail mutual fund universe breakpoints to determine its hypothetical rating.

## Disclaimer

The Morningstar Rating for separate accounts, commonly called the star rating, is a measure of a separate account's risk-adjusted return, relative to other separate accounts in the same Morningstar Category. Separate accounts are rated from 1 to 5 stars, with the best performers receiving 5 stars and the worst performers receiving 1 star. Separate accounts are rated for up to three periods (three, five, and 10 years), and ratings are recalculated each quarter. The Morningstar Rating for separate accounts uses an enhanced risk-adjusted return measure, which accounts for all variations in a separate account's monthly performance, with more emphasis on downward variation. Separate accounts are ranked against others in the same category and stars are assigned as follows: Top 10% 5 stars, Next 22.5% 4 stars, Middle 35% 3 stars, Next 22.5% 2 stars, Bottom 10% 1 star. Fees for separate accounts can vary widely and are negotiated between the asset manager, the separate account program sponsor or advisor, and the investor. Morningstar has chosen to employ the AIMR-approved standard of gross-of-fees performance (before fees have been taken out) to compare separate accounts. Net-of-fees calculations often deduct the highest theoretical fees that an investor may pay. The Morningstar Rating uses an enhanced risk-adjusted return measure based on "expected utility theory," which accounts for all variations in a separate account's monthly performance, with more emphasis on downward variation. Morningstar will not calculate ratings for categories or time periods that contain fewer than five separate accounts. Each investor in the same separate account can experience slightly different total returns, because investors have different account preferences and restrictions. Therefore, all separate account performance data is reported to Morningstar as a "composite" of similarly managed portfolios. Separate accounts that do not have ratings can be divided into two groups: those that do not qualify to be rated and those that did not participate. A separate account will not get a Morningstar Rating if: It is less than three years old, the firm is not AIMR-compliant, the category contains fewer than five separate accounts that are eligible for a rating.

### Morningstar Rating for Group Variable Annuities

The Morningstar Rating™ is provided for those group variable annuities with at least a three-year history. Ratings are based on the group variable annuity's Morningstar Risk-Adjusted Return measure which accounts for variation in monthly performance, placing more emphasis on downward variations and rewarding consistent performance. Morningstar compares each group variable annuity's risk-adjusted return to the open-end mutual fund rating breakpoints for that category. The group variable annuity Morningstar Rating does not affect the retail mutual fund data published by Morningstar. Consistent with the open-end mutual fund ratings, the top 10% of group variable annuities in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. The Overall Morningstar Rating for each group variable annuity is derived from a weighted average of the performance figures associated with its three-, five- and ten-year (if applicable) Morningstar Rating metrics.

### Morningstar Style Box™

The Morningstar Style Box™ reveals a fund's investment strategy. For equity funds the vertical axis shows the market capitalization of the stocks owned and the horizontal axis shows investment style (value, blend or growth). For fixed-income funds the vertical axis shows the average credit quality of the bonds owned, and the horizontal axis shows interest rate sensitivity as measured by a bond's duration (short, intermediate or long).

### Morningstar Ownership Zone™

The Morningstar Ownership Zone™ provides detail about a portfolio's equity investment style by showing the range of stock sizes and styles. A portfolio's Ownership Zone™ is derived by plotting each stock in the fund's portfolio within the proprietary Morningstar Style Box™. The shaded area represents the center 75% of the fund's assets, and it provides an intuitive visual representation of the area of the market in which the fund invests. A "centroid" plot in the middle of the Ownership Zone represents the weighted average of all the fund's holdings. A fund that is concentrated will have a small ownership zone relative to the area of the style box, and broadly diversified fund will have an ownership zone that stretches across many sizes and style. Over a period of time, the shape and location of a fund's ownership zone may vary.

