

STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 5980

Investigation into the Department) Hearings Held in Montpelier:
of Public Service's proposed) January 22 & 23,
Energy Efficiency Plan) February 2 & 3, 1998

Order entered:

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I. INTRODUCTION

In 1990, the Public Service Board (“Board”) determined that there was a large potential for cost-effective energy efficiency measures that could reduce electricity consumption in Vermont. The Board ordered Vermont regulated electric and gas utilities to develop and implement comprehensive programs that would maximize the cost-effective acquisition of energy efficiency resources from their customers. The Board found that peak load reductions of more than 120 megawatts (“MW”) could be achieved by the year 2000.¹

In the eight years since that Order, Vermont electric utilities have worked, with varying degrees of effort and success, to acquire those customer energy efficiency resources. The evidence in this Docket demonstrates that despite significant achievements, Vermont electric utilities are unlikely to achieve the Board’s conservative estimate established in 1990.

The Department of Public Service (“DPS” or “Department”) estimates that in 1998 the total cost-effective energy efficiency potential is 1,315,000 megawatt hours (“MWh”), annually, with peak load reductions of 216 MW (winter) and 140 MW (summer). The DPS proposes a plan, "The Power to Save: A Plan to Transform Vermont's Energy-Efficiency Markets" ("DPS Plan"), to acquire over 207,000 MWh of this potential, with peak load reductions of 40 MW (winter) and 31 MW (summer), over the next five years. The savings are estimated to produce net benefits of \$86 million (1997 dollars) for Vermont residences and businesses. The DPS Plan would achieve these savings through seven “core” programs delivered by a statewide efficiency utility (“EU”) under contract with the Board. Vermont electric utilities would no longer have the responsibility to implement programs related to core program savings; however, they would continue to be responsible for acquiring efficiency savings from non-core programs and measures, as well as through distributed utility (“DU”) planning, pursuant to existing statutes and Board Orders.

The other parties to this proceeding have expressed different levels of support for the Department’s proposal.² While some are strong supporters, most of those who have actively

1. Docket 5270, Order of 4/16/90, vol. IV.

2. In addition to the DPS, the parties to this proceeding include: Central Vermont Public Service Corporation (“CVPS”); Green Mountain Power Corporation (“GMP”); Vermont Marble Power Division of OMYA, Inc. (“VM”); City of Burlington Electric Department (“BED”); a coalition of 14 Vermont municipal utilities located in the towns and villages of Barton, Enosburg
(continued...)

participated have questioned the appropriateness of creating a new, statewide entity that would supercede utility efforts in the several program areas. Other concerns have been raised regarding specific elements of the DPS Plan, including the methodology and values developed by the DPS to evaluate the cost-effectiveness of its proposed programs.

This Order concludes that there is a very strong likelihood that the DPS Plan will acquire significant cost-effective energy efficiency resources and provide substantial net societal benefits. Furthermore, the evidence shows that the total net benefits are highly likely to exceed the benefits that would otherwise be achieved through electric utility efforts absent the DPS Plan. These additional benefits will be realized through two key attributes of the Department's proposal. The first is the greater efficiency and effectiveness of statewide core programs implemented through a single entity. The second is the absence in the statewide entity of the conflicting goals present for cost of service regulated electric utilities: the difficulty of aggressively reducing energy consumption while maintaining electricity sales at a level that assures sufficient revenue recovery and minimizes future rate increases.

There are significant details that remain to be resolved regarding the exact structure, oversight, responsibilities, and operation of the proposed efficiency utility. These issues will be addressed in Phase II proceedings in this Docket. At this time, the evidence is persuasive that, in order for Vermont citizens, businesses, and industry to realize the maximum cost-effective savings associated with reduced energy consumption, a new approach is needed. This Order is a first step in defining that new approach.

2(...continued)

Falls, Hardwick, Hyde Park, Jacksonville, Johnson, Ludlow, Lyndonville, Morrisville, Northfield, Orleans, Readsboro, Stowe, and Swanton ("14 Municipals"); Washington Electric Cooperative, Inc., ("WEC"); Rochester Electric Light & Power Company ("Rochester"); Vermont Electric Cooperative, Inc. ("VEC"); Citizens Utilities Company ("Citizens"); Vermont Natural Resources Council ("VNRC"); Vermont Public Interest Research Group ("VPIRG"); Vermont Energy Investment Corporation ("VEIC"); International Business Machines Corporation ("IBM"); Vermont Electricity Consumers Coalition ("VECC"); Vermont Ski Areas Association ("VSAA"); Vermont Chamber of Commerce ("VCC"); Vermont Independent Power Producers Association ("VIPPA"); Vermont Office of Economic Opportunity ("VOEO"); Vermont Development Credit Union ("VDCU"); Vermont Housing Finance Agency ("VHFA"); American Skiing Company ("ASC"); Conservation Law Foundation ("CLF"); Lake Champlain Regional Chamber of Commerce ("LCRCC"); and Associated Industries of Vermont ("AIV").

II. PROCEDURAL HISTORY

On May 23, 1997, the DPS filed a proposal entitled "The Power to Save: A Plan to Transform Vermont's Energy-Efficiency Markets". The DPS requested that the Board approve the DPS Plan and authorize the creation of an Efficiency Utility ("EU") to deliver the core programs identified in the DPS Plan.

On June 17, 1997, a Prehearing Conference was held before Paul R. Peterson, Esq., the Board-appointed Hearing Officer. A schedule was established for filing briefs on the issue of the Board's jurisdiction to review, approve, and order implementation of the DPS Plan. Order of 7/9/97.

On July 30, 1997, a status conference was held to review motions to intervene and to establish a schedule. A Status Conference Order approving all requests to intervene and setting a schedule was issued on August 29, 1997.

On October 1, 1997, an order confirming the Board's jurisdiction to review, approve and order implementation of the DPS Plan was issued.

Beginning in October 1997 and continuing through the technical hearings in January and March of 1998, numerous objections to discovery and motions to strike testimony were filed.

On November 13, 1997, a duly noticed public hearing was held at Vermont Technical College in Randolph, Vermont.

On November 14, 1997, a status conference was held; a revised schedule was issued on November 21, 1997. A further revised schedule was issued on December 4, 1997.

On January 15, 1998, a procedural order was issued that created two phases to this docket. Phase I would determine the need for energy efficiency services and how they could be most efficiently and cost-effectively provided. Assuming that Phase I resulted in a Board order that established a statewide energy efficiency utility, Phase II would focus on how the new entity would be structured.

On January 22-23 and February 2-3, 1998, technical hearings were held in Phase I. Briefs on Phase I issues were filed by all parties on or before February 24, 1998.

Based on the parties' testimony, exhibits, and other evidence in this Docket, I hereby report the following findings and conclusions to the Board in accordance with 30 V.S.A. § 8.

III. FINDINGS OF FACT AND DISCUSSION

A. Vermont Energy Efficiency Programs

1. Goals and Standards

1. In 1990, the Board concluded that Vermont electric utilities should, at a minimum, achieve peak load reductions of significantly more than 120 MW by 2000 through comprehensive and cost-effective energy efficiency programs. Docket 5270, Order of 4/16/90, Vol. IV at 6.

2. In 1990, the Board also concluded that substantial market barriers prevent consumers from adopting societally cost-effective end-use efficiency improvements. Among the market barriers identified by the Board were customers': limited access to capital; split incentives; real and apparent risks; and inadequate, conflicting, and expensive data. Docket 5270, Order of 4/16/90, vol. II at 49-57, vol. III at 19, 24-27.

3. Market barriers lead to market failure and inefficient markets. From a societal perspective, market barriers lead markets to under-allocate capital to energy efficiency. The market thereby fails to produce the economically optimal level of energy services, both supply and demand. Energy-efficiency market barriers or market imperfections cause this market failure. Plunkett pf. at 9.

4. A powerful array of persistent market barriers prevents consumers from choosing economically optimal energy efficiency investments. Without market intervention to overcome these market barriers, Vermont will suffer needlessly high energy service costs. Failure to intervene in the market to lower energy-service costs will lower Vermonters' standard of living. It will also make Vermont business less competitive in regional, national, and global markets. *Id.* at 4.

5. Market barriers are most severe with respect to potential lost opportunities such as new construction and equipment replacement. In those instances, the opportunity for comprehensive and optimally cost-effective energy efficiency investments are significant but short-lived. Without market intervention, these opportunities are lost for the life of the new buildings or equipment. Exh. DPS-1 at 16.

6. The ability of market intervention to overcome market barriers creates the potential for cost-effective demand-side investment. Market barriers are so strong and so pervasive that almost every utility customer is likely to have some potential for cost-effective efficiency investment. *Id.*

Discussion re: Goals and Standards

In its investigation in Docket 5270, the Board determined that there was a large and significant potential for cost-effective improvements in electrical energy efficiency among all Vermont consumers. The Board also determined that substantial market barriers prevent consumers from implementing many of these improvements. The final order in the main proceedings in that Docket adopted the Hearing Officer's recommendation that Vermont's electric and gas utilities should have the primary responsibility for developing and implementing energy efficiency programs for their customers. In an effort to encourage utility implementation of comprehensive, cost-effective programs that maximize energy efficiency savings, the Board adopted mechanisms to create financial incentives, and reduce disincentives, to such utility actions.³

In 1991, the Vermont legislature enacted 30 V.S.A. § 218c. That statute reiterated the Board's mandate in Docket 5270 that regulated electric and gas utilities acquire all cost-effective energy efficiency resources from all customer classes through the development of comprehensive programs as part of a least cost integrated plan ("LCIP").

