STATE OF VERMONT
PUBLIC SERVICE BOARD

Amended Joint Petition of Central Vermont Public Service Corporation, Danaus Vermont Corp., Gaz Métro Limited Partnership, Gaz Métro inc., Northern New England Energy Corporation for itself and as agent for Gaz Métro Limited Partnership's parents, Green Mountain Power Corporation and Vermont Low Income Trust for Electricity, Inc. for approval of: (1) the merger of Danaus into and with Central Vermont, (2) the acquisition by Northern New England of the common stock of Central Vermont, (3) the amendment to Central Vermont's Articles of Association, (4) the merger of Central Vermont into and with Green Mountain, and (5) the acquisition by VLITE of a controlling interest in Vermont Electric Power Company, Inc.	)	Docket No. 7770

SURREBUTTAL TESTIMONY OF
ASA HOPKINS
ON BEHALF OF THE
VERMONT DEPARTMENT OF PUBLIC SERVICE

MARCH 8, 2012

Surrebuttal Testimony
of
Asa S. Hopkins

Q. Please state your name and title.

A. My name is Asa S. Hopkins, and I am the Director for Regulated Utility Planning with the Vermont Department of Public Service ("the Department"). My responsibilities include direction of overall energy planning activities for the Department and the State of Vermont.

Q. Are you the same Asa S. Hopkins who submitted direct testimony on January 10, 2012?

A. Yes.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to respond to the rebuttal testimony of Mr. John Plunkett and Mr. Robert Griffin, both representing GMP. I also intend to provide conditional support for establishing an appropriately structured clean energy fund mechanism. I particularly focus on the overall structure of such a fund necessary to ensure that net benefits are delivered.

Q. Does the Community Energy and Efficiency Development Fund ("CEED Fund") proposed in Mr. Griffin's testimony meet the principles you described in your rebuttal testimony?

A. Yes, so long as protections are put in place to guarantee the ratepayer benefits. In my direct testimony, I described four principles, which can be summarized as: 1) rate class equity, 2) leverage private investment, 3) consider environmental and economic benefits, and 4) utilize existing delivery mechanisms. The CEED Fund as described in Mr. Griffin's testimony is a broad outline of a plan that could meet these goals if the details of the program design, shaped through oversight by the Board, were properly structured.

Q. Do you think the proposed CEED Fund meets the requirements of the order in Docket 6460 as an acceptable way to deliver net value to CVPS ratepayers, in fulfillment of CVPS's obligation?

A. With appropriate oversight, the proposed CEED Fund would fulfill CVPS's obligation. However, maximizing opportunities for additional value, beyond the $21 million invested, will require careful construction of the Fund's portfolio. The provision suggested by the Petitioners to return to the Board for further proceedings if the full value is not delivered within 7 years acts as a sort of guarantee, but I believe that the Board should also require a formal review process, preferably an independent review, after three years of operation in order to spur program changes at that time if the opportunity to deliver significant additional value is being lost. This three-year review should be in addition to Board review of annual plans, savings verification, and the other safeguards I describe later in my testimony.

Q. Is the CEED Fund proposal the best way to deliver benefits to CVPS ratepayers while abiding by existing Board orders?

A. I believe that investments in efficiency and clean energy measures will deliver maximal benefits to CVPS ratepayers in a manner consistent not only with the order in Docket 6460, but also as the Board previously implemented that order in Docket 7213. The proposed CEED Fund defines the purpose of the Fund in broad strokes and leaves program design decisions to the future. While this makes practical sense, it also leaves more uncertainty with respect to the value of the fund to CVPS ratepayers than I am comfortable with. Therefore, before approving a clean energy/efficiency fund proposal of any sort as the mechanism for delivering value to CVPS ratepayers, the Board should provide direction and structural guidance to increase certainty that the benefits will, in fact, be delivered. The Board should also set concrete requirements for the delivery of any value to ratepayers should the requisite value not be delivered by a date certain.

Q. What are the areas that require greater certainty regarding the proposed CEED Fund, in

your view?

A. I see several significant areas of uncertainty. First, and most significantly, the proposal currently lacks detail regarding the programs, projects, or financial tools that will be used to deliver value to CVPS ratepayers, and how these programs would deliver value to any particular classes of ratepayers. The proposal identifies four broad areas of investment, but does not indicate proportions of fund investment to be directed toward each. Mr. Plunkett's testimony addresses only the first (new and existing energy efficiency projects), offering helpful information describing the potential benefits of financial tools in addition to the "traditional" efficiency direct rebate or incentive programs, but adding no detail regarding precise investments.