# Vermont Public Power Supply Authority

## Retirement Plan/457 Plan Fund Options

Ticker	Name	Asset Class	Return % Ending 3/31/19					Net Exp Ratio %
			YTD	1 Yr	3 Yr	5 Yr	10 Yr	
<b>Cash Alternatives</b>								
SWRXX	Schwab Investor Money Fund®	Prime Money Market	0.56	2.00	1.06	0.64	0.33	0.35
<b>Fixed Income</b>								
BGNMX	American Century Ginnie Mae Inv	Interm Government Bond	2.07	3.78	1.05	1.78	2.70	0.55
LIGRX	Loomis Sayles Investment Grade Bond	Interm Term Bond	3.29	2.63	3.76	2.13	6.73	0.78
EVBLX	Eaton Vance Floating Rate	Bank Loan	3.44	2.48	5.63	3.30	7.13	1.02
MHCAX	MainStay MacKay High Yield Corp Bd	High Yield Bond	6.00	4.54	7.67	4.39	9.42	0.99
TPINX	Templeton Global Bond	World Bond	1.91	1.80	3.90	1.64	5.37	0.96
FCVSX	Fidelity® Convertible Securities	Convertibles	11.56	9.54	9.24	4.36	13.07	0.46
<b>Equities</b>								
PABGX	T. Rowe Price Blue Chip Growth Advisor	Large Growth	16.08	11.79	19.69	14.63	18.61	0.97
JENSX	Jensen Quality Growth	Large Growth	14.39	17.06	15.01	12.78	15.84	0.88
JAMRX	Janus Henderson Research	Large Growth	16.74	11.91	14.12	11.45	17.03	0.83
CVFCX	Pioneer Disciplined Value	Large Value	13.53	0.09	10.84	6.67	12.18	1.13
HIMDX	Hennessy Cornerstone Mid Cap 30	Mid-Cap Blend	12.06	-6.74	2.44	4.21	13.68	0.95
ACRNX	Columbia Acorn Inst	Mid-Cap Growth	16.56	6.82	16.27	8.71	15.79	0.86
TGVAX	Thornburg International Value	Foreign Large Blend	15.54	-5.35	5.48	3.34	8.04	1.27
JAOSX	Janus Henderson Overseas	Foreign Large Blend	10.71	-7.82	8.20	-1.80	4.59	0.77
ODMAX	Oppenheimer Developing Markets	Diversified Emerging Mkts	12.31	-4.14	11.34	3.44	11.19	1.29

Source: Morningstar

Risk-Based Asset Allocation Funds		Equity/Bond Mix
NA	Conservative Asset Allocation	20/80
NA	Moderate Conservative Asset Allocation	35/65
NA	Balanced Asset Allocation	50/50
NA	Moderate Asset Allocation	65/35
NA	Growth Asset Allocation	80/20



# Vermont Public Power Supply Authority

## Retirement Plan/457 Plan Requested Fund Options

Ticker	Name	Asset Class	Return % Ending 3/31/19					Net Exp Ratio %
			YTD	1 Yr	3 Yr	5 Yr	10 Yr	
<b>Reccomended</b>								
SWPPX	SCHWAB S&P 500 INDEX	LARGE BLEND	13.63	9.45	13.45	10.82	15.81	0.02
SWMCX	SCHWAB US MID-CAP INDEX	MID-CAP BLEND	16.51	6.38	NA	NA	NA	0.04
SWISX	SCHWAB INTERNATIONAL INDEX	FOREIGN LARGE BLEND	9.98	-3.95	7.47	2.32	8.88	0.06

**Notes**

The above funds are all index funds and offer a low cost, passive investment alternative for participants looking to simply match market performance at a minimal expense.

**Not Recommended**

SNXFX	SCHWAB 1000 INDEX	LARGE BLEND	13.97	9.07	13.36	10.4	15.69	0.05
SWLVX	SCHWAB US LARGE-CAP VALUE INDEX	LARGE VALUE	11.89	5.53	NA	NA	NA	0.04
SWSXX	Schwab Cash Reserves	CASH	Liquidated 4/11/19					

**Notes**

- SNXFX This fund represents more than one asset class so I think we are better off going with funds with more clearly defined asset classes which we can do through the above funds.
- SWLVX This fund would be repetitive and is not necessary.
- SWSXX This is a cash reserves fund which was liquidated and cannot be added to the plan.

## Memorandum

To: Board of Directors (Advisory & RM Committee)  
From: Ken Nolan, General Manager  
Date: 5/3/19  
Subject: **Agenda #6** – Northview Weather

The VELCO Operating Committee has continued to discuss a possible contract between all distribution Utilities and Northview Weather LLC. Based on previous feedback additional allocation schemes are being considered (sq-miles served, overhead line miles, etc). The VELCO Operating Committee has committed to make a final recommendation at its May meeting.

To facilitate a final VPPSA member decision Steve Fitzhugh has asked that VPPSA convene a meeting of all of the members prior the Operating Committee meeting, so staff is adding this discussion to the Advisory Committee agenda and inviting all members to participate.

Jay Shaeffer or Northview Weather LLC is planning to join the committee meeting by phone and webex at 10:00. Copies of the materials Jay has previously provided are included in the packet for reference.



