Cape Light Compact
Cooperative Investigation Study

Phase I Results

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Executive Summary

INTRODUCTION

The Cape Light Compact (the "Compact") was formed in 1997 and consists of all twenty-one municipalities on Cape Cod and Martha's Vineyard (the "Cape and Vineyard") and Barnstable and Dukes counties. Since 1997, the Compact has implemented a variety of activities and programs to bring competitive market prices for electricity to the Cape and Vineyard, support regional energy efficiency and renewable power development, and offer energy education to Cape and Vineyard students. The Compact has been interested in considering long-term supply contracts and ownership of renewable power projects to advance those programs, but to date it has been precluded from doing so by barriers including liability exposure and lack of legal authority. To address these issues, the Compact is exploring the formation of an energy-related cooperative under a Massachusetts statute, G.L. c. 164, § 136. In late April 2006, the Compact commissioned a two-phase study to explore the feasibility of forming such an electric cooperative. For Phase I of the study, the Compact retained a team led by La Capra Associates that includes Sustainable Energy Advantage, LLC and Birch Tree Capital, LLC (the "Team").

The Compact asked that the Team identify business models for a Co-op best able to meet these objectives, and assess the organizational and financing issues likely to be encountered in establishing the Co-op. This report represents the results of Phase I of the study (the "Report"). Technical terms are defined in Section 2.3 of the Report.

The purposes of Phase I are (1) to identify a range of potential cooperative models and evaluation criteria for assessing their feasibility, especially with regard to financing, (2) to evaluate the models using those criteria, screening out those with fatal flaws, and (3) to recommend to the Compact and its Members the most promising cooperative models for further consideration.

The Compact and its Members have considered, from time to time, the possibility of participating in development of renewable energy projects or of entering into long-term contracts for power or RECs. However, doing so was found to require incurring debt or assuming other obligations, and the Compact and its Members have found themselves unable to do so because of practical concerns, fiduciary responsibilities, differences in their financial capabilities, or limitations on their authority under state law. So, the Compact also wishes this Study to determine whether the Co-op, as a discrete entity, might overcome such constraints and limit the credit exposure of the Compact and its Members.

METHODOLOGY AND APPROACH

Methodology. The Team started by considering the Compact's energy-related roles and objectives and by defining the possible Co-op offerings that could advance the Compact's desire to provide more stable pricing and "green" alternatives. The Team looked at power supply alternatives available to supply those retail offerings, including both renewable and non-renewable sources of supply.

The Team then identified and evaluated organizational structures that could make possible the supply procurement and the delivery of the retail offerings identified in the previous steps. The Team also identified the kinds of relationships between the Compact and the Co-op required by those different approaches. These structures centered on the formation, governance and membership of a cooperative. Finally, the Team assessed the feasibility of various sources of financing to support the Co-op.

The Team screened the various business models identified, rejecting those that appeared to conflict with the Compact's goals and objectives. At this point the various business models—combinations of different retail offerings, supply strategies, and organizational structures—were assembled and screened to identify those recommended for further consideration by the Compact in Phase II.

Evaluation Criteria. The Team developed evaluation criteria to screen potential Co-op business models; these criteria covered the suitability of the business structure, i.e., combinations of cooperative function, retail offerings, cooperative organization and membership, power supply, and financing. Some criteria were considered to be minimum requirements; failure to meet them was considered a fatal flaw. Examples include any need for special legislation or a risk that Compact Members might incur an income tax liability. Other highly desirable traits were used to rank models, such as flexibility for expansion or ability to issue tax-exempt debt. The final category of criteria measures how well a business model aligns with the Compact's objectives and strengths, or how strongly it conflicts with its constraints. Some criteria were measured in a qualitative or approximate manner, with more quantitative assessment reserved for more detailed study in Phase II of the study; others are identified here for potential application in Phase II. Not all criteria are applicable to every component or overall business model. These criteria are discussed further in Chapter 2 of the Report.

RETAIL OFFERING SCENARIOS

The Team created four Retail Offering scenarios through which the cooperative-arranged supply could be delivered to buyers. These scenarios were used to evaluate which organizational and membership structural alternatives could serve these recipients of Cooperative supply, as well as ways to match the amount and type of renewable energy or hedged supplies with the amount of load in each scenario. Three scenarios involve *alternative*, *voluntary* product offerings with different pricing, commitment term or resource mix than the Compact's basic opt-out aggregation offering.

The three Voluntary scenarios are referred to respectively as **Committed Government Account scenario** (available on a voluntary basis to the Compact's Government Accounts only), **Committed Government & Stable C&I Account scenario** (available on a voluntary basis to Government Accounts plus a limited number of the Compact's most stable and credit-worthy retail accounts), and an **Unrestricted scenario** (available to all or a substantial percentage of the Compact's load base). The fourth scenario—the **Opt-Out: Portfolio Enhancement scenario** – was viewed as an enhancement to the portfolio used by the Compact to serve its municipal aggregation customers and involved folding any Cooperative-arranged hedge or renewable energy supply into the Compact's basic Municipal Aggregation opt-out offerings. The purpose

of this last scenario would be to partially stabilize the price of the opt-out product, make that product "greener," or both. The implications of these scenarios are summarized in Section 4 of the Report.

POWER SUPPLY ISSUES

In Phase 1, the team explored issues that relate to how a cooperative purchasing[1] in the bulk power supply market might assist the Compact in advancing its goals, as well as how cooperative business models would affect power trading. The Team's results are discussed in Section 4 of the Report and summarized here.