Another area of some uncertainty is inclusion of societal or systemic benefits in the calculation of net benefits. As called for in the Board order in Docket 6460, net benefits are due directly and identifiably to CVPS ratepayers, at least in the amount of $16 million adjusted for inflation, although anything above and beyond that could be delivered to others more broadly. Petitioners' CEED fund proposal identifies benefits from avoided infrastructure investment, savings compared with similar technologies, environmental benefits, and economic development benefits as potentially included in the calculation of net benefits. These societal benefits accrue to both CVPS ratepayers and others; the relevant and necessary calculation will be the proportion of benefits to CVPS ratepayers specifically. This stands in some contrast to the ratepayer-funded efficiency programs run by the state's EEUs; these programs are not directed toward benefits for only ratepayers of a single utility.

It may be that the clearest way to calculate the net benefits is to first calculate and value site energy benefits, and then incorporate societal or systemic benefits where they can be clearly identified and assigned to CVPS ratepayers. To do this identification, a methodology would need to be developed to calculate the benefits delivered to CVPS ratepayers and the appropriate discount rate the present value of all costs and benefits to these ratepayers. Calculating only benefits to CVPS ratepayers, and using a relatively higher ratepayer discount rate, would result in fewer present value benefits per dollar invested than a more society-wide perspective, reinforcing the need to find Fund

investments that return high net value compared with their costs. It would likely, for example, require greater investment in thermal efficiency projects that tend to offer a higher monetary return than "but for" electric efficiency projects.

Q. Do these areas of uncertainty need to be absolutely resolved prior to the Board approving the CEED Fund or a similar fund proposal as part of this merger?

A. No. If the Board issues structural guidelines that guarantee the delivery of value to CVPS ratepayers, it would be appropriate to leave the details of the program design to subsequent participatory planning subject to Board oversight.

Q. Are these areas of uncertainty your only concerns regarding the proposed CEED Fund?

A. No. I am also concerned about the process that the proposed CEED Fund would use to determine its portfolio of investments. As described, the Company would propose projects which would then be reviewed through an undefined "stakeholder process." I would prefer a participatory model in which stakeholders are directly involved in early in the decision-making process regarding fund investments. Stakeholders often have a more accurate sense of the needs of particular classes of ratepayers than the Company is likely to have, and a better sense of what is likely to be effective in quickly delivering value to ratepayers.

Q. How does a fund of this sort deliver value to ratepayers? Could it deliver value greater than the $21 million required for CVPS ratepayers?

A. Yes, it certainly could deliver greater than the required value. The CEED Fund, as well as the existing GMP Efficiency Fund, would be designed to deliver the Board-ordered amount of value through the net benefits of efficiency (and in the case of CEED, other clean energy) investments. For example, if an efficiency investment returns $400 (present value) in benefits on a $200 up-front investment, of which $100 was provided by the Fund, and $100 provided by the property owner, then the net benefits are, at first blush, $200.

However, the actual calculation of the present value of the net benefits depends on

the discount rate assumed for the participant, and on the rate of return earned by the Company on the Fund investment.1 Under the assumptions detailed in the footnote, the present value of the ratepayer cost of our example's $100 Fund investment is about $126.2 Therefore, the net benefit delivered to ratepayers, as a whole, by this efficiency investment is actually $400-$100-$126 = $174.3 Thus, a $100 Fund investment becomes a $174 net benefit to ratepayers; this investment has demonstrated the power of efficiency and other cost-effective investments to deliver net value to ratepayers beyond the amount of the investment.

Of course, not all efficiency investments return gross 2 to 1 benefits-to-costs like this example. However, there are significant unmet efficiency needs that can exceed this ratio. For example, the recent Affordable Heat report (www.raponline.org/document/download/id/4439) shows that low-income weatherization can return about 2½ to 1 (in present value terms). Even if 100% of the cost were paid by a fund structured like CEED, these programs would return a net ratepayer value of about 1¼ times the fund investment.

Q. Please describe a bit more about the programmatic implications of delivering value to ratepayers through the net benefits from clean energy or efficiency investments.

A. Because value is being delivered to ratepayers through the net benefits of clean energy investments, investments that are only marginally cost-effective are not well suited to form a large portion of the Fund's portfolio. In other words, the Fund's portfolio as a whole must deliver value in excess of the size of the Fund investment. Some of the Fund's investments can underperform if others have a greater rate of return.