Thus, for the past eight years, Vermont electric distribution utilities have been responsible for designing and implementing programs that will overcome the market barriers that impede the adoption of cost-effective energy efficiency measures for those utilities' customers. The evidence in this Docket demonstrates that those market barriers continue to inhibit customer acquisition of cost-effective energy efficiency measures, and that there persists a strong public interest in programs that overcome those barriers.

2. Utility Achievements

7. Electric utility energy efficiency programs from 1992 through 1996 achieved 202,835 MWh of savings, from both retrofit and lost opportunity programs,⁴ which represents

3. See, Order of 4/16/90, vol. I at 2-5, vol. III at 24-32, 154-156.

4. While the distinctions can sometimes get blurred, in general, retrofit programs replace existing, functioning energy end uses (such as a lightbulb) with a new, more efficient product; lost opportunity programs encourage the adoption of high efficiency products or designs for new uses (such as a new building) or the replacement of non-functioning equipment (such as a burned-out motor).

a 4 percent reduction in 1995 total MWh sales. Cumulative peak savings over this same five-year period were 49 MW, a 4.8 percent reduction in 1996 peak demand. Exh. DPS-1 at 14.

8. Utility energy efficiency programs have demonstrated not only that market barriers can be overcome, but also that the costs of market intervention are far less than the benefits estimated from energy savings. Plunkett pf. at 10.

9. Utility expenditures (\$19 million) and annual savings (55,813 MWh) both peaked in 1993. Since 1993, utility expenditures and savings have steadily declined. Exh. DPS-1 at 14-15.

10. CVPS, GMP, and Citizens have not only dramatically lowered DSM spending in recent years, they also have significantly underspent DSM budget amounts to which they previously agreed. Parker reb. at 16; exh. DPS-SHP-R12.

11. With few exceptions, utilities have failed to demonstrate a sustained creative approach to identifying and securing efficiency resources; and in some instances they have acquired few resources at all. This is true even though most Vermont electric utilities have implemented energy efficiency programs which have secured real savings that benefit the customers, utility, and society alike. Parker pf. at 12-13.

12. Utilities frequently hold to approved or established program designs until monitoring and evaluation or changes in avoided costs suggest that aspects of the program are not cost-effective. At such times, the utilities often respond by cutting measures or services or dropping the program altogether rather than by developing new program components and new strategies that will *increase* program effectiveness and savings. *Id.*

13. The fragmentation of Vermont into different service territories has created market barriers to DSM as a consequence of customer and trade ally confusion caused by having varying programs in different service territories. It is a disincentive to customer and trade ally participation that they must absorb the burden of sorting out differing utility program requirements and incentive schemes. This is particularly the case with customers that have facilities in multiple service territories or vendors and designers who work region-wide. In addition, markets for efficiency are statewide or, more likely, region-wide; utility service territories do not generally coincide with these more natural economic regions. *Id.* at 15.

14. A significant obstacle for utilities to pursue energy efficiency for their customers is the utilities' profound resistance to going out and aggressively reducing sales. *Id.*

15. In 1990, the Board adopted a policy to compensate utilities for reduced sales due to energy efficiency programs called the Account Correcting for Efficiency ("ACE"). ACE recognizes so-called "lost revenues" between rate cases.⁵ Docket 5270, Order of 4/16/90, vol. IV at 17-21.

16. ACE provides a mechanism for utilities to recover lost revenues between rate cases. It does not fully compensate a utility for the long-term impacts of reduced sales. Tr. 1/23/98 at 201-202 (Plunkett).

17. In Dockets 5701/5724, the Board imposed a 75-point basis penalty on CVPS's rate of return on equity in part because of "serious problems . . . as to the design and performance of many of the Company's [DSM] programs." Dockets No. 5701/5724, Order of 10/31/94 at 170-71.

18. The history of fuel-switching issues, as exemplified in the record of Dockets 5270-CVPS-1 & 3 and 5686, also demonstrates the difficulties encountered with distribution utility DSM. Those cases were marked by protracted and contentious litigation with respect to whether CVPS could and would be ordered to engage in a program to switch customers off electric space heat to other fuels where such switches were societally cost-effective. It is reasonable to infer that the sales reduction disincentive to DSM played a role in CVPS's opposition to the potential consumption reduction represented by fuel-switching. Steinhurst pf. at 6.; Dockets 5270-CVPS-1 & 3, 5686, Order of 9/4/96 at 12-13; Dockets 5701/5724, Order of 10/31/94 at 148-152.

19. With respect to Citizens, the Board recently concluded that:

Citizens has failed to meet the requirements of 30 V.S.A. § 218c and our Orders in Docket 5270 for the subset of its DSM programs described in the above findings. Among the shortcomings noted are the following: the programs have not been prudently designed and administered; the programs have failed to meet the savings kWh targets and objectives set out by the Company itself; reasonable incentives to overcome market barriers were not provided; and there have been no attempts to deliver fuel-switching services. In addition, with respect to overall mismanagement of the Company's DSM programs, the impact of such failure is that Citizens' ratepayers are paying more in power costs than they would have had the Company fulfilled its responsibility under the law to capture all cost-effective

5. Lost revenues are the net revenues that a utility does not realize due to the reduced consumption of electricity directly caused by the utility's efforts to encourage customer implementation of energy efficiency measures.

energy savings. This is not consistent with prudent utility practice and violates both the letter and spirit of Vermont law.

Parker reb. at 15-16, *citing* Dockets 5841/5859, Order of 6/16/97 at 221-222.

20. In a recent GMP rate case, GMP's DSM programs were extensively litigated. The Board concluded that, although GMP had designed and implemented its energy efficiency programs in a manner consistent with its settlement agreements with the DPS, GMP had not operated its programs to acquire all cost-effective DSM resources in its service territory. Specific findings supported the disallowance of some program costs and ACE accruals. Docket 5983, Order of 2/27/98 at 124, 144-148.

21. In Docket 5983, the Board also reviewed GMP's compliance with Condition 8 of the Vermont Joint Owners contract with Hydro Quebec.⁶ The Board concluded that:

[T]he evidence in this docket does demonstrate that in certain instances the Company operated its programs to meet a minimum standard of compliance with the MOUs, but no more. . . . As stated above, merely operating cost-effective programs is *necessary*, but not *sufficient* to satisfy a utility's obligation to provide least-cost energy services to its customers. . . .

[I]t appears to us that, after a decade of effort, the level of DSM achievement is less than Vermont's rigorous standards require. The Company has performed adequately and, in comparison to utilities across the nation ranks highly. However, the evidence we have heard in this and many other dockets persuades us that the potential for cost-effective investments in energy efficiency in Vermont greatly exceeds GMP's achievements to date. GMP's commitment to the Contract has created a powerful disincentive to the more aggressive pursuit of DSM measures.

Order of 2/27/98 at 260, 262.

22. The 14 Municipals have, as a group, achieved significantly less MWh savings than the statewide average of 4 percent of MWh sales. Through 1996, the nine members of VPPSA achieved energy efficiency savings of 2.6 percent of MWh sales, and only 37 percent of their targeted savings. The five non-VPPSA municipals achieved even less savings, as a percent of sales, through 1996. Parker reb. at 14-15.

23. BED and WEC have achieved savings from energy efficiency programs well above the statewide average. Through 1996, BED had achieved MWh savings of 11-14 percent of its

6. Condition 8 states that each Vermont utility accepting power under the contract shall develop and implement measures to acquire all resources available from cost-effective energy efficiency programs, consistent with the Board's Order of 4/16/90 in Docket 5270.

annual MWh sales; WEC had realized MWh savings of 9.4 percent through the same time period. Docket 5983, Order of 2/27/98 at 262 fn. 483.

24. Utilities have a continuing obligation to go beyond savings targets, to identify new opportunities, and to adopt new strategies and initiatives. Most utilities tend to set savings targets which are quite conservative and then claim success, notwithstanding that savings targets are not the final word on the utilities' obligation to pursue all cost-effective DSM. These utilities are claiming success because they met an arbitrary target. Parker reb. at 16-17.

25. A May 10, 1996, memorandum by GMP's present DSM manager, commenting on an internal evaluation of GMP's Mad River Valley program, provides disturbing insights into GMP's DSM performance. Among other things, the memorandum states:

GMP was telling the public we wanted to deferred [*sic*] the cost of a T&D upgrade to save money for its customers. The least cost way to do that was to fuel switch customers but internally we did not want to fuel switch any more customers than we needed to make the goal we filed with the DPS.

Exhibit DPS-Cross-7.

26. Over the past few years, the DPS has established multi-utility working groups to explore the concept of statewide core programs. Program development so far has been exceedingly slow. The effort to reconcile individual utility positions frequently overwhelms the potential efficiencies of coordination. Funding issues run the risk of paralyzing collective decision-making. Implementation contractors are burdened with multiple — sometimes divergent — contracts to deliver the same program, and are subjected to contract management by committee. New initiatives are slow to be developed since any new undertaking requires lengthy negotiation and any one utility can effectively block action, or at least cripple it. As a result, specific opportunities are missed and greater opportunities for program improvements such as those outlined by the Department in the Plan, Section 6.4, are not being voluntarily implemented. Parker pf. at 9; reb. at 16-17.