Electricity market prices are driven, in large part, by prices of natural gas and oil, and increasing prices for these fuels have driven a corresponding upward trend in New England electricity prices during the past several years. Other factors (particularly the regional supply/demand balance of generating capacity) can also affect the long-term price trend and contribute to price volatility. Electricity market price uncertainty has significant implications for the potential Cooperative.

A Cooperative could use fixed price bilateral purchases of energy and capacity to increase the stability of retail electricity. In a bilateral contract, one party buys a certain amount of power from another party for a specific term, possibly at a fixed price. The purchases could still be passed on to the Compact's Retail Supplier and used to supply the Compact's Municipal Aggregation program. Alternatively, retail prices could be stabilized using either a financial hedge or a synthetic hedge. These methods, discussed in Section 4, in essence use financial instruments to stabilize the net price of power as with a fixed price purchase, but *may* be simpler or cheaper to implement. Or, the Co-op could pursue full participation in the ISO-NE electricity market, become an ISO-NE market participant and create full-requirements supply itself rather than through a Retail Supplier. To do this, the Co-op would have to play a much more intensive role in the wholesale electricity market on a daily and hourly basis.

Each approach has pros and cons. One of the biggest concerns would be credit requirements. Credit terms are a central part of power contract negotiation and power trading. In order to make fixed price bilateral purchases of significant duration, a buyer lacking strong financial standing (as the Cooperative would, initially) must be able to post substantial security. A full wholesale market participant with an ISO-NE settlement account would likely need to post additional collateral to cover net short purchases. The specific amount of security required would depend on the size and length of contracts negotiated, but a fixed-price purchase of 20 MW for three years could require security (e.g., letters of credit) in the $3 to $5 million range, while a fixed price hedging purchase for the entire Compact Aggregation program over this period could require security on the order of many tens of millions of dollars.[2]

[1] A cooperative's trading activities would consist primarily of purchases to meet its customers' needs; some sales (e.g., to balance fluctuations in customer electricity requirements) might also be appropriate.

[2] While the security requirements discussed here do not represent an expense – because they are ultimately returned to the buyer except in the event of an actual hedge contract default – they would preclude the use of an amount of capital or guarantee authority for other purposes during the power contract.

The feasibility of long-term fixed price power purchases or other hedging transactions for a Cooperative will depend to a large degree on the amount of performance assurance, i.e., collateral, required by wholesale suppliers, and the amount of capital or guarantees that Co-op or Compact Members are willing and able to provide.

THE RENEWABLE ENERGY MARKET

The Compact is especially interested in securing regional renewable energy as part of the supply to Compact load. Because the costs of renewable energy generators are largely fixed and independent from the fossil-fuel drivers of commodity electricity prices, renewables may provide an important tool for achieving the Compact's price stabilization objectives. For these reasons, Section 5 of this Report gives an the overview of aspects of the regional renewable energy landscape - the projects being developed, their economics and the motivations and needs of those developing them – which are important in shaping what the Co-op can strive to achieve.

Considerable renewable energy development activity is underway throughout New England, primarily wind and biomass (which includes landfill methane). While many projects in development may not reach commercial operation, certain conclusions can be reached. First, enough *local land-based* wind projects are likely to be available to serve a meaningful fraction of the Compact's Government Accounts within the next two to three years. Second, of renewable energy projects under development throughout the New England region as a whole, enough projects are likely to be completed within 5 years to serve much of the Compact's entire Municipal Aggregation load. More specifically, information on publicly-known projects in the region indicates that 2 to 5 MW of local community-scale wind projects under development may be completed for possible delivery by 2007, a figure increasing to 35 to 50 MW for delivery by 2010. In New England as a whole, wind projects under development amount to roughly an additional 460 MW onshore and over 750 MW offshore to be on-line by as early as 2010, with another 85 MW of biomass under development in a similar time frame. (See Section 5 for details.)

Renewable energy project costs, permitting situations, and financing requirements vary widely, depending on a variety of factors including: technology type; project scale; site-specific resource strength as well as access, construction and interconnection costs; availability of Federal (production tax credit) and state incentives, and the ownership structure. The "all-in" life-of-unit levelized cost of wholesale energy at the plant (not comparable to retail prices) varies among different types and scales of potential renewable energy projects in New England from roughly $60 per MWh to over $120/MWh (equal to 6 to 12 ¢/kWh). The products of renewable energy generators include energy, capacity, and RECs. The levelized costs of renewable energy technologies could exceed the cost of fixed price power contracts by up to 3.5 ¢/kWh in the near term. However, that differential could be offset through the sale of some or all RECs, and might then be less costly than conventional fixed price power contracts. Typically, a willingness to enter into a long-term contract for the output of a renewable energy generator in support of financing, or alternatively, direct project ownership, is necessary to access renewable energy supply reflective of these costs. However, this opportunity is likely limited to projects which have not yet arranged financing; an already-financed "merchant" renewable energy project will

have no reason to price differently from the bulk power commodity market. Furthermore, wind power generators have very low ongoing operating costs, so wind project ownership by the Co-op could, after capital costs are fully amortized, result in long-term costs below the market price of conventional power. Such low-cost power supply could mitigate future migration risk.