**To:** VELCO OC Members

**Date:** April 26, 2019

**Re:** Northview Weather forecast technology (SkyRisk and OutageRisk product suites)

**Provided by:** Jason Shafer, President & CEO, Northview Weather

[jason.shafer@northviewweather.com](mailto:jason.shafer@northviewweather.com)

**Background:** Over the last two plus years, we have provided you numerous presentations on our research, development, and commercialization activities. We refer you to these resources to understand the lineage of our development roadmap, our technology capabilities, and how Northview products can provide value to utility users for storm preparedness decisions.

Feb 14, 2017 VWAC project update ([link to presentation](#)).

Jul 18, 2017 VWAC project update ([link to presentation](#)).

Oct 10, 2017 outage workshop at Lyndon ([link to documents](#)).

Dec 2017 draft MOU to VELCO for first proposed agreement ([link to document](#)).

Jan 10, 2018 to VELCO (Mary Coombs) to describe outage prediction system ([link to document](#)).

Feb 15, 2018 to VELCO OC for first proposed agreement ([link to presentation](#)).

Jul 11, 2018 to VEC for distribution applications ([link to presentation](#)).

Aug 14, 2018 to VELCO for distribution applications ([link to presentation](#)).

Aug 29, 2018 to VELCO for transmission icing applications ([link to presentation](#)).

Sep 25, 2018 at Emergency Prep (Utilities-State Agencies) Annual Meeting ([link to presentation](#)).

Mar 20, 2019 to GMP for technology update and revealing new beta products ([link to presentation](#))

## 1. Introduction and Overview

Northview technology is designed to help electric distribution utilities make smarter storm planning decisions. Northview provides new information to better understand risk from wet snow, ice, and gradient wind storms, which collectively account for the majority of weather-caused power outages across Vermont. This new technology provides risk using a probabilistic framework, allowing for better scenario-based planning to match emergency preparedness levels with greater confidence. Northview has consistently demonstrated improved forecast accuracy of 10-20% vs. the National Weather Service for wind and ice storms over the last two winter seasons. Northview is creating new industry standards for storm preparation and response, and every Vermont distribution utility now has the opportunity to use this information to improve reliability.

## 2. Northview Advantages

**New Science:** Northview has taken research on wet snow and ice storms and applied these results successfully to our operational systems. This has resulted in improved ways to

understand risk from wet snow storms and wet snow loading. We have developed the first wet snow accretion loading approximations along lines using wet bulb temperature criteria to separate wet vs. dry snow. For freezing rain icing, we have implemented the latest research on icing, with a physically based ice loading model that accounts for wind, temperature, and precipitation rate as the critical factors affecting freezing rain ice formation.

**Outage prediction:** Northview has developed an outage prediction model for wet snow and ice storms. This is based on a linearized statistical relationship between the amount of ice load and an event failure rate along overhead distribution. For major storms, we have demonstrated a forecast accuracy around 70% with storm magnitude around 2 day prior to wet snow and ice storms.

**Relevant risk:** Northview analytics are derived using complex GIS techniques that allow for the weather to be sampled along the overhead lines. This results in the most meaningful risk for decision making (asset-based risk). Stop staring at course maps to determine how bad the storm might be, and use line-risk exposures to better understand storm impacts.

**Latest weather prediction modeling:** Northview derives its analytics from two forecast systems. One uses open-source information that the National Weather Service relies upon, and the other is generated in-house. Our in-house forecast system is the most advanced weather forecast system (that we are aware of) across the Northeast US running operationally, with 10 weather forecast models. By contrast, Deep Thunder and Nostradamus are each one model, and are not be as accurate as the information that can be derived from an ensemble of 10 members.

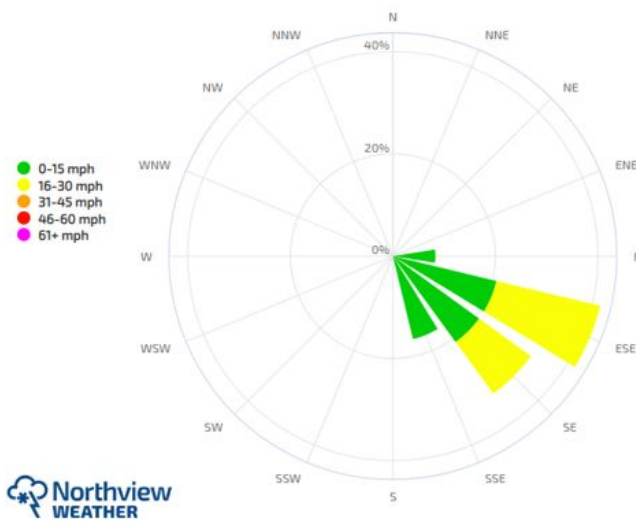
**Team Vermont:** Northview is completely organically home-grown here in Vermont from research that originated at Northern Vermont University-Lyndon (formerly Lyndon State College), with R&D support from VLITE. We understand local weather and plan to help our VT customers first and not leave them behind with any growth.