There are two main ways a Fund like this could find investments with large returns: 1) identify opportunities where the participant covers a larger fraction of the cost,

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1 For the purposes of my testimony, I assume that the Company's rate of return is 9.93% (GMP's current rate of return on equity), it is taxed at 41.35% (GMP's current marginal tax rate), and that the ratepayer's discount rate is 6.8%1. I will also assume that the Fund's investments in rate base are amortized over ten years, like the GMP Efficiency Fund investments.

2 This is a cost to all ratepayers of the Combined Company, not just a cost to CVPS ratepayers. Approximately 30% of this cost would be borne by GMP ratepayers, as part of the general obligations that all ratepayers bear for regulatory liabilities.

3 The net benefit to CVPS ratepayers, accounting for the costs borne by GMP ratepayers, would be about $230.

or 2) fund primarily those investments that return significantly more than $1 in benefits per $1 in up-front costs. Let us examine these two in greater detail and see what impact they have on program design.

If the participant covers a larger fraction of the cost, and the Fund covers less, while achieving the same benefits, the ratio of net benefits to Fund investment clearly increases. This is why one of the principles I described in my initial testimony was that leveraging private investment was a key component. Searching for higher-leverage opportunities like this does have real programmatic implications. In particular, it works best for participants with significant capital or ability to take on debt. Financial tools, such as a loan fund or a loan-loss reserve (such as the loan-loss reserve discussed in Mr. Plunkett's testimony), are prime examples of programmatic tools that do well on this measure because they use a small amount of fund expenditure to enable a much larger investment by the participant. Low-income participants who cannot put up significant capital or access credit would not be well served by such tools, however. On-bill financing, combined with a loan-loss reserve to broaden access to credit, could make high-leverage financing tools available and acceptable to moderate-income participants. Higher-income participants, or well-capitalized firms, could also be quite well served by these tools.

If the efficiency fund were to focus primarily on investments that return significantly more than $1 in benefits for each $1 in total costs, it could overcome low participant contributions while still delivering net value. However, this does have some programmatic implications: focusing attention on "low hanging fruit" counteracts a desire for comprehensiveness. Efficiency programs serving the low-income sector have a particular desire to treat each building comprehensively because they risk long delays before being able to return to do the less cost-effective work.

One other challenge raised by the desire for a fund like the proposed CEED Fund to maximize benefits per dollar of fund expenditure is that Efficiency Vermont is already well-capitalized and incentivized to provide electric efficiency services for the commercial and residential sectors. Screening for the CEED Fund should ensure that supported projects pass a "but for" test with respect to Efficiency Vermont's programs.

Program design for Fund efficiency investments should consider these programmatic implications and tradeoffs in the search for net value. Financing tools, such as a loan loss reserve with revolving loan fund, can address the desire to create high leverage, while thermal efficiency investments may be required to deliver significant net value while passing a "but for" test.

Q. What are some lessons we can learn from the GMP Efficiency Fund when it comes to understanding these tradeoffs in program design?

A. The GMP Efficiency Fund has been more successful at delivering net value to commercial ratepayers[4] than it has at delivering value to residential ratepayers. This is not surprising given that Efficiency Vermont's robust electric efficiency programs cover a larger fraction of the reasonably available cost-effective electric efficiency measures on the residential side, leaving relatively little remaining electrical efficiency that would pass a "but for" test. As a result, the GMP Efficiency Fund has made significant investment in thermal efficiency. While at the time of the order in Docket 7213 the Board noted its concern with such investments, the intervening years have shown that delivery of thermal efficiency measures to residential ratepayers (including low income) through means of a program such as proposed by this Fund can deliver real, positive, and otherwise unavailable benefits to ratepayers and therefore should be not only allowed but encouraged.

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4 Efficiency Vermont's commercial efficiency investments have not been able to cover as large a fraction of the available opportunities, so the GMP Efficiency Fund can provide net benefits through "piggy-backing" on these programs. This will, however, become more difficult in the future than it has been in the past because EVT's funding has increased. Efficiency Vermont is supposed to be pursuing, and funded to pursue, *all* reasonably available cost-effective efficiency. Additional commercial efficiency investments (other than through novel financing tools) through the GMP Efficiency Fund or a fund for the CVPS windfall should be directed at the marginal projects that Efficiency Vermont is not able to address. These marginal projects are likely to return fewer benefits per dollar invested, making careful program design essential to ensure that net value is delivered to ratepayers. The GMP Efficiency Fund has used a "mutual fund" model in which the fund is credited with a share of the savings from programs as a whole. While this means that the GMP Efficiency Fund is credited with the average rather than the marginal projects, the administrative simplicity of this (such as the avoided need to construct separate verification and evaluation samples) allows more GMP Efficiency Fund dollars to be spent on efficiency, delivering more net value to ratepayers than if only the marginal projects were assigned to the GMP Efficiency Fund. Using this model, it has been possible to quantify savings resulting from GMP Efficiency Fund investments and those due to baseline Efficiency Vermont programs.