Finally, it is important to note that renewable energy projects are being developed for many different reasons by a variety of public and private sector entities. Long-term contracts for sale of power or RECs to the Co-op may not be attractive to some of these developers, but may be uniquely appealing to developers of some of the less conventional (and more modest scale) projects, particularly where the Co-op's participation can make a marginal project financially feasible.

FINANCING CONSIDERATIONS

Financing Structures and Co-op Bankability. Section 6 of the Report considers whether the Co-op could show sufficient financial strength or "bankability" to support potential power market hedging transactions and renewable power supply activities with little or no support from Compact Members. Bankability refers to the prospects of a company (including, but not limited to, the Co-op) or a project to obtain third party capital in support of some planned transaction or investment. The goal is for the Co-op to tap financing that is cheaper, easier to obtain, and present fewer risks to Compact Members than financing raised directly by the Compact Members.

Multiple capital sources may meet the needs of the Co-op in financing its own investment in a renewable power generation project, or may be tapped by a third party owner of such a project in connection with a long-term power purchase commitment by the Co-op on behalf of Compact Members. These include financing sources geared for projects involving public, private, and cooperative ownership and in the form of grants, guaranteed loans, conventional loans, and private equity. Potential financing options vary in the trade-off of costs, complexity, terms, and degree of support likely needed from Compact Members. Grant programs alone are unlikely to meet the needs of the Co-op.

It is important to note here, that in order to finance investments in renewable power projects, the Co-op instead will need to obtain equity from Compact Members, i.e., capital contributions, limited pledges of credit, or both, obtain debt and equity capital from third parties, or obtain some combination of financing from both Compact Members and third parties.

Long-term debt financing extended either on a corporate or project basis is typically used to finance renewable power projects. In corporate financings, the lender extends the loan based on comfort with the borrower's aggregate cash flow and resources. The loan amount may be for up to the full amount of the project costs and have a repayment period unrelated to the operational life of the project. The Team believes that it will be difficult at best for the Co-op to obtain such corporate-style financing for its initial operations. At its outset, the Co-op, as a start-up enterprise with no financial history or cash flows, is unlikely to be able to do so on its own. To borrow on a corporate basis, the Co-op will almost certainly need explicit credit guarantees by Compact Members or other credit-worthy entities. Letters of credit for fixed dollar amounts or

comparable partial guarantees are unlikely to be accepted by potential lenders as adequate substitutes for demonstrated and projected cash flow generation. The level of external credit support needed may lessen over time as the Co-op develops a satisfactory financial track record.

An alternate long-term debt financing option is project financing. Under this structure, the Co-op instead seeks to make the renewable power project itself bankable on a stand-alone, or project, basis. Financing for the project is on terms that provide sufficient comfort to lenders that the project itself yields sufficient ongoing cash flow to repay the debt. Under this structure, the lenders would not require direct loan guarantees by Compact Members. The Team believes that project-based financing structures supported by strong power purchase commitments may be the most effective means for the Co-op to attract long-term third party debt and equity financing.

The quality of the purchase commitments is vital under a project finance structure, since those commitments represent the source of the cash flow ultimately needed by the project to repay the debt financing. If Compact Members or other Government Accounts, acting through the Compact, want to purchase power and RECs from the project, they will need to be credit-worthy in the eyes of the project finance lenders (and project investors) and be willing to enter into fully binding purchase commitments lasting at least as long as the term of the debt financing. The details of the actual sales contracts will need to be worked out within the Compact Aggregation structure and the contract with the Compact's Retail Supplier. A project finance loan typically only covers roughly half of the cost of a power project. If the Co-op elects to invest directly in renewable power projects, the Co-op will need a source of equity capital for the balance of the capital costs. Lenders will look to have the Compact Members, as owners of the Co-op, provide adequate comfort that the Co-op will meet its equity and any other performance obligations.

These project financing criteria likely will arise even if the Co-op only seeks to enter into multi-year power or REC purchase commitments with third party project developers. The developer will face the same requirements from its own lenders and investors in obtaining term debt financing and equity capital to build the power plant. These lenders and investors will look to see that the Co-op's power and REC purchases are on terms deemed creditworthy for a project finance structure. They will need to be comfortable that the ultimate buyers of the power and RECs from the project, e.g., interested Compact Members, are creditworthy entities and are willing to make long-term purchase commitments.

Co-op Financing Options. Renewable power project developers undertake projects for various reasons. Recent wind projects in New England have been sponsored by diverse public, quasi-public, and private entities. Similarly, capital sources financing renewable power projects hold differing rationales, capabilities, and focus on certain types of financing transactions. The variety of power project developers and their varying financial strength will determine which financing sources are most feasible for any given project and will improve the ability of the Co-op to offer power purchase contract or investment terms that meet the needs of the project developers.

Renewable project developers are tapping a variety of financing sources to finance renewable power projects. These include several Federal and state grant and loan programs. The Compact's counsel considers that the organization of the Co-op under Massachusetts G.L. c. 164, § 136 should make the Co-op eligible to issue revenue bonds. Further evaluation by

legal counsel and bond underwriters likely will be needed to confirm the Co-op's ability to issue tax-exempt bonds. Several tax-oriented hybrid partnership structures have been developed in recent years to attract private sector equity financing in support of renewable power projects developed by entities unable to make efficient use of available Federal tax incentives, e.g., towns and smaller private developers. The Co-op may be able to employ such tax-oriented partnership structures to help finance its own renewable projects and/or those sponsored by other entities unable to use the tax incentives efficiently.

