NEPC, LLC

To: Vermont Pension Investment Committee

From: Doug Moseley, Partner

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Subject: Preliminary Analysis of Potential Impact of Energy Sector Divestment

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Overview

One of the most important concepts of retirement act legislation governing the investment of pension assets at all levels of the public and private sectors in the United States is that those assets be invested "exclusively in the best interests of plan participants." This language sharpens focus on strengthening the integrity of the retirement promise, so important to our economy and the welfare of both public and privately employed individuals.

In this environment of subdued returns and economic uncertainty, those provisions take on added importance, as most retirement programs are somewhat underfunded and the incremental contributions required in the future from employees and employers alike will tap increasingly into national, state and local budgets in the public sector and capital programs in the private sector, diverting funds that would otherwise be used for more productive economic endeavors.

VPIC Executive Summary

In this context, NEPC conducted a review of VPIC's Energy sector exposure, the historical return and risk characteristics of the sector relative to the broad market indices and the potential costs associated with divesting the related assets from the VPIC portfolio. Based on this analysis, we believe that the Energy divestment initiative, if enacted, will have significant implications for VPIC, including the generation of immediate transaction costs, increase in asset management fees, and most importantly a potential reduction in expected return (because the energy sector is forecasted to earn above market rates of return) coupled with a likely increase in portfolio risk (due to the higher concentration of the resultant portfolio) for the VPIC Policy portfolio going forward.

While the forward looking, long-term implications of this initiative are hard to quantify, NEPC's preliminary analysis conservatively indicates that VPIC could incur the following costs and forgone returns over the time periods indicated:

Category	Projected Cost*	Expected Range*	Frequency
Transaction Cost	$1,865,000	$1.4 m - $2.7 m	One-time
Management Fee Increases	$820,000	$525,000 – $1,115,000	Annual Estimate
Reduction in Exp. Return (Beta)	$6,050,000	$3.6 m - $8.5 m	Annual Estimate
Reduction in Exp. Return (Alpha)	$1,965,000	$1.6 m - $2.4 m	Annual Estimate

*Please see Assumptions for detail

In addition to these and additional costs that may be incurred, but were not covered in this analysis, NEPC believes that divesting of the energy sector will also impact VPIC's equity and total portfolio risk. Over various periods the energy sector has delivered both higher return and higher volatility, both of which have complemented the performance of the other market sectors and acted to reduce overall equity market portfolio risk. NEPC has not completed an analysis of the potential impact on overall portfolio risk or tracking error to the standard benchmarks as part of this preliminary analysis, but we will work with VPIC's managers to complete that analysis if the divestment initiative moves forward.

Based on our assessment of the potential negative impact outlined in this summary, NEPC recommends that VPIC not support the legislative initiative. Further as fiduciaries to the VPIC's individual retirement systems and their respective participants, NEPC recommends that VPIC consider seeking additional funding from the State of Vermont to cover the measurable costs and impact on return that we believe will negatively affect VPIC future investment results.

Overview:

The energy sector represents a significant portion of the global equity markets, representing approximately 11% of the S&P 500 (a measure of domestic capitalization), 8% for the MSCI EAFE (a measure of established international market capitalization) and 13% of the MSCI EM (emerging market capitalization) indices. Most of the energy companies in these indices are large cap (greater than $10 billion market cap) and most of them are focused on the extraction and production of fossil fuels. The smaller companies that are part of the Russell 2000 (small cap) Index are generally more focused on providing services and transportation to the larger companies in the sector.

Based on NEPC's assumptions regarding the VPIC portfolio's energy sector holdings, NEPC estimates that VPIC has exposure to approximately $120.8 million in energy sector equities and $20.6 million in fixed income energy sector securities.

Implications for VPIC

1) *Immediate Transaction Costs* – If forced to divest, VPIC would incur transaction costs, including commissions, market impact and transactions spreads as part of liquidating the energy sector securities and then repurchasing other securities from other sectors.

2) *Negative Impact on Manager Ability to Generate Excess Return* – In many cases the excess return achieved by VPIC's managers has come from stock selection in the energy sector

3) *Loss of True Passive Management* – A requirement that VPIC shift portions of its portfolio from low cost passive management to a customized approach that is effectively actively managed.

4) *Inflation Protection* – The ability of VPIC to structure a Policy portfolio that will provide protection during a period of global inflation or dollar devaluation if the energy sector is eliminated from the Policy portfolio.

5) *Ability to use Commingled Funds* – VPIC is currently using commingled funds to gain access to low cost passive management and to make allocations to products that require

larger size and scale to implement, including risk-parity, GAA, commodity and private equity investments. In several cases NEPC believes that existing VPIC managers may be unable or unwilling to offer separately managed accounts to accommodate an ex-Energy sector mandate. Therefore, as a result of this proposed initiative VPIC may be forced to make Policy and implementation (manager selection) decisions that could negatively impact expected return and volatility going forward.

6) *Ability to use Derivatives* – A mandate to divest from the energy sector may impact VPIC's and its managers' ability to use traditional market-oriented derivatives to maintain market exposure or hedge portfolio risk.