### 3. Unique Product Capabilities and Features

Northview offers its technology through two product classes, SkyRisk and OutageRisk. Each provides varying levels of customization, with OutageRisk providing outage prediction for wet snow and ice storms. All information is provided on a user-interface platform, as a software-as-a-service or licence agreement. Information is organized and structured to help you understand how bad the storm will be, where it will hit, and when it will happen to optimize planning and response.

**SkyRisk - New Wind Information:** The below example demonstrates asset-based wind risk from the third SkyRisk tier. This technology shows the forecast wind information where it intersects the overhead lines. This information on the left demonstrates the dominant wind direction (from the southeast) over a one-day period. The table table shows the percentage of lines exposed to different wind gust classes, with all wind gusts below 30 mph in this example.

Lyndonville Wind Rose  
Average Wind Gust  
Mean Forecast  
2019-04-25 20:00 EDT to 2019-04-26 20:00 EDT

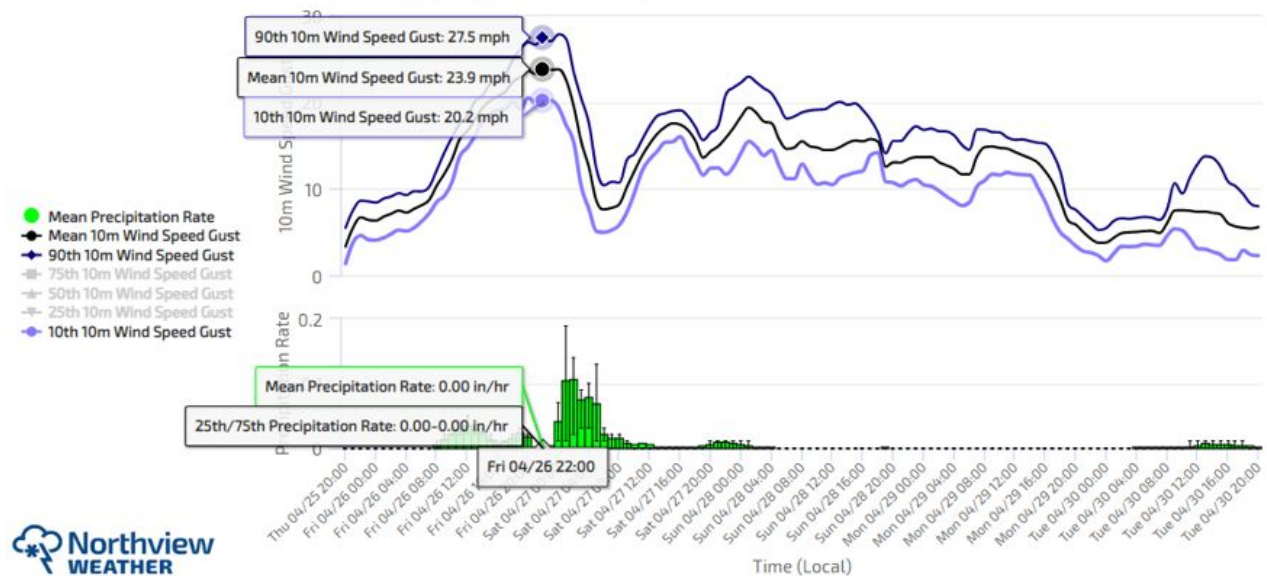


Forecast Wind Gust Threshold (mph)	Day 1	
	Lines Exposed (miles)	% of Total Lines Exposed
0	0	0
1-5	0	0
6-10	0	0
11-15	0	0
16-20	4	1
21-25	313	76
26-30	94	23
31-35	0	0
36-40	0	0
41-45	0	0
46-50	0	0
51-55	0	0
56-60	0	0
61-65	0	0
66-70	0	0
71-75	0	0