The diversity of financing sources and structures give comfort that the Co-op should be able to secure financing whether it opts to buy renewable power through long-term purchase contracts or make a direct investment in a renewable power project. Initial Phase I research indicates that bond financing backed directly by Compact Members, project-based financing with limited recourse to the Compact Members, as well as hybrid tax-oriented equity investment structures all appear to be feasible financing options. Specific contract or investment opportunities will involve devising a plan that works for the specific project. In general, however, creation of the Co-op should facilitate raising financing for such renewable power projects, if only by serving as a focal point in crafting the requisite contract and project structure and financing activities. These financing strategies and options could be implemented by a Co-op organized using the business models discussed in Section 8.

To improve the Co-op's prospects for closing on financing (or for assisting a third party developer to do so), such financing strategies will need to draw upon the Compact's and Co-op's multiple competitive strengths while minimizing their weaknesses. Such strengths include access to specialized financing sources and structures not readily available to other renewable power developers, as well as the unique Compact Aggregation framework. Constraints include the Co-op's initial lack of intrinsic financial strength or bankability and the fiduciary responsibilities of the Compact Members in negotiating contracts with private sector entities. Depending on the size and types of loads being served by a project, the nature of the credit and purchase commitments by the interested Compact Members also will be relevant.

Next Steps. The Team suggests that the Compact assess selected financing sources and strategies in more detail. This analysis could be done with respect to one or two types of likely near-term renewable power purchase contract or investment opportunities, e.g., the community wind project in the Town of Orleans. The intent would be to understand the detailed issues and tasks in securing a long-term power purchase contract or financing for an investment project. The detailed review would also work out the coordination details with the Compact Aggregation structure. In advance of such analyses, this Report outlines four hypothetical contracting and investment scenarios that might be encountered by the Co-op and suggests corresponding financing strategies. The scenarios illustrate the diversity of possible future renewable power development opportunities and available financing plans.

The Team also offers measures to manage the initial financial exposure of the Co-op while facilitating its power contracting and financing capabilities. These include an initial focus on community-scale projects not exceeding five megawatts in size and focusing initially on supporting projects developed by other parties. These measures will limit the dollar scale as well as simplify the Co-op's tasks of devising a financial plan and negotiating bankable power purchase contracts. At the same time, the Team suggests that the Co-op adopt a longer range

goal of becoming the "go-to" advisory, contract, and investment financing partner for Cape-based community-scale renewable power projects. This might be done by combining support from Compact Members with developing Co-op expertise to achieve successful closings on financing initial projects. The Team suggests that the Co-op work in advance with Compact Members and the Compact's Retail Supplier on the power contract template framework and likely terms and to familiarize selected potential investors and lenders with the template framework; such efforts will improve the Co-op's ability to respond effectively to specific power purchase contract or investment opportunities in a timely manner.

COOPERATIVE BUSINESS MODELS

In Section 7, the Team developed several structural models for a Co-op. In addition, the Team considered various business scopes and functional alternatives. Finally, options for cooperative structural organization and membership alternatives were evaluated. The Team then applied the evaluation criteria discussed earlier to eliminate unsuitable models from further consideration.

Alternative Business Organizational Structures. The Team considered whether alternative forms of business organization, e.g., a limited liability company, a for-profit C-Corporation or an S-Corporation, or a tax-exempt non-profit corporation, could meet the Compact's objectives. The Team concluded that while each alternative carries its own limitations, special state legislation would be needed for the Compact Members to establish any of the non-cooperative entities in a form that could own power projects or perform many of the other functions envisioned. In contrast, the Compact's legal counsel believes that G.L. c. 164, § 136 would enable the Compact Members to establish such a cooperative to perform all the various functions desired, including project ownership. As a result, the non-cooperative forms were not considered for further detailed study.

Alternative Business Scope and Functions. The Cooperative could, in principle, perform additional roles relating to the sale or delivery of electricity, beyond wholesale power supply. The Team considered three such additional functions the Cooperative could conceivably perform: ownership of distribution facilities (poles and wires), provision of retail generation services, and taking over the utility franchise for generation services. Our analysis concluded that both ownership of distribution facilities (poles and wires) and taking over the utility franchise for generation service would require multi-year, complex and contentious processes, diverting the Compact's attention and resources towards a function unnecessary to fulfill the Compact's stated objectives. As a result, neither was recommended for consideration as part of this Study. In contrast, provision of *retail generation services,* i.e., the Cooperative becoming the Retail Supplier procuring energy at wholesale and reselling it as full-requirements electric supply to end-use customers, was deemed a decision that should be set aside for possible consideration at a future date when, and if, an electric cooperative is established and operational.

Cooperative Organizational & Membership Alternatives. Section 7.4 discusses several inter-related issues that dictate the feasible alternatives to organizational and membership structures capable of meeting Co-op objectives. These include:

- Who are the members of the cooperative? This relates to balancing governance and the fiduciary responsibility associated with managing any pledge of public assets with the basic cooperative tenet of one member, one vote.
- Whether tax liabilities that would eat into the benefits of forming a cooperative can be avoided and certain considerations regarding preservation of access to tax-exempt financing.
- Can the Co-op be established as a tax-exempt entity? One way to do so is to structure the Cooperative as an instrumentality of its members, provided that its members themselves are all tax-exempt governmental entities; another structure requires compliance with Federal Internal Revenue Code 501(c)12 requirements.
- Can a model efficiently build reserves for working capital and business expansion from earnings?