Q. Is there enough efficiency potential, beyond that being reached by Efficiency Vermont through its ongoing programs, to effectively use CEED funds to deliver value through energy efficiency?

A. Yes, particularly if the fund uses tools beyond the standard Efficiency Vermont arsenal of programs already offered. I was heartened to see the Petitioners' proposal of high-leverage financing tools as a potential significant component of the CEED Fund portfolio. Also, if the fund is expanded to cover thermal efficiency robustly, there are significant unmet needs. The efficiency needs in low-income housing stock are also greater than in the residential sector as a whole; the community action agencies take the lead in delivering efficiency in these homes, but significant gaps remain and using CEED Funds to further the work of these agencies would be very positive.

Q. Given what you've said about your concerns with the CEED Fund as proposed, and the performance of the GMP Efficiency Fund, what guidelines or principles would you suggest adding to the proposal in order to increase confidence that sufficient net value would be delivered to CVPS ratepayers and that equity between ratepayer classes is maintained?

A. I would propose the following guidelines:

1) Total value form the fund should be delivered in rough proportion to the revenue from each broad ratepayer class (residential and commercial/industrial). This proportion is very close to 50/50. Note that Fund investments need not be split in that ratio in order to deliver proportionate value. If the return on investments in one class is lower, then additional funds may need to be invested there. The Fund should have the flexibility to "rebalance" between classes in order to achieve this proportionate value. This guideline is consistent with the Board's order in Docket 7213 that "Windfall Sharing should benefit all customer classes . . . [T]o ensure that all customer classes receive some value commensurate with the higher rates they paid as a result of Docket 6107, in designing and implementing its projects, we require that

GMP ensure that the benefits received by each customer class accrue in rough proportion to that class's revenue."

2) Residential funding should cover both programs serving low-income ratepayers and programs serving moderate- or high-income ratepayers.5 Low-income ratepayers lack the capital to make efficiency investments, often do not own their homes, and are unable to access credit. Programs that require low to no participant contribution are likely to be required to meet the needs of this class. Higher-income ratepayers are best able to take advantage of existing efficiency programs, such as Home Performance with Energy Star, and to own significant equity in their homes (and therefore are able to take advantage of PACE financing where available). As a result, programs directed at low- and moderate-income ratepayers are better able to pass a "but for" test. Moderate-income ratepayers may have the ability to borrow some funds for efficiency, although not at favorable terms, and can be debt-averse. They can take advantage of some level of incentives, combined with access to favorable loan funds (such as through an interest rate buy-down loan fund combined with loan guarantees and on-bill financing), to surmount barriers to increased efficiency.

3) Commercial funding should be allocated with at least 10% reserved for loans or grants to towns and schools and the remainder for other commercial efficiency projects. (I estimate that government buildings pay about 10% of commercial/industrial revenue6, and benefits they achieve result in either greater services delivered, or reduced taxes, either of which benefits taxpayers, and therefore ratepayers.)

4) For those portions of the Fund used to create value for moderate- and higher-income participants and businesses, particular emphasis should be given to providing financing tools though this fund that are not available otherwise, such as loan loss

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5 By low-income, I mean those ratepayers who make less than 185% of the poverty level, the definition used for eligibility for a number of state and federal assistance programs. I believe that about 1/3 of CVPS residential ratepayers fall into this category –roughly percentiles 0 through 35. By moderate income, I mean ratepayers in the middle third of the income distribution – roughly percentiles 35 to 70. By high income, I mean ratepayers in the top third of the income distribution – roughly percentiles 70 to 100.

6 Based on analysis of the 2003 Commercial Building Energy Consumption Survey results for New England buildings.

reserves (to expand access to credit), revolving loan funds (that buy down the interest rate on efficiency loans), and on-bill financing (that can overcome resistance to debt, such as that among moderate-income ratepayers). Such tools can be more clearly demonstrated to pass a "but-for" test than simple expansions of existing programs, and have the potential to deliver high ratios of net benefits to fund costs. On-bill financing is a particularly high-value component of the CEED proposal, and should be incorporated wherever loans or financing tools are applied, such as in moderate-income residential efficiency or in town or school buildings. Combined with a loan loss reserve, on-bill financing can allow access to credit for efficiency in sectors unreached by current programs.