27. These utility working groups' efforts so far have succeeded in getting only a few key utilities to work together. Most of Vermont's smaller utilities are not currently participants in these efforts and, depending on the program, even some of the larger utilities are at very different levels of cooperation and participation. Parker pf. at 9.

28. Every day of delay results in more lost and missed opportunities both with regard to specific projects and new measures, and with regard to whole customer segments that can be reached effectively only by new initiatives. In addition, both GMP and CVPS substantially underspend even the relatively low budgets they currently have committed for DSM. Parker reb. at 18.

29. There are many specific examples of the above-described lack of cooperation and delay. A few of these examples follow:

(a) The New England Energy Project is developing a New England-wide promotion for very efficient horizontal axis clothes washers. Vermont has in place nothing like the Efficient Products Program proposed in the Plan which would be the logical entity to coordinate Vermont's participation in this effort. Presently, in order for Vermont to participate in the regional effort, each utility has to decide on its own whether it will join the project. While Vermont's share of the cost of the regional project would be relatively small, each utility has to determine if it can find the money for this effort. The chance to participate in this New England effort may pass by before Vermont utilities can decide to participate in a coordinated manner.

(b) Although the Large, Multi-Family Housing Program described in Appendix 3 of the Plan (Low-Income Core Program, pp. 5-6) is in operation, it is severely hampered by requirements of multiple screenings by individual utilities using different avoided costs, by inconsistent contribution methods by different utilities,⁷ by non-participation of a number of utilities, and by an overall level of utility funding well below what is proposed by the DPS in its Plan. In addition, no consistent approach to improving the "piggybacked" electric efficiency services for the single-family component of this program has been undertaken.

(c) In the multi-party Commercial and Industrial New Construction working group, a program component agreed to in concept by all parties is the hiring of engineers to inspect Act 250 installations. The DPS has, with the participation of the group, issued an RFP, selected potential contractors, written contracts, and is now waiting for agreement from utilities that they will pay the agreed-upon portion of the cost of inspections done within their service territory. Although the DPS has repeatedly asked utilities to indicate their agreement to reimburse the DPS for such services, such agreements have not been provided to the DPS, and this program component has not been advanced.

7. For instance, CVPS pays its annual contribution to the program in a lump sum at the beginning of the year. GMP pays on a quarterly basis, and BED pays reimbursement for specific measures on a project-specific basis. Parker reb. at 19.

(d) DPS staff recently devoted significant effort to help the Commercial and Industrial Market Opportunities Program update the structure of its incentive offer for prescriptive lighting and motors projects, and coordinate prescriptive efforts with a more aggressive, comprehensive approach for replacements and renovations. Disagreement by BED and other parties over the structure of the lighting incentives, and reluctance by various parties to develop a coordinated, aggressive “custom” track for the program has led to an apparent setback in that effort.

The significance of these examples is that they illustrate that what *could* be getting done is *not* getting done; that the multi-utility approaches to Core Program efforts are falling far short of reaching the scale of effort and level of penetration proposed in the Plan. *Id.* at 18-20.

Discussion re: Utility achievements

In this Docket there is substantial evidence that utility DSM efforts since the Board's Order of April, 1990, have failed to achieve, and are unlikely to achieve, the level of cost-effective energy savings that could be acquired with intensive, comprehensive programs.⁸ Vermont's three largest investor-owned utilities, in extensively litigated and contentious proceedings, have had specific program designs criticized and savings estimates disallowed in recent rate cases. The Board has raised questions regarding those utilities' commitments to the goal of fully integrating demand-side measures with supply-side investments to provide energy services at the least cost to society. Utility investment in energy efficiency measures has declined substantially in the last few years. Many municipal utilities were slow to begin implementing energy efficiency programs and have never devoted the equivalent resources, on a percentage basis, of their investor-owned counterparts.

This is not to say that the approach adopted by the Board in 1990 has been a failure. Vermont utilities have achieved significant savings, delivered cost-effective programs, and have overcome many market barriers to implementation. Despite some success, however, Vermont utilities have not demonstrated a commitment to maximizing energy efficiency savings for their customers. A key component of this failure is the disincentive for utilities to continually reduce

8. As discussed at the technical hearings, the findings and conclusions reached in this Docket are for the purpose of evaluating the appropriate future course for energy efficiency programs in Vermont. The issues regarding a utility's success or failure with its energy efficiency efforts, and the consequences for recovering particular costs in rates, will be resolved in a separate, utility-specific proceeding. Tr. 1/22/98, vol. I at 38-41, 58-59, 61-62, 72-73.

electricity sales on an annual basis. While the ACE mechanism allows utilities to recover the revenues that are lost between rate cases due to utility energy efficiency efforts, utilities may experience negative consequences due to the long-term impacts of reduced sales. If a utility has unavoidable commitments to supply resources and simultaneously acts to sell less electricity to its customers, rates will have to be increased to recover sufficient revenues. Higher rates may discourage current consumption, business plans to expand activities, and decisions by new entities to locate in the utility's service territory. This disincentive to reduce electricity and gas sales exists for all of Vermont's regulated electric and gas utilities whether they are non-profit or for-profit corporations.⁹ Despite these potential negative utility impacts, it is important to remember that, on a *societal* basis, net benefits will increase through the implementation of cost-effective measures. Also, individual ratepayers who implement measures are likely to see bills decrease, or stay the same, even if rates increase.¹⁰

3. The DPS Proposal

30. The DPS estimates that in 1998 the total cost-effective retrofit energy efficiency potential for Vermont is 1,315,000 MWh, annually. This estimate represents 21.6 percent of the total estimated 1998 Vermont electric consumption. The DPS estimates peak load reductions of 216 MW winter and 134 MW summer. If this potential was acquired overnight, it would produce net benefits to Vermont consumers of \$463 million (1997 dollars) with a societal benefit-cost ratio of 1.74. Exh. DPS-1 at 54; Mosenthal pf. at 5.

31. The Plan proposes seven core programs, primarily lost opportunity programs, that are estimated to achieve 207,288 MWh of savings (net of free riders), with peak load reductions of 40 MW winter and 31 MW summer, over a five-year period. Net societal benefits are estimated at \$86 million. The overall benefit-to-cost ratio of the seven programs is 1.87. Exh. DPS-1 at 74-76.

9. It is important to note that a utility's reluctance to reduce sales is, in most cases, an understandable utility response to the current cost of service regulatory structure. It is a significant market barrier that *utilities* must overcome in order to develop programs that maximize savings and net benefits to society.

10. See, Docket 5270, Order of 4/16/90, vols. III & IV.

32. At the end of five years, the Plan estimates that the remaining cost-effective retrofit energy efficiency potential, net of core program savings and naturally occurring savings,¹¹ will be 1,014,656 MWh. This estimate does not include savings from distribution utility efforts in non-core program areas. *Id.* at 55.

33. It is unlikely that competitive electricity markets will weaken, eliminate, or overcome energy efficiency market barriers. The regulated utility industry did not give rise to these barriers; they are prevalent in all energy-consuming building, equipment, and service markets. These barriers exist regardless of the structure of utility regulation. Plunkett pf. at 13-14.

34. The infrastructure costs of developing and delivering energy efficiency programs are likely to be less for a single statewide entity than twenty-two separate distribution utilities.¹² In addition, the combined infrastructure costs for implementing core and non-core programs is likely to be less through the use of a statewide entity for the core programs as compared to twenty-two distribution utilities implementing both core and non-core programs. Tr. 1/23/98 at 182-185 (Plunkett).

Discussion re: DPS proposal

The DPS proposal in this docket for a statewide efficiency utility, as described above, has three important elements:

- (1) it focuses on lost-opportunity programs and two critical retrofit programs for dairy farmers and low-income Vermonters;
- (2) it seeks to achieve greater program efficiency through a statewide approach to program development and delivery; and
- (3) it avoids the fundamental disincentive that applies to all utilities, the reluctance to reduce electricity sales.

Lost-opportunity programs try to acquire energy efficiency resources at the time of construction or replacement of buildings and equipment. If not acquired at the outset, many of these energy efficiency opportunities become non-cost-effective for acquisition at a later time. An

11. Naturally occurring savings refer to energy efficiency savings that occur without any direct intervention by a utility or other outside entity.

12. The DPS Plan does not specifically address how Vermont's single regulated gas utility would be included in or, encouraged to participate in, the core programs. This issue can be addressed in Phase II.

instructive example is building insulation: if a building is constructed with 4-inch wall cavities to accommodate 3.5-inch insulation, it would require extensive physical changes at great expense to accommodate 6-inch insulation at a later time.

Statewide programs are very likely to achieve savings in the costs for developing, implementing, and monitoring energy efficiency programs. Additional savings come from reduced confusion among consumers and trade allies as multiple, similar (but different) utility programs are combined into one statewide program with the same application process, fees, incentives, and options for all Vermonters.

Most importantly, the EU proposed by the DPS would not be concerned with the reduced electricity sales that would occur through successful, comprehensive programs. The EU would have a unilateral commitment to reduce electricity consumption through cost-effective programs, regardless of the impacts on specific utility's revenues.