Unintended Consequences:

While there does not seem to be a clearly defined or measurable objective to the outcome of the initiative, should energy divestment become broadly accepted in the plan sponsor community the effort could result in unintended or collateral results, including the following:

1) *Increase in Energy Sector Expected Return* - capital flows away from the equity and fixed income securities of energy sector companies may result in more attractive pricing for those securities, thereby increasing their expected returns and potentially attracting other investors
2) *Negative Impact on some Clean Energy programs* – while higher fossil fuel energy prices may make renewable energy programs more economically attractive, many of the energy sector companies targeted also own and sponsor renewable energy companies, technology development and projects that could be negatively impacted.
3) *Higher transportation and food costs* – if the initiative is broadly accepted and results in higher fossil fuel prices those costs would impact the cost of food and most other consumer goods

Assumptions:

This analysis and the assumptions that NEPC relied on are an effort to provide VPIC with a framework to evaluate the potential costs of this initiative. The impact on actual expenses, portfolio return and risk will depend heavily on how a divestment requirement is interpreted and eventually implemented. The individual implementation decisions will have a significant impact on the variability of these projections.

<u>*Sector Exposure & Transaction Costs*</u> - For this analysis, NEPC reviewed the existing Energy sector exposure for the active and passive, US and Non-US equity managers (both separately managed and commingled). NEPC did not have access to a comprehensive list of energy sector fixed income securities, so we made assumptions regarding exposure to those securities following discussions with VPIC staff.

NEPC assumed that all of the separately managed Energy sector assets would have to be sold and a corresponding basket of securities purchased across the remaining market sectors. For commingled funds, we assumed that all of the commingled fund assets would have to be transitioned to separately managed accounts. As part of these potential transitions, NEPC made the following assumptions as they pertain to the underlying transaction costs for the affected securities:

Asset Class	Expected Transaction Cost Range	Assumption Used
US Large Cap	0.10% - 0.30%	0.20% (20 bps)
US Small-Mid Cap	0.15% - 0.35%	0.25% (25 bps)
Non-US Developed	0.25% - 0.45%	0.30% (30 bps)
Non-US Emerging	0.40% - 0.70%	0.50% (50 bps)
US Fixed Income	0.10% - 0.50%	0.30% (30 bps)

For the fixed income exposure, NEPC made the general assumption that the actively managed fixed income accounts (PIMCO) and high yield accounts held 3% of their portfolio in energy sector corporate securities. Further, we assumed that the Mondrian global fixed, Wellington Opportunistic EMD and the BlackRock TIPS Index did not include any meaningful exposure to the energy sector. Lastly, this analysis does not include any assumptions regarding the exposures or the need to divest from the commingled Hedge Fund, GAA, Commodities or Real estate products that are currently in place in the VPIC portfolio.

Management Fees – NEPC assumed that VPIC's management fees on passively managed equity assets ($424 million) would increase by 0.02% (2 bps) due to the need to transition to separate accounts and create custom, passive benchmark portfolios. For actively managed equity and fixed income assets with energy sector exposure ($1.47 billion) we assumed that fees would increase by .05% (5 bps) due to need for a transition to separate accounts and customized mandates that would be run differently than other client portfolios. NEPC did not assume that the energy divestment would have any impact on the Policy targets as part of this analysis.

Reduction in Expected Market Return (Beta) – For the total global equity portfolio holdings ($1.21 billion) NEPC assumed that VPIC would experience a reduction in annualized return from not holding the Energy sector assets of 0.50% per year on those assets, with the projected range of 0.30% to 0.70% included in the analysis. This assumption is in line with the historical impact of the energy sector over longer-term time periods, and close to the trailing 10-year annualized return impact of 0.6% calculated using returns provided by an index provider. Importantly, NEPC did not do any analysis of what a reweighted S&P 500 or MSCI EAFE Index would have returned without the energy sector results.

Reduction in Expected Manager Excess Return (Alpha) – For the total actively managed global equity portfolio holdings ($785 million) NEPC assumed that VPIC would experience a reduction in annualized excess return from not holding the Energy sector assets of 0.25% per year. This estimate is based on a review of the portfolio sector attribution over various periods for a sample of VPIC's active managers, so this should be considered highly subjective. While the contribution to excess return can certainly vary over short- and long-term periods, the Energy sector appears to be a key area where managers have been able to make active decisions to add excess return over the benchmark. NEPC did not make any assumption about the impact on the ability of the active fixed income managers to add value because the energy sector is a much smaller portion of their benchmark and overall opportunity set.

Scope of the Analysis

This analysis did not include any assumptions about how VPIC Policy targets would be adjusted to better balance the risk & return profile without the energy sector exposure. For the non-equity commingled fund products, including commodities, EMD, GAA and risk parity, NEPC did not assume that VPIC would be forced to divest from these strategies in order to eliminate indirect energy sector exposure that may exist. If VPIC was forced to divest from these strategies that would likely result in additional transaction costs and changes to VPIC's return and risk profile.

Our analysis did not make any assumption about the impact on the ability of the active fixed income managers to add value because the energy sector is a much smaller portion of their benchmark and overall opportunity set. NEPC's analysis did not examine companies outside of the energy sector that may also be involved in the production of fossil fuels. Finally, NEPC did not make any assumptions regarding the impact of managing additional separate accounts on custody costs.

Should this initiative move forward VPIC would need to clarify the scope and definition of the mandate to divest to clarify whether or not it will require VPIC to use separately managed accounts exclusively.