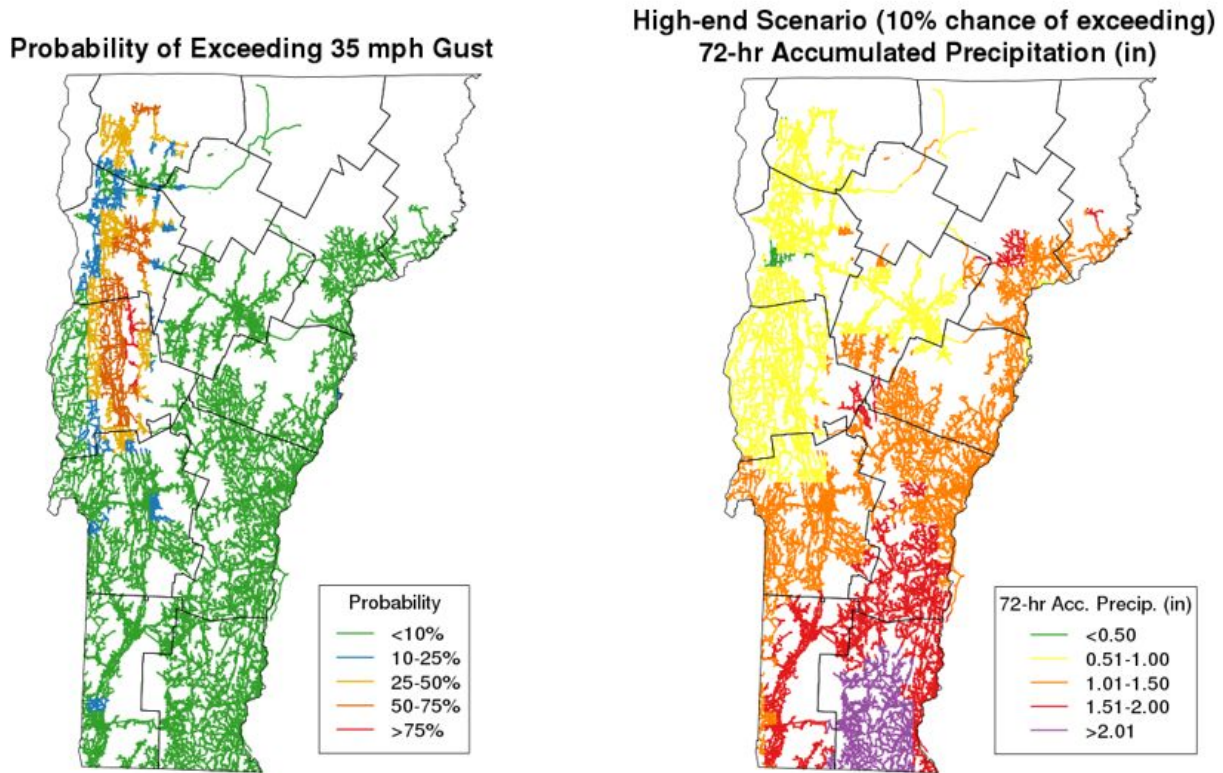
**SkyRisk - Time Series:** Time series forecast information helps you determine when weather may happen. In this example we see spatially averaged hourly wind gusts over Lyndonville Electric, with cursor readouts describing when the wind will peak and precipitation will likely occur. All forecasts are generated twice a day up to five days ahead of potential storms.

Primary: 10m Wind Speed Gust Secondary: Precipitation Rate Change Graph

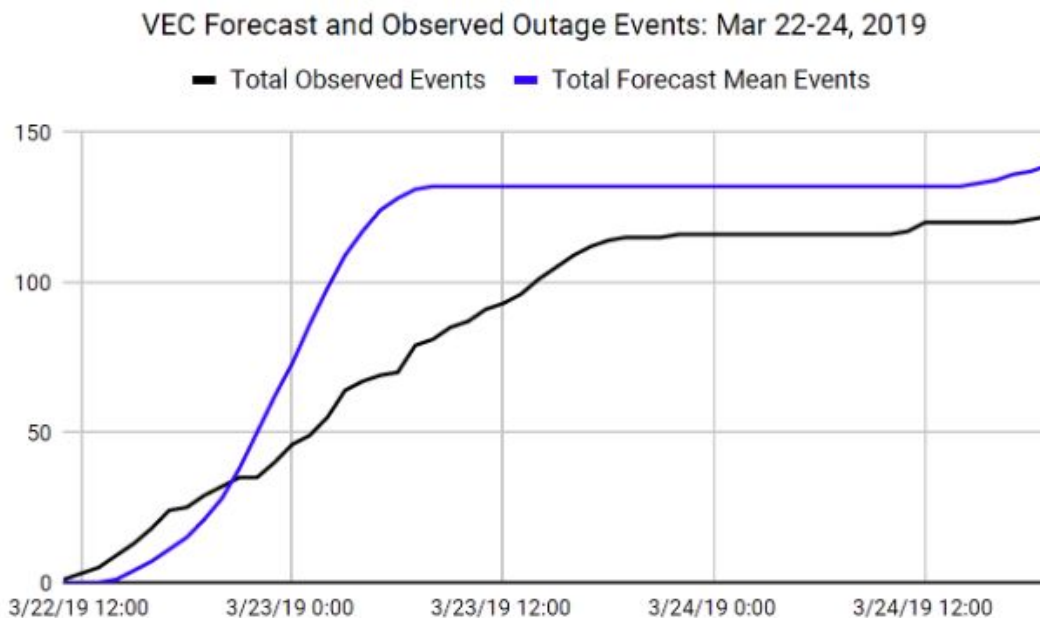
Lyndonville Electric - Starting 2019-04-25 20:00