In considering alternatives, the relationship between the Compact and the Co-op is also critical, as is the degree to which the Compact or its selected Retail Supplier is a buyer (patron) of what the Co-op sells.

Based on an assessment of these factors, the Team identified two primary organizational and membership structures for evaluation. These include: (1) the *Public Co-op*, whose members are all government entities, e.g. the towns and counties of the Cape and Vineyard, acting in the interests of their constituents, the citizens, businesses and institutions in their jurisdictions; and (2) the *All-Consumers Co-op* in which all retail customers could be members. In addition, two variations on the *Public Co-op* were identified. These are described further in section 7.5 of the Report.

The Public Co-op. This model relies on a representative form of governance with the membership comprised of government entities, e.g., interested Compact Members. Such a cooperative could enable retail offerings in two different ways, through sales to its members, or sales to the Compact. In either case, the Compact could bundle the Co-op's supply into a full-requirements retail supply either through resale to the Retail Supplier to Compact load, or potentially serving as a Retail Supplier itself. Under the "Sales to the Compact" option, the Co-op would make sales of blocks of energy, hedges or renewable energy output to the Compact. In turn, the Compact would either (a) bundle those sales into a voluntary retail offering for the benefit of the Compact's Committed Government Accounts or (b) bundle those resources into the Compact's opt-out product (to enable the *Opt-Out: Portfolio Enhancement* Retail Offering Scenario).

The *Public Co-op* structure appears feasible for at least some (if not all) of the Retail Offering scenarios, and has a number of advantages. It maintains a linkage between governance and fiduciary responsibility to manage pledges of public assets, and would allow for tractable and efficient governance. It would maintain tax exemption, not trigger any government tax liability, and would avoid erosion of benefits through income taxation at any level. It appears to allow for tax-exempt debt issuance, as well as retention of earnings to build capital reserves. It would be bankable to the extent of pledges of capital, credit and other commitments by the member government entities, as discussed in Section 6. In summary, this simple and straightforward alternative appears to be feasible and most suitable for further revaluation in Phase II.

The "All-Consumers" Co-op. Under this approach, the Co-op's bylaws could allow any retail customer within the Compact Aggregation to join, or a subset of customers meeting certain qualifications. In practice, it could initially be set up with membership of government entities, e.g. interested Compact Members, with other members joining at a later date under specified conditions. Because members would include non-government entities, this model cannot rely on being an instrumentality of tax-exempt entities, instead being formed and operated as a Federal I.R.C. 501(c)12 cooperative to maintain tax exemption.

The *All-Consumers Co-op* might seem attractive as it could arguably include the full range of non-government end-users while complying with the provisions of Federal I.R.C. 501(c)(12). However, it fares poorly with respect to several of the evaluation criteria. It could not be made credit worthy by relying on the public entities to pledge their taxing authority, for (consistent with the Massachusetts Constitution and General Laws) public entities cannot use their taxing authority for the benefit of private individuals. This model also cannot avoid taxation by virtue of being an instrumentality of tax-exempt members. Instead, Federal tax-exempt status would have to be maintained by compliance with I.R.C. 501(c)(12) provisions. However, sales of surplus RECs or energy to ISO-NE spot market, if significant in volume, would potentially violate certain 501(c)(12) provisions. As triggering tax liability would be considered a fatal flaw, the need to avoid this risk would severely limit a cooperative's ability to carry out the range of transactions envisioned, especially in comparison to the *Public Co-op* model. Uncertainty whether the model would allow for issuance of tax-exempt debt represents a further fatal flaw. Consequently it is severely limited and likely fatally flawed, and simpler alternatives appear available to address this desire under the Public Co-op approach.

CONSTRUCTING BUSINESS MODELS FOR PHASE II CONSIDERATION

In Section 8, the Team used the prior analysis to select cooperative organizational and membership options that warrant further consideration for the near term in Phase II, those which should be preserved for possible future use, and those which we suggest be rejected. We then screened the Retail Offering Scenarios and identified those to be considered for the near term in Phase II and those that should be preserved for possible future use. Next, the Team identified which Retail Offering Scenarios would appear to work best with the selected cooperative organizational and membership options. Using the groupings from the previous step, the Team developed business models for further consideration by the Compact in Phase II. Finally, we matched these business models with associated supply capabilities, strategies, tactics and limitations. We also identified some of their key characteristics including the impact on the Compact's existing opt-out Municipal Aggregation offering, the structure and options for relationships with entities such as Retail Suppliers, the implications for term of customer commitment, scale of hedging, and options for which entities could serve as Retail Supplier and the Load-Serving Entity ("LSE").

Recommendations: Cooperative Organizational & Membership Alternatives. Based on the Team's evaluation, we identified two combinations of cooperative organization and membership options that merit further study in Phase II: the Public Co-op with Sales to Members and the

Public Co-op with Sales to Compact. We screened from further consideration the All-Consumers Co-op and Supplier Co-op.

Aligning Organization & Membership Alternatives with Retail Offering Scenarios. Combining the results of the previous two sections, along with the characteristics of the organizational and membership structures provides a view of feasible and recommended combinations. These combinations, summarized in Table 7 in Section 8.3 of the Report, serve as the core of the business models recommended for further consideration in Phase II. The recommended model of the Public Co-op, with sales to the Compact, easily accommodates the Voluntary product offering to Committed Government Accounts and can support all of the other Retail Offerings scenarios as well.