I conclude, based on improved efficiency and effectiveness from statewide implementation, that an EU is likely to deliver benefits to the ratepayers of Vermont's regulated electric and gas utilities through the implementation of comprehensive, cost-effective energy efficiency programs. I further conclude, based on the absence of an incentive to maintain or increase electricity sales, that the benefits achieved from EU programs are likely to exceed the benefits that Vermont's distribution utilities would achieve through individual or coordinated utility implementation of the core programs.

On a related matter, I also conclude that energy savings achieved through the EU should not be eligible for ACE for individual distribution utilities. ACE was designed to remove a disincentive for *distribution utilities* subject to cost of service regulation to acquire energy efficiency resources from customers and, thereby, reduce electricity sales. Since the distribution utilities will not be responsible for acquiring the energy efficiency resources that the EU programs achieve, that disincentive does not exist. A utility should not be compensated for revenues lost due to reduced sales of electricity from programs that it does not, itself, operate.¹³

13. If a distribution utility's customers implemented energy efficiency measures without any assistance from the utility, the utility could not claim ACE for the reduced sales of electricity. Similarly, if a separate entity encourages a utility's customers to implement energy efficiency measures, those savings would not be eligible for ACE. The EU, although it may receive funding from distribution utilities, is a separate entity that would operate independently of those utilities.

(continued...)

Several of the distribution utilities raised questions regarding the relationship of EU energy efficiency programs with utility programs. They question the appropriateness of having both EU core programs and distribution utility non-core programs. CVPS and the 14 Municipals suggest that the EU should be responsible for *all* energy efficiency programs, except those that specifically relate to distributed utility planning. In contrast, BED and WEC have stated that they have an interest in continuing to deliver energy efficiency services to their customers. They are concerned that there will be duplication of effort by the EU and some, or all, of the distribution utilities.¹⁴

The DPS is not averse to allowing the EU to design and deliver non-core programs. The Emerging Markets program is a vehicle that could accommodate such activity. However, the DPS believes that the EU should begin with the programs identified in the Plan and then expand to include non-core programs as its experience and expertise develop. To the extent that EU core programs and distribution utility non-core programs could benefit from coordinated delivery, those opportunities should be taken advantage of with appropriate cost-sharing of program implementation.¹⁵

Furthermore, the DPS states that some distribution utilities may develop, or may already be implementing, programs that address EU core-program objectives in a manner that is superior to the EU's core program. In those cases, and where the distribution utility can demonstrate that the additional benefits are being provided cost-effectively and in coordination with the EU's program, the DPS would support an EU decision to allow the distribution utility to have primary responsibility for the delivery of that program to its customers.¹⁶

I conclude that the DPS's approach regarding core and non-core programs is a reasonable one at this time. In Phase II, there will be an opportunity to re-visit these issues. There may be some situations, particularly for some of the smallest distribution utilities, where the EU would be

13(...continued)

Between rate cases, many factors can affect a utility's electricity sales (revenues), as well as its costs. Not including ACE for EU savings in a utility's cost of service does not mean that the utility will no longer be afforded a reasonable opportunity to earn its allowed rate of return.

14. See CVPS brief at 33; 14 Municipals brief at 5-6; WEC brief at 2-3; Buckley pf. at 12-14, reb. at 24-26; GMP brief at 6-7.

15. Exh. DPS-1 at 94-95; tr. 1/23/98 at 132-133 (Plunkett); tr. 2/2/98, vol. II at 156-158 (Parker).

16. One such program identified by the DPS is WEC's Residential New Construction program. Tr. 1/23/98 at 133-137 (Plunkett).

the logical entity to deliver all energy efficiency programs. Also, if a distribution utility develops a program that is superior to, or overlaps with, EU core programs, it may be appropriate, on a case by case basis, to provide the distribution utility with a role in core program implementation. Finally, it is likely that the EU, over time, will expand its activities into non-core programs, to the extent that competitive energy service companies or distribution utilities are unsuccessful in addressing these opportunities.

B. DPS Plan for Delivery of Energy Efficiency Services

1. Core Programs

35. The Plan proposes a portfolio of seven core programs to be delivered throughout Vermont. These programs primarily address critical lost opportunity markets, but also would capture retrofit savings from low income and dairy farm consumers. The programs build on and enhance existing DSM programs in Vermont, with significant changes to increase participation levels, the comprehensiveness of savings, and to achieve sustainable market transformation. Exh. DPS-1 at 56-76 and Appendix 1; Mosenthal pf. at 9.

36. The seven core programs are: Commercial and Industrial (“C&I”) Market Opportunities; C&I New Construction; Dairy Farm; Residential New Construction; Residential Low Income; Efficient Products; and the Emerging Markets Initiative. Together, the seven core programs are expected to provide \$86 million in net present value savings (1997 dollars) to Vermonters. Exh. DPS-1 at 57-71.

37. The C&I Market Opportunities program targets the commercial and industrial equipment replacement and remodeling markets. It is designed to prevent lost opportunities by promoting the adoption of energy efficient equipment at the time of natural equipment turnover, when the cost of efficiency is lowest and the opportunity the greatest. The program employs multiple and complementary strategies to capture maximum savings and net benefits, including: financial incentives, detailed design and technical assistance, a comprehensive component to provide additional incentives and financial services for the adoption of multiple efficiency strategies, extensive trade ally outreach to further market transformation, and strategies to achieve coordination with regional and national market transformation initiatives. Implementation of the C&I Market Opportunities Program for five years will provide Vermonters net benefits of approximately \$29,000,000, with a benefit-cost ratio of 2.0. *Id.* at 57-59, 76.

38. The C&I New Construction program targets lost efficiency opportunities in the C&I new construction, renovation and remodeling markets. It includes two program tracks, one for buildings that must comply with Act 250 and one for all other facilities. Its marketing plan is designed to identify potential new projects early so that it can have significant influence over the design process. For non-Act 250 facilities, it offers prescriptive and custom tracks. To participate, customers must meet a set of minimum efficiency criteria among all major end uses, ensuring a high level of comprehensiveness and per-participant savings. As with the market opportunities program, the new construction program employs multiple and complementary strategies to capture maximum savings and net benefits, including: financial incentives; detailed design and technical assistance; a comprehensive component to provide additional incentives and financial services for the adoption of multiple efficiency strategies; extensive trade ally outreach to further market transformation; and strategies to achieve coordination with regional and national market transformation initiatives. Implementation of the C&I New Construction Program for five years will provide Vermonters net benefits of approximately \$11,000,000, with a benefit-cost ratio of 2.2. *Id.* at 59-62, 76.

39. The Dairy Farm program targets comprehensive retrofit opportunities in the dairy sector. This program is a continuation of the successful dairy program that has been offered by some Vermont utilities. It provides farmers with detailed technical assistance to identify and analyze cost-effective retrofit efficiency opportunities, and offers financial services to assist customers in implementing the efficiency measures. Financial services include cash incentives and low interest loans. In addition, the program offers customers assistance in coordinating the solicitation, selection, and management of contractors and provides inspection and quality control services. Because approximately 60% of Vermont dairy farms have already participated in this program, the core program is expected to reach maximum participation in two years, and then be phased out. Implementation of the Dairy Farm Program for two years will provide Vermonters net benefits of approximately \$1,300,000 million, with a benefit-cost ratio of 1.5. *Id.* at 62-63, 76.

40. The Residential New Construction program targets new homes with multiple strategies designed to both capture lost opportunity savings and significantly transform the way homes are built and the institutional mechanisms that influence the demand for new homes. The program uses a combination of financial incentives, builder training, consumer marketing and

education, coordinated advertising, home energy rating services, financial and real estate institutional mechanisms, coordination with regional and national market transformation initiatives, and homeowner energy consumption guarantees to achieve comprehensive savings and transform current building and home purchasing practices. Implementation of the Residential New Construction Program for five years will provide Vermonters net benefits of approximately \$11,000,000, with a benefit-cost ratio of 2.5. *Id.* at 63-66, 76.

41. The Residential Low Income program offers services targeted to single family low income homeowners and renters, and to building owners, managers and occupants of low income multifamily buildings. The single family component is a coordinated program that builds on the State weatherization assistance program by offering additional cost-effective measures and services. The multifamily portion of the program provides a one-stop-shopping package of services including: technical analysis; packaging of financial services including incentives, loan and performance contracting arrangements; contractor and construction management; direct installation of measures; and coordination of bulk purchases of efficient equipment. Implementation of the Low Income Program for five years will provide Vermonters net benefits of approximately \$5,000,000, with a benefit-cost ratio of 1.2. *Id.* at 66-67, 76.

42. The Efficient Products program is designed to transform markets for energy efficient equipment that is typically purchased in retail markets. Examples include residential lighting, clothes washers and room air conditioners, etc. The program uses aggressive marketing and vendor and manufacturer coordination strategies to ensure that: consumers are aware of efficient products and the benefits of them; vendors are motivated to aggressively sell, market, and prominently display the products; manufacturers are motivated to coordinate with the program and offer value added services and benefits; a wide range and selection of efficient products are widely and easily available to all Vermont consumers; and economic barriers to adoption of the efficient products are overcome through financial incentives and or other strategies as appropriate. The program will also make maximum use of opportunities to coordinate with and enhance regional and national market transformation initiatives, such as Northeast Energy Efficiency Partnerships, Inc. and U. S. Environmental Protection Agency efforts. Implementation of the Efficient Products Program for five years will provide Vermonters net benefits of approximately \$16,000,000, with a benefit-cost ratio of 2.9. *Id.* at 67-69, 76.