**SkyRisk - Asset-Based Mapping:** Through GIS analytics we are able to sample all weather forecasts of wet snow, ice, precipitation, and wind onto overhead line information. This allows for clearer identification of critical risk areas. The below example highlight where southeast winds may downslope east of the Green Mountains (left) and a high-end scenario of total forecast rainfall (right) for GMP.



**Outage Risk - Outage Predictions:** Outage predictions are available for wet snow and ice. Outages are unique events, or truck rolls. These can be represented in map form across districts, data tables, and time series. The below example demonstrates the performance of the March 22 wet snow storm across VEC, showing forecast and observed outage events.



#### 4. Value and Benefits

Northview is passionate about helping you be smarter about weather, making the most informed storm planning and response decisions. In addition to our forecast products, we offer consultations with an operational forecaster around major storms, to help you understand forecast information and make the right decisions.

Weather prediction skill continues to advance with increasing accuracy. This accuracy is too reliable to ignore, and needs to be rigorously built into storm planning and response decision making.

**Value - crew management efficiencies:** Improved forecast accuracy and information relevance will translate to comparable savings of 10-20% by reducing false-alarm outside crew commitments and right-sizing the preparation for major storms. We understand this value scales better over larger areas, but smaller utilities can benefit from knowing when they should be ready or may be overwhelmed.

**Value - response to regulation:** Northview is creating new storm preparation and responding standards. Our forecast system will soon have the capability of doing rapid post-storm verification of our own system and third-party data. This will allow for root cause analysis of forecast errors. Such information will allow you to justify your storm-related decisions to regulating bodies. We anticipate building the capability of incorporating OMS data into verification metrics to learn from each storm and help retain this institutional knowledge.

**Value - asset performance analysis:** We anticipate with the integration of OMS data, the ability to better baseline how well your assets perform during a storm. This information will help you discover potentially weather-vulnerable areas across your system and take action.

**Value - customers:** Improved reliability and transparency of weather forecast information will help to improve customer/member satisfaction when managing storms.

We want to work with you to help you discover the value of knowing the future. Being well informed about the future is critical to maintaining and improving reliability. At Northview Weather we like to say that we are “the first responders to the future”.

# DRAFT

## Proposed Term Sheet for VELCO/DU Agreement with Northview

Concept	VELCO/DU comments	Northview Comments
<p>1. Parties</p>	<p>Northview Weather and VELCO as agent for participating DU's: VEC, GMP, Northfield and others TBD</p> <p><b>Decision Point</b> VEIC has expressed possible interest in certain products. Their pricing TBD.</p>	<p>Northview understands that VELCO will act as the agent for all DUs except BED.</p> <p>Any VEIC agreement will be separate from the current agreement.</p>
<p>2. Products [copied what is in VEC's contract. Highlighted is what VELCO just contracted for Tx icing only]</p>	<p><b>SkyRisk Products:</b></p> <ul style="list-style-type: none"> <li>• <b>Tier #1: (Geopolitical locations)</b> <ul style="list-style-type: none"> <li>○ Forecast maps – daily and hourly map images of snow, ice, and wind risks over VT &amp; NH</li> <li>○ Area precip risk: Area-based precipitation analytics over VT counties</li> <li>○ Area wind risk: Area-based wind analytics over VT counties</li> <li>○ Time series graphs at major cities and towns</li> </ul> </li> <li>• <b>Tier #2: (Service area based analytics)</b> <ul style="list-style-type: none"> <li>○ Area precip risk: Area-based precipitation analytics over VEC service areas</li> <li>○ Area wind risk: Area-based wind analytics over VEC service areas</li> <li>○ Time series graphs at customized point locations</li> </ul> </li> <li>• <b>Tier #3: (Distribution line based analytics)</b> <ul style="list-style-type: none"> <li>○ Asset precip risk: Asset-based precipitation risks over VEC distribution lines</li> <li>○ Asset wind risk: Asset-based wind risks over VEC distribution lines</li> </ul> </li> </ul> <p>All OutageRisk products include access to the full SkyRisk product line.</p> <p><b>OutageRisk Products:</b></p> <ul style="list-style-type: none"> <li>• <b>Tier #1:</b> Customized user alerting capabilities - users can specify risk thresholds for alerting email messages that embed essential information</li> </ul>	<p>Northview would prefer not to itemize given the inherent relatedness of the products being offered currently. As new products are developed, those products may be included within an existing Tier at no further cost, or may be a stand alone product that can be separately contracted for.</p>