Business Models Recommended for Further Study in Phase II. The business models suggested for further consideration in Phase II include a *Public Co-op* with:

- Government Accounts as members and patrons under voluntary long-term retail purchase agreements,

- Government Accounts as members and selling to the Compact in the first instance, but with the Compact arranging resale to Government Accounts under voluntary long-term retail purchase agreements via the Compact's Retail Supplier **[potentially expandable to other accounts in the future]** , and

- Compact Members as the members of the Co-op and selling to the Compact for blending into its Municipal Aggregation program's load.

These models are discussed in greater detail in Sections 7 and 8 of this Study.

The Public Co-op Selling to Government Accounts Model. The membership of the Co-op in this business model is open to public sector entities in the Compact's service territory, e.g., interested Compact Members. These members who voluntarily join help provide the Co-op with initial capital and limited credit support. The participating government accounts (the "Committed Government Accounts") buy the energy, hedge contracts or RECs from the Co-op and assign them in turn to the Retail Supplier to fold into retail full-requirements supply for their own ultimate consumption. The longer a period for which the Committed Government Accounts can commit to purchasing this product from the Co-op and to provide credit support to the Co-op, the more easily the Co-op will be able to secure long term power market transactions, including ownership and investments in renewable energy projects and bilateral wholesale forward market purchases.

The Public Co-op Selling to the Compact for Voluntary Offerings Model. The membership of the Co-op in this business model is, again, open to public sector entities in the Compact service territory who voluntarily join to help provide the cooperative with initial capital and limited credit support. As with the above model, the longer the Committed Government Accounts can commit to purchasing from the Co-op and providing requisite credit support, the more easily the Co-op can secure long term power market transactions, including ownership and investments in renewable energy projects and bilateral wholesale forward market purchases.

The primary difference between this model and the previous one is that the Committed Government Accounts who agree to take their generation service under the Voluntary Participation offering do not purchase products directly. Instead, the Co-op's Portfolio of generation, RECs and other products is sold to the Compact, which in turn assigns the portfolio to the Retail Supplier serving the Committed Government Accounts with full requirements retail generation service.

The Public Co-op Serving the Opt-Out Municipal Aggregation Model. The membership of the Co-op in this business model is the same as in the prior two models - interested government entities in the Compact service territory who voluntarily join and provide the Co-op with initial capital and credit support. As with the prior business models, the longer the Committed Government Accounts can commit to membership in the Co-op, the more easily the Co-op can secure longer term power market transactions, including ownership and investments in renewable energy projects and bilateral wholesale forward market purchases.

In this model, the Committed Government Accounts agree to take their generation service via the Compact's Municipal Aggregation offering. They do not purchase a share of the Co-op's Portfolio. Rather, the Portfolio is sold to the Compact, which in turn assigns it to the Retail Supplier serving the Municipal Aggregation.

CONCLUSIONS AND RECOMMENDATIONS

The Phase I research has led the Team to offer several conclusions for consideration by the Compact to assist the Compact and the Compact Members in determining whether and how to proceed with Phase II of this effort and ultimately in the formation of a cooperative. These are summarized here.

Cooperative Structure & Organization

- A Co-op formed under G.L. c. 164, § 136 appears more capable than other potential business structures to complement the Compact's operations from the perspective of governance compatibility, financing and maintaining non-taxable status.

- The Team recommends the Public Co-op model for further review. This model appears capable of providing hedging for power prices, while supporting the development of renewable generation in the region. Other identified models do not appear to be workable.

- The Team recommends the Voluntary: Committed Government Account retail offering scenario as the primary focus for Phase II of this study. The Team suggests the Compact further assess the optimal chain of title for the Co-op's sales of its power and RECs, i.e., the relative feasibility and benefits of the Co-op selling power and RECs to Compact Members and other Government Accounts who join the Co-op versus sales directly to the Compact where the Compact itself is in the chain of title. The Opt-Out Portfolio Enhancement Scenario has some issues and practical limitations on its effectiveness, but may have some utility in later stages of the operation of the Co-op.

- Choices concerning Co-op membership and governance are critical to a successful Co-op. Those choices will drive what the Co-op can do and whether it will be viable.

Hedging Power Price Volatility

- Participation by the Compact or the Co-op or the Compact Members in meaningful levels of power market hedging transactions will impose credit exposure on the participating entities during the life of the hedge contract. The required credit amounts may reach significant levels depending on the extent of hedging desired.

- Price volatility will be hard to hedge through conventional hedging contracts without the contract counterparty requiring significant security requirements.

- Power price volatility also could be hedged by entering into long-term renewable power purchase agreements or by undertaking direct investments in renewable power projects.

- There are enough viable renewable generation projects under development in the region to provide multiple opportunities for the Compact and the Co-op to enter into power purchase contracts or consider direct investments in pursuit of the objective of hedging against power supply price volatility for at least the Government Accounts load in the near term, and perhaps the overall Compact Aggregation portfolio in the long term.

- There are several ways to set up a Co-op to access renewable power generation supplies, including several that appear to be able to integrate the renewable power into power supply for some or all retail accounts on the Cape and Vineyard.

- The Compact will want to review in further detail integrating new power purchase contracts or investments with its existing Opt-Out offerings.