43. The Emerging Markets Initiative offers Vermont a flexible framework to pursue virtually any strategy to capture cost-effective efficiency savings from markets or technologies that are not being fully served by either the other core programs, the distribution utilities, or the competitive energy services industry. For example, if the efficiency utility determined that schools were not adequately served by the core programs because of some of the unique barriers they face, the EU could design a program component specifically to capture comprehensive efficiency resources in schools across Vermont. Alternatively, the EU could solicit proposals from the energy services industry for innovative and cost-effective strategies to acquire these resources in schools. In addition to the EU's identifying areas of need, outside entities (including utilities and energy service companies) could make unsolicited proposals to provide services that are designed to acquire cost-effective efficiency resources and/or transform markets for efficiency among specific target populations. The benefits of the Emerging Markets Program are estimated to be the average of the other six core programs; over five years, the Emerging Markets Program will provide Vermonters net benefits of approximately \$16,000,000, with a benefit-cost ratio of 1.9. *Id.* at 69-71, 76.

44. The core programs are primarily designed to capture lost opportunity resources. The DPS has proposed to allow the competitive energy services industry an opportunity to capture cost-effective retrofit opportunities. It is expected that the EU and the DPS (as part of its resource planning role) will monitor the effectiveness of the energy services industry in its ability to capture the retrofit potential identified in the Plan. The Emerging Markets Initiative offers a potent tool for the EU to quickly and strategically put in place aggressive services, if necessary, to target those areas where the energy services industry fails. *Id.* at 17-19, 69-71, Appendix 1; Mosenthal pf. at 10.

45. In addition to specific improvements to individual programs, the core programs offer Vermonters substantial benefits over and above what can be delivered with separate, utility-delivered programs. This is true even if each utility delivered the same core programs. The core programs overcome an existing and persistent problem with DSM in Vermont resulting from 22 separate electric utilities offering different programs, using different marketing materials and eligibility and efficiency criteria, and in some cases, not offering any programs at all. The current 22-utility system is inefficient, often ineffective, and generally confusing to consumers, trade allies, design professionals and manufacturers. Uniformity of program design will maximize

participation by trade allies such as equipment retailers and wholesalers, builders, architects, engineers, lenders and others. By eliminating inconsistencies or unnecessary differences between efficiency programs statewide, the core programs are likely to achieve two primary Board objectives simultaneously: maximum cost-effective savings in lost opportunities markets and market transformation. Mosenthal pf. at 8; exh. DPS-1 at 56-57.

46. The DPS analysis of benefits and costs for the core programs includes the total costs of the efficiency utility. Those include the costs the EU would incur on "start-up" to develop a centralized tracking system, and the ongoing administrative costs of coordinating and transferring data among, and reporting to, the distribution utilities, the DPS and the Board. Exh. DPS-1 at 71-76; tr. 2/2/98, vol. I at 28-29 (Mosenthal).

47. The DPS analysis of benefits and costs for the core programs does not include any future costs incurred by distribution utilities for coordination with the EU and for support and customer referrals. Nor does it include the substantial *savings* the distribution utilities will realize from no longer having to plan for, design, deliver and evaluate programs targeting the core program markets. In addition, the analysis does not include the savings to the distribution utilities, the DPS and the Board from reduced regulatory review and litigation over utility-delivered DSM for the core program markets. *Id.*

48. Annual program spending by the EU would range from \$13 million in 1998 to \$17.8 million in 2002. Based on 1995 sales, the budgets represent between 2.6 and 3.5 mills/kWh. To the extent that future electricity sales exceed 1995 levels, per-kWh collection amounts would be less. Exh. DPS-1 at 71.

49. The core program planned savings exceeds the efficiency savings likely to be achieved by Vermont's distribution utilities absent adoption of the plan. *Id.* at 12-15, 71-76.

Discussion re: core programs

The DPS proposes seven core programs that the EU would develop and implement on a statewide basis. Four of the programs, C&I Market Opportunities, C&I New Construction, Residential New Construction, and Efficient Products, are lost opportunity programs that are designed to acquire energy efficiency resources during the critical time period when new or replacement equipment opportunities arise. Two of the programs are primarily retrofit programs. The Dairy Farm (retrofit) program is specifically authorized by statute to improve the energy

efficiency of Vermont's dairy farms.¹⁷ The Residential Low Income (retrofit) program is designed to address the specific, often more formidable, market barriers that low income customers face as tenants in multifamily dwellings or as occupants of single family dwellings. The seventh program, Emerging Markets, is designed to provide the EU with the flexibility to develop strategies for new opportunities for energy efficiency savings that may arise due to changes in energy efficiency products or delivery systems for those products. In addition, the Emerging Markets program could be a transition mechanism for EU incorporation of non-core distribution utility programs. All seven programs are estimated to be cost-effective over the next five years and, in total, will provide approximately \$86 million of net societal benefits.

I conclude that over their five-year implementation period the seven core programs are likely to provide substantial net societal benefits to Vermont ratepayers. I further conclude that each program is likely to be cost-effective over that same time period, and, taken together, the seven programs address the need for essential lost opportunity and retrofit programs.

2. Structure of the EU

50. The efficiency utility proposed by the DPS is essential to the effective implementation of the core programs identified above. The EU should be designed so that it controls the implementation of the core programs outlined in the Plan, and that an independent DSM capability will exist in the state against which the performance of utilities in their remaining areas of DSM implementation obligation can be measured. Parker pf. at 15-16.

51. The EU should operate under a contract with the Public Service Board. The contract should be awarded competitively through a public solicitation conducted by the Board through a formal proceeding. Exh. DPS-1 at 82.

52. The contracting entity should have demonstrated DSM program implementation and management competence, should be free of conflicts of interest, and may be of any corporate form as long as it met these tests. *Id.*

53. The EU itself may contract out actual delivery of some DSM programs, but should have the flexibility to provide some services through development of in-house capability. These and other items should be spelled out in the contract between the Board and the EU. *Id.* at 82-3.

17. See 30 V.S.A. § 218b.

54. The contract between the Board and the EU should have performance standards to enhance the incentive for effective EU implementation. Parker reb. at 27; tr. 2/2/98, vol. II at 93 (Parker).

55. The EU should be independent of utility control over its operations or budget. There should neither be direct utility control or control through some form of “governance board” with utility representation. The EU should operate with the assistance of an advisory committee with expertise in various technologies, financing mechanisms, and a knowledge of markets and specific customer groups that would provide regular input on the operation and direction of the EU. Parker reb. pf. at 25-27.

56. The EU should have independent audits conducted periodically. Parker reb. at 25, footnote 11; tr. 2/2/98, vol. II at 161 (Parker).

57. Many other aspects of the structure, oversight, and evaluation of the EU need to be developed in Phase II of this Docket. Tr. 1/23/98 at 137-138 (Plunkett); tr. 2/2/98, vol. II at 140-146, 158-161 (Parker).

Discussion re: Structure of EU

In its Plan, the DPS describes the essential features of an EU that can be capable of delivering the core programs, developing new programs as necessary, and providing the maximum amount of cost-effective energy efficiency benefits. At this time, the DPS's proposal is an outline for an EU; many of the details still need to be determined.

I conclude that the EU should include the features described in the findings, above. The EU should be selected by and under contract with the Board. Independence, performance-based incentives, and periodic audits will help ensure that the EU achieves its goals. In Phase II, further specific characteristics of the EU will be developed.¹⁸

3. Distributed Utility Planning

18. See, below, at 41.

58. The purpose of distributed utility (“DU”) planning is to explore options for using DSM and distributed generation¹⁹ to reduce the cost of maintaining the reliability of power delivery, by avoiding or deferring T&D investment and by deferring expensive decisions. Chernick reb. at 5, 10.

59. DU planning should follow the following basic steps: (a) identify the major T&D additions in the utility’s budget that could be avoided or deferred by reductions in forecast loads; (b) define the area in which load reductions could contribute to the deferral of the T&D reinforcement; (c) identify the deferrable costs and the DSM load reductions that would be needed to defer those costs for various periods of time; (d) compute the benefits of DSM load reductions; and (e) seek combinations of DSM and distributed generation (“DG”) that would avoid the additions at lower total societal costs. Chernick pf. at 16; exh. DPS-1, Appendix 5.

60. In addition to the costs of the deferred T&D investments, DSM cost-effectiveness analyses should be credited with all appropriate energy, generation capacity, and residual T&D benefits. Exhibit DPS-1, Appendix 5.

61. The least-cost resource portfolio might include some resources with costs per kW that are greater than the average cost of the planned T&D project, if they are needed to produce sufficient load reductions. So long as the total cost of a plan with distributed resources is lower than the costs with the traditional T&D expansion, avoidance or some deferral of the expansion is economic. Chernick pf. at 17.