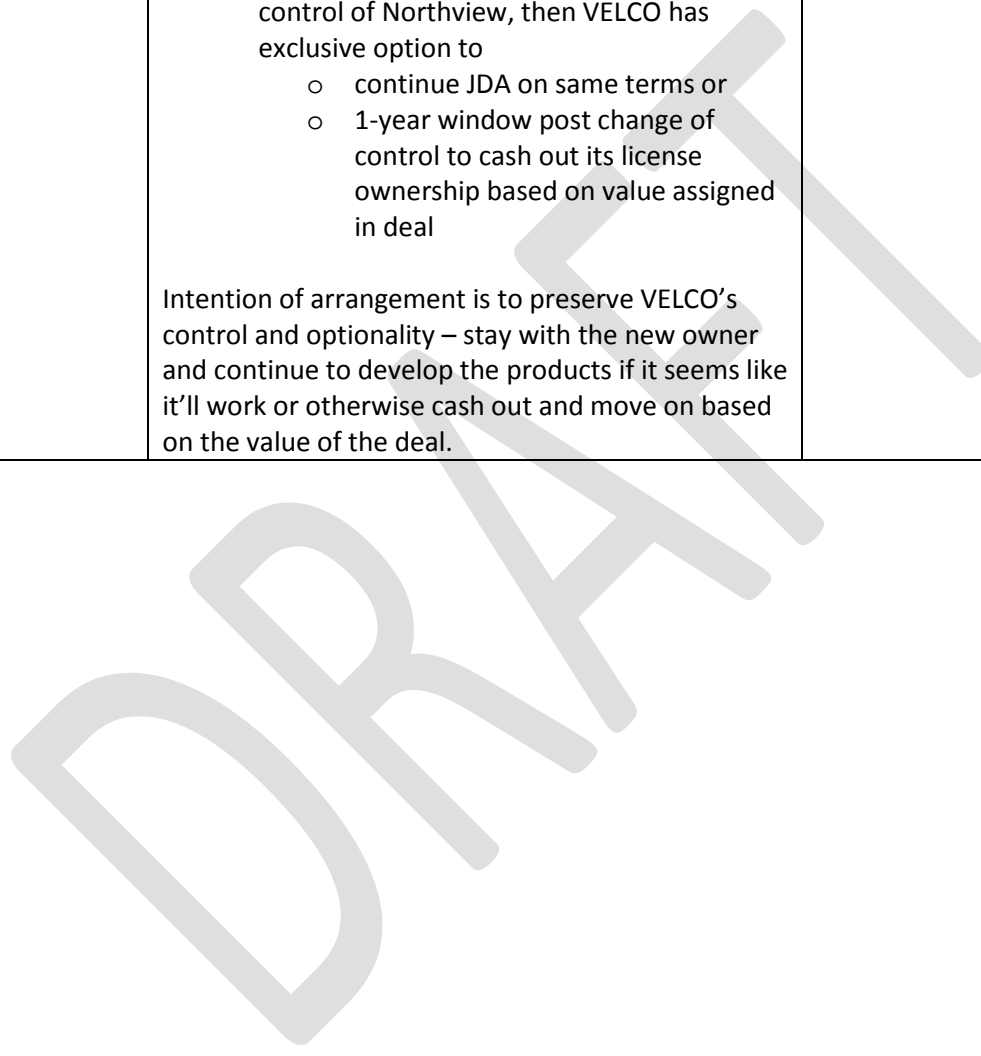


**DRAFT**

	<ul style="list-style-type: none"> <li>• <b>Tier #2:</b> Outage “event” forecasts for wet snow and ice using damage model version 1.0             <ul style="list-style-type: none"> <li>○ Event forecasts for VEC service areas and the entire VEC territory                 <ul style="list-style-type: none"> <li>▪ Magnitude: presented via user interface data tables</li> <li>▪ Timing: presented via time series graphs</li> <li>▪ Location: presented via the user interface mapping</li> </ul> </li> </ul> </li> </ul> <p><b>Tier #3:</b> (Experimental wind outage model for gradient wind events – available if and when the first version is developed)</p> <p><b>Discussion Point:</b> Can Northview do itemized pricing by product and by tier?</p>	
<p>3. Price</p>	<p>\$325,000 over 3 years to be allocated among DUs on total line mile ratio. Collective price based on Northview quote to individual DUs.</p>	<p>Northview understands that this would be reduced by \$1531 to exclude BED. The price should also include an additional \$15K in setup costs (this is less than typical as some of this work has already been completed).</p>
<p>4. Royalty</p>	<p>VELCO contract has perpetual royalty of 10% of all revenues Northview generates from ideas VELCO and DUs contributes pursuant to co-development agreements. We would want comparable mechanism re-scaled for contract price.</p>	<p>The 10% royalty figure will be a floor for any co-development agreement entered into by the parties. The 10% royalty will apply after \$100K in revenues are earned by Northview so as to cover development costs.</p>
<p>5. MFN</p>	<p>Utilities would want one here so that we would each be entitled to the benefit of any better term or offering which Northview provided to any customer or counterparty in any future agreement if we so desired.</p>	<p>Ok</p>
<p>6. SaaS vs license</p>	<p><b>Decision Point for DUs:</b>              UI was license. Current VEC and VELCO agreements are both SaaS. Northview open. Perpetual, irrevocable license should be capitalizable. Each DU should consult with their finance and accounting staff to assess whether DU needs to be signatory to</p>	<p>Northview is flexible; however, it appears inconsistent that the contract has a three-year term and that there would be a perpetual, irrevocable license. By definition, the</p>

# DRAFT

	contract to receive capital accounting if we go with license.	term of the license will be limited by whether there is a renewal by VELCO/DUs.