- The simplest way to incorporate Co-op-sponsored 'green' and 'hedged' supply resources is in separate Opt-In product offering(s), blended into Full Requirements Service by a Retail Supplier. This is likely the best fit with Government Accounts.

Securing Co-op Financing & Bankability

- Multiple sources and financing structures are available that are geared to financing projects involving public, private, and cooperative ownership.

- Financing Co-op renewable power purchase contracts or investments will need to take into account the Co-op's start-up status and initial lack of financial strength. Corporate-style financing likely only will be feasible to the extent that the Compact Members assume contingent payment obligations. Project-based financing supported by strong power purchase commitments by Compact Members may be the most effective means for securing financing at an acceptable trade-off amongst these aspects.

- The ability of the Co-op to issue tax free bond financing to finance its investments in renewable power projects will improve the economics of such projects by enabling lower-cost financing and, ultimately, a lower required price for the power. The Co-op

appears able to access such tax-exempt financing for certain projects, but further legal and bond underwriter analysis likely will be needed to resolve eligibility questions.

If the Compact undertakes further research, the Team recommends an early focus on certain questions, consideration, and tasks:

- Exactly how would a separate Voluntary Participation offering mesh with the Compact's existing Municipal Aggregation service?
- Legal research to confirm the Co-op's ability to issue tax-exempt bond financing, and to confirm that potential Co-op power or REC sales activity would not imperil either the tax-exempt status or the bond issuance capabilities.
- Focusing on one or more specific potential contract or investment opportunities so as to address detailed Co-op organizational, contract, and financing questions on a practical basis.
- Estimating the magnitude of bilateral power purchase transactions that would provide significant hedge value to the Compact's Members.
- Creating an indicative schedule of renewable energy project participation or investments to gauge concomitant financing requirements for the Co-op.
- Exploring the specific amounts of security that the Co-op would require in order to implement bilateral contracts for multi-year hedging.
- If engaging in financial hedging of power supply transactions to mirror the benefits of fixed-price power transactions is appealing, the Team suggests that Phase II research include investigating whether such pure financial hedging can reduce credit requirements.

1.0: Introduction, Objectives and Purpose of Report

1.1 Introduction

The Cape Light Compact (the "Compact") was formed in 1997 and consists of all twenty-one municipalities on Cape Cod and Martha's Vineyard (the "Cape and Vineyard") and Barnstable and Dukes counties. Under the Intergovernmental Agreement (the "Agreement") signed by the members of the Compact (the "Compact Members"), the Compact was charged with advancing the interests of energy consumers in its region in the competitive energy supply market.

More specifically, the goals of the Compact include:

- Supplying the benefits of municipal aggregation provided for under Massachusetts's electric restructuring law to electric power consumers on the Cape and Vineyard (the "Compact Aggregation");
- Supporting renewable electric power generation projects;
- Providing a policy advocate role for the Compact Members and other electricity consumers on the Cape and Vineyard regarding electricity matters; and
- Administering broad energy efficiency programs developed for the consumer base on the Cape and Vineyard, funded from the energy efficiency surcharge within electric rates.

Since 1997, the Compact has implemented a variety of activities and programs to bring competitive market prices for electricity to the Cape and Vineyard, support regional energy efficiency and renewable power development, and offer energy education to Cape and Vineyard students. Notwithstanding its achievements to date, the Compact has determined that it has been hindered in making further progress towards its goals by several legal, business, and policy concerns. To offset electricity price variability, the Compact has considered the potential of entering into multi-year purchase commitments with one or more wholesale power suppliers. In addition, the Compact would like to facilitate the further development of renewable power in the region, especially of community-scale renewable power projects, by entering into long-term agreements to purchase the power and possibly the renewable energy credits ("RECs") generated by such projects. In certain cases, the Compact can see benefits from directly owning interests in renewable power projects. However, the Compact has determined that purchasing electric power or RECs from a wholesale power supplier could raise significant liability concerns for the Compact Members. There are also questions whether the Compact Members have the legal authority to enter into long-term contracts or own power generation assets.

To address these issues, the Compact is exploring the formation of an energy-related cooperative under a Massachusetts statute, G.L. c. 164, Section 136. The Compact has set the primary objectives for a potential cooperative (the "Co-op" or the "Cooperative") as the following:

- Improve power supply pricing benefits (through stability and price reductions) for municipalities and other government entities willing to participate in more

structured municipal aggregation programs (the "Committed Government Accounts");

- Increase renewable energy development, particularly on the Cape and Vineyard, by supporting specific utility and community-scale renewable power generation projects through some combination of power and REC purchase commitments and/or direct investment and ownership;

- Increase the renewable energy component in the Compact Aggregation's power supply; and

- Obtain new power supply acquisition avenues for the Compact Aggregation.

The Compact is exploring whether the use of such a cooperative can facilitate its ability to accomplish these objectives. To this end, the Compact elected to have a two-phase study be undertaken by independent consultants to explore the feasibility of forming an electric cooperative pursuant to Massachusetts G.L. c. 164, § 136. The Compact issued a formal request for proposals in late February 2006 and in late April 2006 engaged a team of consultants led by La Capra Associates and including Sustainable Energy Advantage, LLC and Birch Tree Capital, LLC (the "Team") to undertake the first phase ("Phase I") of the study.