62. DU planning should rely on the societal cost test. *Id.* at 16.

63. Neither the costs nor the benefits of DU planning have been quantified in the DPS benefit-cost analyses. Because of their existing obligation to maximize net benefits from cost-effective DSM, all Vermont electric utilities are already obligated to pursue DU planning as part of their existing IRP responsibilities, and to implement all cost-effective DU programs. Therefore, the Plan does not impose any new IRP responsibilities on Vermont's electric utilities. Exh. DPS-1 at 19-23, 94; tr. 2/2/98, vol. I at 29 (Mosenthal).

Discussion re: DU planning

19. Distributed generation refers to small scale generation facilities deployed at strategic points on a utility's distribution system.

The DPS proposes that even after the establishment of an EU that distribution utilities retain the responsibility for DU planning pursuant to the guidelines identified above. The purpose of DU planning is to identify less costly alternatives to new T&D construction or upgrades of existing systems. In brief, the distribution utility should be willing to pay up to the cost of the T&D improvement for energy efficiency measures, local generation, or a combination of the two. Often, the expensive nature of T&D improvements can justify energy efficiency measures that would not pass simple avoided cost screening.

Other parties did not dispute the benefits of DU planning. However, there were some concerns expressed regarding the methodology proposed by the DPS. GMP, in particular, favors a DU planning model that is being developed by the Electric Power Research Institute ("EPRI"), although GMP concedes that the EPRI approach is not yet refined enough for actual use, today, by distribution utilities.²⁰

Based on the evidence in this docket, I conclude that DU planning should continue to be the responsibility of distribution utilities. I further conclude that the DPS's methodology for evaluating the costs of T&D improvements in comparison to combinations of energy efficiency measures and localized generation is an appropriate starting point. In Phase II, all parties will be able to present further evidence on alternative approaches for DU planning.

C. Screening Energy Efficiency Programs

1. Avoided generation costs

64. Avoided generation costs are uniform across the state because the generation costs avoided by a reduction in load anywhere in Vermont will be determined by the New England regional power market. Whether DSM frees up power for sale into the market, or allows the avoidance of a purchase, the regional market price is the same. Similarly, that price is the same whether the power costs are avoided by a utility or by a marketer serving a customer with direct access. In addition, since the avoided generation costs are based primarily on the costs of new power plants, the costs of new utility-owned generation (if there is any) should be very similar to the regional market price. Chernick pf. at 5.

20. Lesser pf. at 16-19; tr.2/3/98, vol. I at 73-75 (Lesser).

65. The use of regional market prices is the culmination of a long-term trend, starting shortly after utilities first started projecting avoided costs in the mid-1980s. The avoided generation costs estimated by and for New England utilities were originally based on their own loads and resources, with new generic resources representing either entire units the utility might build, or (especially for small utilities) shares in jointly-owned units. Avoidable capacity costs were often set to zero until the utility had a capacity need, and then set to the cost of a peaking unit. Hence, at the same point in time, a capacity-long oil-burning utility would be projecting high avoided energy costs and no capacity value, while a neighboring utility might have low energy costs and a high capacity value. *Id.* at 5-6.

66. The historic treatment of avoided costs was often unrealistic, since utilities routinely bought and sold generation entitlements with one another, for periods from short-term economy transactions to life-of-unit sales. By the late 1980s, CVPS's avoided costs were recognizing the opportunity for off-system energy purchases and sales. About the same time, avoided-cost projections began to include the potential for capacity purchases and sales, including transactions with the general market, rather than identified participants. More recent avoided-cost studies by CVPS and GMP have relied entirely on market prices for capacity costs. *Id.* at 6; Chernick reb. at 43-48; exh. CVPS-JCC-3.

67. The Federal Energy Regulatory Commission's ("FERC") Order 888 continued the process of opening up the transmission system that FERC had been pursuing for some years in merger cases and elsewhere, reducing the remaining barriers to wholesale power transactions. With the inception of ISO New England²¹, and near-term plans for divestiture of generation and implementation of retail access, the wholesale power market in New England should be highly competitive, allowing for purchases and sales from parties throughout the region. Hence, the New England regional market prices will be the effective avoided generation cost for all Vermont utilities. Chernick pf. at 6-7.

68. In light of the foregoing facts, a utility's embedded generation costs are irrelevant to determining whether a DSM program is cost-effective for that utility. No matter what the utility's embedded generation costs are, the value of the supply avoided by the DSM program will be the

21. ISO New England is the independent system operator for the New England integrated transmission system, formerly the New England Power Exchange ("NEPEX").

market price. Either the utility will re-sell the supply at the market price or will avoid buying new supply at the market price. Tr. 1/22/98, vol. I at 184-189 (Chernick).

69. The Plan's avoided generation costs reflect the regional power market. Avoided capacity costs are set at the costs for new combustion turbines from 1999 on, and avoided energy costs at the energy-related costs (fuel, variable operations and maintenance, and capitalized energy) of a gas combined-cycle plant from 2000 on. These are based on determinations of when new capacity and energy are likely to be needed (1999 and 2000, respectively). Avoided energy costs rise modestly with fuel costs, based on the Department's latest fuel-price forecast. Short-term capacity and energy costs are based on interpolation between recent market values and the costs of new resources. These avoided generation costs are very similar to those prepared by the Department in February 1996, and used in CVPS and GMP presentations to the legislature on stranded costs. Chernick pf. at 13; exh. DPS-1 at 24-31 and Appendix 4-1.

Discussion re: avoided generation costs

The evidence in this Docket demonstrates that avoided costs for energy and capacity do not vary between Vermont distribution utilities. The New England wholesale market for energy and capacity establishes regional values (based on an hourly dispatch system) due to the relatively seamless interconnection of New England utilities' transmission and distribution systems. This is particularly true for Vermont distribution utilities due to the statewide dispatch of power by the Vermont Electric Company ("VELCO") which treats all Vermont electric consumption as if it were being provided by a single utility. The DPS proposes statewide values for marginal energy and capacity sales (or purchases). Consumption avoided by energy efficiency measures can be priced at these marginal values for purposes of cost-effectiveness analysis.

None of the parties in this docket have provided any evidence that refutes the DPS's approach with regard to avoided energy and capacity costs.

I conclude that the use of regional New England market prices for marginal energy and capacity costs is appropriate for developing screening values for energy efficiency measures. I further conclude that the specific values proposed by the DPS are reasonable as placeholders for the EU's screening of energy efficiency programs. In Phase II, the refinement of these values, based on updated information regarding the New England market, is an open issue; the methodology of developing these Vermont specific values is not an open issue.

2. Avoided Transmission and Distribution (T&D) costs

70. The use of statewide average avoided T&D costs for statewide programs is consistent with standard practice. For DSM screening, utilities normally estimate avoided T&D costs by calculating average investment per kW throughout their service territories. Chernick pf. at 9-10.

71. A statewide average can be more accurate than a company-specific average for several reasons:

- (a) T&D costs vary geographically, but not necessarily on the scale of utility service territories;
- (b) Some transmission costs, particularly at the VELCO level and for transmission into the state, are essentially statewide;
- (c) Using statewide averages will provide more stable estimates of avoided T&D costs. Since T&D avoided cost is averaged over a wider base, it is more likely to reflect the expected value of future conditions than the history of any one utility;
- (d) The statewide average will tend to balance the over- and under-building that is due to the inherently discrete nature of T&D investments and the inevitable variations between local-area demand forecasts and actual loads;
- (e) Statewide avoided T&D will be less subject to uncertainty in the location of future growth; and
- (f) Load growth in one utility's service territory may require investments by another utility, due to interdependencies of neighboring utility systems.

Id. at 7-9; Chernick reb. pf. at 31; tr. 1/22/98, vol. II at 5 (Chernick).

72. No party has demonstrated that utility-specific and statewide avoided T&D costs actually differ, using the same methodology to calculate both estimates. Unless there were some reason to believe that disaggregated estimates of avoided T&D costs would be vastly superior to statewide estimates, the costs of producing and using the disaggregated estimates, and implementing the resulting programs, is unlikely to be justified. Chernick pf. at 11-12; Chernick reb. at 3.

73. The Department's avoided T&D costs include line losses avoided by DSM. The avoidable losses calculated by the Department were developed on a societal basis and consider system loss data from every Vermont distribution company and from Vermont Electric Power Company. Exhibit DPS-1 at 31-32 and Appendix 4-2; tr. 1/23/98 at 16 (Litkovitz).

74. The avoidable losses calculated by the Department are conservatively low in that: (1) the generation avoidable by demand-side management is located out of state; and (2) the

Department assumes zero losses on all out-of-state transmission lines connecting this generation to the Vermont border. Exh. DPS-1 at Appendix 4-2; tr. 1/23/98 at 14-16 (Litkovitz).

75. The average annual energy losses for a given distribution company comprise just a small portion of the total losses avoidable by demand-side management. Losses avoidable by demand-side management, on a statewide basis, differ from the average annual energy losses of a given distribution company in that the statewide avoidable losses: (1) take into account, on an average basis, the losses incurred on all of Vermont's distribution systems rather than simply the losses of a single distribution system; (2) are calculated on a societal basis and therefore recognize the losses avoidable on in-state transmission lines; (3) recognize that because losses increase as load increases that avoidable losses during various costing periods will differ; and (4) recognize that avoidable energy losses are marginal losses rather than average losses and therefore are significantly higher than average energy losses. Exh. DPS-1 at 31, Appendix 4-2; tr. 1/23/98 at 21-26 Litkovitz.