7. Change of control	<p>VELCO further executes</p> <ul style="list-style-type: none"> <li>• JDA under which products developed for utilities' use</li> <li>• Perpetual, irrevocable license to all those products</li> <li>• Non-transferrable unless on change of control of Northview, then VELCO has exclusive option to             <ul style="list-style-type: none"> <li>○ continue JDA on same terms or</li> <li>○ 1-year window post change of control to cash out its license ownership based on value assigned in deal</li> </ul> </li> </ul> <p>Intention of arrangement is to preserve VELCO's control and optionality – stay with the new owner and continue to develop the products if it seems like it'll work or otherwise cash out and move on based on the value of the deal.</p>	Ok.



Participating Utility	System Line Miles	%age	Cost (on \$325k)	Service Territory		
				(sq mi)	%age	Cost (on \$325k)
BED (excluding underground)	71	0.47%	\$1,531	10.30	100.00%	\$325,000
GMP (excluding underground)	11104	73.68%	\$239,449		0.00%	\$0
VEC	2574	17.08%	\$55,506		0.00%	\$0
WEC	1281	8.50%	\$27,624		0.00%	\$0
Northfield	41	0.27%	\$890		0.00%	\$0
		0.00%	\$0		0.00%	\$0
		0.00%	\$0		0.00%	\$0
		0.00%	\$0		0.00%	\$0
<b>Totals</b>	15071	100.00%	\$325,000	10.30	100.00%	\$325,000

## Memorandum

To: Board of Directors (Advisory & RM Committee)  
From: Ken Nolan, General Manager  
Date: 5/3/19  
Subject: **Agenda #7** – Virtual Peaker

VPPSA has been evaluating ways to implement load control in relation to Renewable Energy Standard Electric Vehicle and Cold Climate Heat Pump installations. Our research turned up a company called Virtual Peaker who has been working with GMP for several years and recently signed an agreement with VEC.

We have had several conversations with Virtual Peaker, and recently had a demonstration provided by GMP staff. The cloud-based software program appears to provide the functionality desired at a reasonable cost. It is designed flexibly to allow the program to grow and become more complex over time:

- 1) Start by using e-mail addresses to send peak time notifications
- 2) Add controllable devices (through a process similar to Bluetooth) one at a time
- 3) In the future provide a Bring Your Own Device (BYOD) program for customer self sign up
- 4) As the program grows implement algorithms to maximize benefits
  - a. Peak reduction
  - b. Energy arbitrage

GMP is also using this program to manage non-Tesla customer battery installations.

A program of this nature was contemplated as part of the RES program implementation by regulators. Before VPPSA proceeds to sign the contract staff would like to discuss the implementation with the committee to uncover any concerns.