5) Investments in renewable energy or in piloting or testing new programs are welcome, but can only be supported if the efficiency portion of the Fund is performing at or above its expected level, given the need to show positive net ratepayer value. Such projects will likely be appropriate as a portion of a varied portfolio that delivers the required net value to CVPS ratepayers.

6) Thermal efficiency projects should be a large fraction of the efficiency investments made by this Fund in order to deliver significant net value quickly. Given first that Efficiency Vermont is tasked with, and funded to achieve, all reasonable cost-effective electric efficiency, and second, Vermonters' demonstrated great need for thermal efficiency investments, these projects are likely to result in an increase in net benefits to ratepayers when compared with the marginal electric efficiency measures that would otherwise pass the "but-for" test. This is especially true if fund investments are to reach a wide range of ratepayers within each class.

My answers to the next few questions address the safeguards—such as measurement, verification, minimum requirements, and regulatory oversight—that the Board should apply to ensure that net value is delivered to ratepayers.

Q. What further analysis would be required during Fund implementation to provide sufficient confidence that energy efficiency expenditures are being properly directed?

A. As annual or multi-year plans are developed for clean energy/efficiency

investments, it would be critical to identify clear strategies and crisply identify the ways in which the windfall monies pass a "but for" test. Carefully quantifying the baseline Efficiency Vermont investment, and its return, would be critical in order to determine the additional value resulting from fund investments.

Q. How certain can ratepayers be that efficiency investments made and credited today will perform at the level required to deliver net value over many years?

A. The last several decades of ratepayer- and taxpayer-funded efficiency investments have been carefully measured, verified, and modeled. Established methodologies have increased the ability of regulators to ensure that value is being delivered. However, there always remains some uncertainty. What if electricity or fuel prices fall or rise dramatically in the future? Falling prices would mean that efficiency has saved less than expected (although complaints about falling fuel prices are rare!). What if interest rates rise, and with them the appropriate discount rate? To address these and other similar uncertainties, Efficiency Vermont is required to maintain an average benefit-cost ratio of at least 1.2 to 1. This provides a 20% buffer. The Board should consider requiring a similar minimum ratio of net value to fund investment (accounting for rate recovery costs) on average across the Fund's residential and commercial/industrial portfolios.

Q. Please describe the necessary regulatory oversight.

A. In the Board's order, it should establish clear principles for the use of the fund. The CEED Fund proposal correctly identifies performance monitoring as a key component. Verification of savings and the accurate calculation of net benefits would also be critical. To the extent that such verification can be captured within the Board's oversight of Efficiency Vermont, or within established oversight of other efficiency providers, administrative costs can be reduced, resulting in more dollars available for efficiency investment. The Board should devote careful attention to a fund's annual plans as well as to annual reports, savings and net benefit claims. A clear and agreed-upon methodology for calculation of net benefits, fund benefit obligations, and the return on fund investments through rates will be required.

Q. Please describe further any safeguards necessary to approve the CEED Fund or similar clean energy fund.

A. The Board should establish a framework for the windfall, in general, that assures little to no downside risk for CVPS ratepayers (and minimizes costs or risks for ratepayers of the Combined Company as well). A clear timeline, as well as milestones to verify the delivery of value, would help to ensure that the fund is performing adequately with a provision for refund of any undelivered value after a time certain. The Company should be responsible for delivering value, taking into account the early and continuing input of others in a participatory process. Changes to the program should be subject to Board oversight and open for comment by the Department and other interested parties.

Q. Please describe your concerns with the timeframe for delivering value to CVPS ratepayers through the proposed CEED Fund or a similar clean energy fund.

A. Roughly $21 million in net present value is due to CVPS ratepayers, should this acquisition and merger be approved. Given that the payoff from efficiency investments, in particular, can take some years to accumulate, I feel it is critical that Fund investments take place as quickly as possible. A target of 4 years or less, with an outside of 7 years to allow for hiccups along the way, would be appropriate. Given that the required benefit is expected to grow at the Company's weighted-average cost of capital after the approval, I expect that the Company also would have some incentive to deliver the value quickly. Ideally, the Company would begin investments in residential thermal efficiency before this next heating season, given the great need. A Board-directed review after 3 years, as I mentioned earlier, would spur the Fund to change direction if it is not on pace to deliver the required net value quickly.

Q. Does this conclude your testimony?

A. Yes.