Discussion re: avoided T&D costs

The DPS presented substantial evidence that using statewide values for the transmission and distribution costs that can be avoided through the implementation of energy efficiency measures is a reasonable approach. The DPS would encourage the use of values *higher* than the statewide average for specific constrained areas where energy efficiency could significantly reduce line losses or avoid the need for a transmission or distribution upgrade.²²

Most of the distribution utility parties maintain that avoidable T&D values should be determined on a per-utility basis, with some utilities acknowledging that T&D values vary significantly within a distribution utility's service territory. In principle, the distribution utilities request that the best available information be used; that is, values lower or higher than the statewide average where appropriate.²³

The evidence in this docket persuades me that transmission costs that can be avoided by energy efficiency measures are most appropriately expressed as a statewide average value. An exception may be necessary for those customers who receive their electricity directly from a

22. Tr. 2/22/98, vol. II at 13-18 (Chernick).

23. CVPS brief at 31-33; GMP brief at 14; 14 Municipals brief at 50-52; VM brief at 24.

transmission line; energy efficiency measures for these customers may reduce transmission costs more significantly than for most customers. But for those few customers, statewide average values for avoidable transmission costs are sufficient. The values proposed by the DPS are conservative to the extent that they do not reflect line losses associated with generation *outside* of Vermont, a cost that Vermont utilities often incur as part of their total transmission cost. I conclude that the DPS's values are appropriate placeholders for the EU's screening of core energy efficiency programs and distribution utilities' screening of non-core programs.

In regard to distribution costs that can be avoided through the implementation of energy efficiency measures, the evidence persuades me that these costs vary from customer to customer depending upon a customer's geographic location (proximity to transmission lines), presence of any T & D constraint, the size of a customer's load, the variability of a customer's load, and the times that those loads are demanding electricity. For some customers this information is known, but for most it is unknown and costly to find out. Therefore, some kind of averaging must be done. The issue is to determine the appropriate level of aggregation or disaggregation.

For Vermont distribution utilities with large geographic service territories, some of the sub-systems are larger than the entire T&D systems of small Vermont distribution utilities. Basing avoidable distribution costs on a distribution utility's average costs is unlikely to be any more precise than using a statewide average. In addition, there is no way to predict with certainty where transmission or distribution upgrades will be needed in the future; using statewide average values may be an appropriate proxy for that uncertainty.

I am persuaded that the DPS proposal to use statewide average values for avoidable distribution costs is appropriate as a placeholder for the EU's screening of core energy efficiency programs and distribution utilities' non-core programs. In Phase II, parties may present evidence on the cost of developing and utilizing more precise values for measure screening.

3. Environmental Externalities

76. Airborne emissions generated by power plants cause significant environmental impacts. The costs of these impacts are typically referred to as “externalities”, meaning that these costs are not internalized in the price of power supply. The testimony in this docket is that the total societal cost of these environmental impacts (including impacts on health) must be greater than zero. Chernick reb. at 54.

77. Major air pollutants from power-plants include particulate matter (“PM”), sulfur dioxide (“SO₂”), oxides of nitrogen (“NO_x”), and carbon dioxide (“CO₂”). *Id.* at 54; exh. DPS-PLC-R12.

78. In Docket 5270, the Board created a rebuttable presumption of a five-percent environmental externality adder in utility least-cost integrated planning. Chernick reb. at 52-53; tr. 1/22/98, vol. I at 114-115 (Steinhurst).

79. Vermont statutes require the inclusion of such costs in decision-making. Specifically, amendments to 30 V.S.A. § 202(b)(2) now require the inclusion of both “economic and environmental costs of energy supply” in planning, while 30 V.S.A. § 218c(a)(1) requires plans to meet “the public’s needs for energy services . . . at the lowest possible life cycle cost, including economic and environmental costs” The Board and Department have a clear duty to include the best possible values for these costs in all decisions concerning energy resources, whether supply or demand-side. Steinhurst pf. at 7-8.

80. It is sound policy to reflect external costs in the avoided costs of generation and delivery. State energy policy clearly states that Vermont’s energy needs are to be met “in a manner that is . . . sustainable . . . and that is environmentally sound.” 30 V.S.A. § 202a(1). As a matter of economics and policy, incorporating environmental costs into program decisions is the most effective way to achieve this goal, short of actually incorporating those costs into the cost structure of producers. *Id.* at 8-9.

81. The Department’s avoided costs include externality values for major air emissions, including PM, NO_x, SO₂, CO₂, volatile organics, and carbon monoxide. These emissions are priced at the values selected by the Massachusetts Department of Public Utilities (“MDPU”) in MDPU 91-131, updated for inflation. Subsequent information indicates that the costs of these emissions may be of even greater magnitude than the MDPU estimated. Exh. DPS-1 at 34 and Appendix 4-4.

82. The Department’s proposed environmental cost values are based on environmental control costs imposed by regulators and legislators. Chernick reb. at 60.

83. The only major pollutant for which an adjustment to the Massachusetts values appears justified is PM, for which the Department uses a value twice that of the MDPU, based on higher damage-cost and control-cost estimates, recent evidence of still higher damages, and EPA proposals for stricter control of fine particulates. Chernick pf. at 15.

84. The Department's proposed environmental cost values take into account that DSM will displace the economically marginal plants. A reduction in load will reduce generation from these plants, and a reduction in such generation will reduce emissions. If, when external avoided costs are taken into account, more DSM is found to be cost-effective and is implemented, then that additional DSM will result in additional load reductions and, in turn, less generation and less emissions. Chernick reb. at 57.

85. Such environmental control costs reflect considerations of economic efficiency and trade-offs that members of society would be willing to make between pollution and costs. In the decisions on which the Department relied to develop costs of control for regulated pollutants, the regulators had cost data available to them prior to adopting the regulations, and there is extensive evidence that the regulators considered cost-effectiveness in their requirements. Moreover, many factors can and do influence whether or not a regulation is adopted, including issues of equity and administrative feasibility. *Id.* at 61-62; exh. DPS-PLC-R13.

86. The DPS also screened its core programs using the Board's five percent adder. All programs were cost-effective using the lower value. Tr. 2/23/98 at 124-125 (Plunkett).

Discussion re: environmental externalities

In Docket 5270, the Board adopted a five percent environmental externality adjustment as a placeholder that would be refined in a subsequent proceeding based on more accurate estimates of the unpriced environmental costs of supply resources. At that time, in 1991, the Board noted that record evidence suggested that unpriced environmental costs may significantly exceed five percent for some supply technologies. The Board stated:

We may not yet have the tools to monetize these costs precisely, but that is no reason to treat them as having no value at all. We conclude that the 5% externalities adder is a reasonable initial proxy value for the unpriced externalities of energy supply. Based upon all of the evidence available to the Board, we conclude that this is a conservative adjustment.

Order of 4/16/90, vol. IV at 8,12.

On 9/30/92, the Board open Docket No. 5611, "Board Investigation into the Unpriced 'External' Costs of Energy Services for Vermont Electric and Gas Utilities". The last activity in that docket were filings in response to a Board request for comments on how to proceed.²⁴

The DPS maintains that its evidence in this Docket meets the requirements that the Board established in Docket No. 5270. The DPS recommends that the Board adopt its proposed externalities adders (based on adders developed and adopted by the Massachusetts Department of Public Utilities) for use in EU and distribution utility cost-effectiveness screening.²⁵

CVPS, GMP, VMPPD, the 14 municipals, and IBM maintain that the EU and the distribution utilities should continue to use the five percent adder. They further state that Docket No. 5611 is the appropriate proceeding in which revisions to environmental externalities should be evaluated.²⁶

For the purposes of Phase I, the DPS's proposed environmental externality values are not an issue. All of the programs proposed by the DPS are cost-effective using the Board's five percent adder. Therefore, society will benefit from the implementation of these programs even without the higher values that the DPS proposes.

For the purposes of Phase II, however, it will be important to determine what environmental externality values the EU and distribution utilities should utilize for program screening. At minimum, there are three approaches that could be used to develop these values. First, proceedings in Docket 5611 could go forward and its results incorporated into this Docket. Second, the issues could be litigated in this Docket, although additional entities may want to intervene to present their evidence on this topic. Third, the Board could affirm its current five percent adder or adopt a different interim value pending further investigation in this or some other proceeding.

24. See Order of 12/22/94.

25. Chernick reb. at 52-55.

26. In support of their position, these parties refer to a Hearing Officer Order in Docket 5825. In that Order, the Hearing Officer upheld a motion to exclude the DPS's proposed revisions to environmental externality values that a municipal utility would be required to use for energy efficiency screening. The Hearing Officer concluded that Docket 5611 was the appropriate proceeding for reviewing proposed changes to environmental externality values, rather than litigating that issue in each individual utility IRP docket. Docket 5825, Order of 9/14/95.

Based on my review of the evidence in this proceeding, I recommend that the Board utilize the third approach and establish a placeholder value for environmental externalities pending a final order in Docket 5611. It appears likely that litigation of this issue will require substantial time and resources from both the Board and the other parties, whether the issues are litigated in this proceeding or in Docket 5611. The EU needs to be established and begin implementing cost-effective programs as quickly as possible, bearing in mind that the core programs focus primarily on lost-opportunity measures. Providing a placeholder value will allow the EU to move forward with the programs proposed by the DPS and to develop any additional programs as appropriate.

However, I further recommend that the Board consider a ten percent adder as a placeholder for environmental externalities based on the record established to date in this Docket and further proceedings in Phase II. I base my recommendation on several factors. First, the original five percent adder was a conservative estimate adopted with the knowledge that some supply resources had impacts in excess of five percent. Second, the Massachusetts DPU adopted its adders after a fully litigated proceeding. Third, the Massachusetts adders incorporate values well in excess of ten percent.²⁷ Fourth, concerns regarding environmental impacts of electric generation have not decreased since 1991, when the Board originally adopted the five percent placeholder; in fact, discussions regarding electric restructuring efforts often focus on concerns that supply resources with significant environmental impacts may increase their electric production in a more competitive industry.²⁸

If the Board adopts my recommendation of a revised placeholder, parties in this Docket should be given an opportunity to present evidence in Phase II as to the reasonableness of ten percent or some other number as a placeholder.

IV. CONCLUSIONS AND RECOMMENDATIONS

27. DPS witness Chernick estimated the percent impact of the adders at approximately thirteen percent. GMP witness Lesser estimate the percent impact of the adders at up to eighty percent. Tr. 1/22/98, vol. II at 55 (Chernick); tr. 2/3/98, vol. II at 86-87 (Lesser).

28. *See*, Docket 5854, 12/30/96 at 116, 124.

A. Hearing Officer Rulings

1. Jurisdiction

An Order confirming the Board's jurisdiction to approve the DPS's Plan was issued on October 1, 1997. In summary, the Order concluded that the DPS's Plan should be reviewed under 30 V.S.A. §209(d) which states:

(d) The public service department and all gas and electric utility companies are encouraged to propose, develop, solicit and monitor energy efficiency and conservation programs and measures. Such programs and measures may be approved by the board if it determines they will be beneficial to the ratepayers of the companies after such notice and hearing as the board may require by order or by rule.

Although parties had an opportunity to seek interlocutory review by the Board, none sought such a review.

Should the Board accept the Findings, Conclusions, and Recommendations of the Hearing Officer, Phase II proceedings would commence to resolve outstanding issues regarding the structure and operation of the EU. To ensure that Phase II proceedings are substantive and justify the significant time and effort likely to be expended by all parties to this Docket, I recommend that this Order in Phase I be treated as a final Board Order. Any party who objects to *any* of the decisions reached in this Docket, up to the date that the Board signs this Order, should be required to file all motions and appeals within the statutory framework for final Board Orders.

2. Phases I & II

An Order establishing two phases to this Docket was issued on January 1, 1998. Phase I would evaluate the need for energy efficiency services and how they could be most efficiently and cost-effectively provided. If the DPS's Plan was determined to be the best approach, and the Board concurred, Phase II proceedings would determine many of the details of how the new entity would be structured.

Any party who objects to the two-phase approach in this Docket should raise its objections in its comments on this proposal for decision.

3. Resolution of Motions to Strike and Post-Hearing Filings

Both prior to and during the technical hearings on January 22 & 23 and February 2 & 3, 1998, numerous objections and motions to strike were filed by many of the parties. To the extent that any party believes it has been disadvantaged or prejudiced by any of the Hearing Officer's rulings, that party should raise its concerns in its comments on this proposal for decision.

In addition, several parties made filings (in addition to the briefs requested by the Hearing Officer) subsequent to the close of technical hearings on February 3, 1998. Except for the parties' briefs, none of those filings, including reply briefs, are part of the record in Phase I of this Docket. In Phase II, parties may request consideration of the filings excluded from Phase I.

4. Motion to Intervene

On October 2, 1997, Associated Industries of Vermont ("AIV") filed a motion to intervene. No party has objected to AIV's motion. I grant AIV's motion to intervene pursuant to Board Rule 2.209(B) and note that AIV's participation may be subject to conditions, as are other parties in this proceeding, pursuant to Board Rule 2.209(C).

B. Phase I Recommendations

I conclude that the seven core programs proposed by the DPS, as specified in its Plan and consistent with the findings, discussion, and conclusions, above, satisfy the requirements of 30 V.S.A. § 209(d) and should be approved by the Board. The core programs are designed to encourage energy efficiency, they have been proposed by the Department, and they are likely to be beneficial to the ratepayers of Vermont's electric utilities.

I further conclude that the EU, as described in the DPS's Plan, is likely to be the most cost-effective mechanism for developing and delivering comprehensive, cost-effective, energy efficiency programs in a manner that will maximize societal net benefits. I recommend that the Board approve the creation of an EU, subject to conditions established pursuant to Phase II of this Docket.

I recommend that the Board approve the general outline proposed by the DPS for the structure and operation of the EU. The EU should be selected by the Board and perform its duties pursuant to Board oversight. The EU should have a contract for a term of years, subject to renewal or termination based on EU performance. Most of the details for structure and operation of the EU should be determined in Phase II.

The responsibility for acquiring energy efficiency resources related to the core programs should reside with the EU. Energy efficiency resources related to non-core programs should remain the responsibility of the distribution utilities. Distributed utility planning should also remain the responsibility of the distribution utilities. However, coordination and cooperation between the EU and the distribution utilities will be necessary if both are to fulfill their responsibilities. I recommend that the Board adopt this division of responsibilities and direct the parties to consider flexible, coordinated approaches to meeting their respective responsibilities.

I recommend that the Board approve the DPS's proposed methodology for determining costs that are avoided by the implementation of energy efficiency measures, except for the issues related to avoidable distribution costs. That means that avoided generation costs will be determined by the New England market price for marginal energy and capacity; avoided transmission costs will be based on a Vermont statewide average; and an avoided environmental externalities value will be added. The methodology for assigning avoided distribution costs should be determined in Phase II.

I recommend that the Board approve the specific values proposed by the DPS for avoided costs, except the DPS's proposed environmental externality adder, as placeholders for EU screening pending the proceedings in Phase II. As a placeholder for the environmental externality adder, I recommend that the Board maintain its five percent adder, and consider increasing the adder to ten percent based on all the evidence in Phases I and II of this Docket. Upon the conclusion of proceedings in Docket 5611, I recommend that the environmental externality values developed there be incorporated into all energy efficiency program screenings for core programs, non-core programs, and DU planning.

C. Phase II Recommendations

Assuming the Board adopts the findings, conclusions and recommendations, above (or adopts them in substantial and significant part), and approves the establishment of a statewide EU, I recommend that the following issues be reviewed in Phase II of this Docket:

- (1) the form and structure for the EU and the process by which the Board would select an entity to perform the EU functions: this will include the performance criteria for the EU, including how it will be evaluated, audited, and its contract

renewed or terminated, and the assistance that the DPS and PSB would provide in developing, coordinating with, and monitoring the EU;

(2) the scope of the EU's duties and its relationship to the distribution utilities: this will include the coordination of core and non-core programs, program delivery options(including the use of distribution utilities to deliver core programs and the use of the EU to deliver non-core programs), and the coordination of distributed utility planning with the EU;

(3) the funding mechanism for the EU: this will include the allocation of costs to distribution utilities, the mechanisms for aligning those costs with benefits received by distribution utility customers, the procedures for recognizing past distribution utilities' expenditures for energy efficiency measures that provided benefits to their customers, and the mechanisms for non-core program services that the EU may provide to distribution utilities;

(4) the procedures for establishing avoided cost values for energy efficiency screening: this will include the values for screening core programs, non-core programs, and DU planning, to the extent that different values are appropriate; and,

(5) the appropriate time frame for establishing the EU and the need for and structure of any interim mechanisms.

I recommend that Phase II proceedings begin with a filing by the DPS that addresses the issues, above, with an opportunity for parties to make responsive filings, as appropriate. Many of the Phase II issues are already the subject of extensive prefiled testimony in this Docket.²⁹ Those filings could be incorporated into the record of Phase II and supplemented as necessary.

This Proposal for Decision has been served on all parties to this proceeding in accordance with 3 V.S.A. § 811.

DATED at Montpelier, Vermont, this _____ day of _____, 1998.

Paul R. Peterson, Esq.
Hearing Officer

29. Several parties have reserved their participation in this Docket solely for Phase II issues.

V. ORDER

IT IS HEREBY ORDERED, ADJUDGED AND DECREED by the Public Service Board of the State of Vermont that:

1. The Hearing Officer’s Findings, Recommendations, and Conclusions are hereby adopted.
2. The Department of Public Service’s proposal to create an energy efficiency utility to deliver energy efficiency services on a statewide basis to Vermont ratepayers is approved as specified herein.
3. The Department of Public Service shall file a proposal for additional proceedings in this Docket on or before June 1, 1998. That proposal shall address the Phase II issues identified in this Order. Subsequent to the DPS’s filing, a status conference shall be held to determine how to proceed.
4. This Order is a final order for Phase I.

DATED at Montpelier, Vermont, this _____ day of _____, 1998.

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| _____) | PUBLIC SERVICE BOARD OF VERMONT |
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OFFICE OF THE CLERK

FILED:

ATTEST: _____
Clerk of the Board

NOTICE TO READERS: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Board of any technical errors, in order that any necessary corrections may be made.

Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Board within thirty days. Appeal will not stay the effect of this Order, absent further Order by this Board or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Board within ten days of the date of this decision and order.