1.2 Compact Objectives for This Study

A key underpinning of this study is the Compact's desire to supplement and leverage its existing municipal aggregation power supply and energy efficiency programs with its support for renewable energy. Accordingly, the Team was asked to investigate whether the Cooperative might play a major role in facilitating the development of renewable energy projects on the Cape and Vineyard and the surrounding region. The Compact wants to understand any advantages that participation by the Co-op and/or the Compact Members can bring to such projects.

Specifically, the Compact commissioned this study to explore whether the Co-op could accomplish one or more of the following functions in a feasible manner, including:

- Purchase wholesale energy under long-term contracts from renewable electric power generation projects, including especially, but not limited to, land-based community wind projects on the Cape and Vineyard for resale to Compact Members;

- Purchase RECs on a long-term basis for resale to Compact Members ;

- Purchase energy on a wholesale basis for the Compact's basic power supply needs to satisfy the demand of its Cape and Vineyard consumers;

- Facilitate the development of renewable energy and distributed generation projects owned by third parties, e.g., by Compact Members, other regional municipalities and public entities, and by private sector entities;

- Purchase ownership interests in renewable energy and distributed power generation facilities developed by third parties;

- Undertake the direct construction, operation and/or ownership of renewable energy and distributed generation projects; and
- Provide a means for Compact Members and other interested Cape and Vineyard electric retail accounts to mitigate electricity price volatility and manage the path of their electricity costs.
- In concert with the review of the potential form and structure of the Co-op, the Compact asked the Team to investigate several tiers of potential recipients of Co-op-arranged hedge and/or renewable energy supplies and relate such tiers to the magnitude of potentially available renewable energy supply. In order of increasing magnitude of load, these tiers include service to:
- Government (e.g. municipal and county) retail electric accounts of Compact Members (at a minimum);
- An additional, but limited, number of the Cape and Vineyard's most stable large non-government retail electric accounts;
- A larger proportion of the Cape and Vineyard's retail electric accounts; or
- The entire Compact Aggregation.

In its initial exploration of the concept and potential utility of a cooperative, the Compact determined that no cooperative exists in Massachusetts under the Chapter 164 statute. Accordingly, the Compact asked that the Team assess possible business models and the organizational and financing issues likely to be encountered in establishing the Co-op.

A key concern of the Compact is whether the Co-op can overcome the financial and legal limitations of the Compact and Compact Members in undertaking such activities. The fact that the Compact was created through an intergovernmental agreement, rather than via incorporation as a corporate or other distinct legal entity under state law, may limit its ability to undertake certain activities. For their part, the Compact Members have been constrained in what they can undertake, e.g., ability to incur indebtedness and long-term contract obligations, due to their fiduciary responsibilities, their diverse financial capabilities, and limitations on all municipalities under state law. The Compact wishes to determine whether the Co-op, as a discrete entity, might be able to overcome such constraints. To this end, the Compact has asked the Team to review the ability of the Compact to enter into long-term power and REC purchase contracts, to invest in power project generation assets, and to access or facilitate long-term third party financing in support of such activities. Particular questions of interest are the Co-op's potential ability to obtain tax-exempt bond financing and the ability to secure financing with limited direct support extended by the Compact Members.

1.3 Purpose of This Report

Recognizing that there may be a large number of cooperative business models to investigate in the study, the Compact has elected to divide the study into two phases. The Team was commissioned to undertake the first phase of the study. This report represents the results of Phase I of the study (the "Report").

The purpose of Phase I of the study is to undertake a screening analysis to identify a selection of potential cooperative models, to compile "fatal flaw" and other criteria for evaluating the general feasibility of such models, to evaluate the potential models using such evaluation criteria to screen out those with fatal flaws, and to suggest to the Compact and the Compact Members a subset of the most promising cooperative models. The Compact intends to review the results of the Report with the Compact Members and make recommendations for any follow-up research in a Phase II of the study or such other actions as determined by the Compact.

This Report has several other related purposes including (1) an assessment of the potential designs for retail offerings under which power and RECs procured or generated directly by the Co-op could be integrated into the existing Municipal Aggregation, (2) a survey of the potential availability of renewable power projects in development in the region, and (3) a framing of the potential types, sources, and terms of financing that the Co-op might feasibly be able to access in support of power and REC hedging in financial markets, long-term contract purchases, and direct investments in power generation supplies. The Report is to offer an assessment of the prospects of the Compact for tapping into financing independent of support from the Compact Members. Lastly, the Report is to offer suggestions and observations on these matters to the Compact and the Compact Members for their review in considering whether to undertake a Phase II further analysis of the Co-op concept.

1.4 Organization of This Report

This Report, covering Phase I of the study, contains an executive summary followed by the main report, which is organized, into nine sections. The first section (Section 1) introduces the objectives and purpose of the Compact in undertaking the overall study.

Section 2 summarizes the general methodology and approach of the study; it includes a translation of the Compact's objectives into evaluation criteria for characterizing and screening the alternative approaches considered, as well as definitions of several terms used throughout the Report.

Section 3 introduces four Retail Offering Scenarios used to consider the possible tiers of potential recipients of Cooperative supply and possible cooperative organizational and membership structural alternatives, and the match of available resources to the amount of load targeted to serve.

Section 4 identifies how the Compact can increase its involvement in power supply through a Cooperative and sets out the associated issues, opportunities, risks and requirements, the alternative power supply options that would be available to the Compact through a Cooperative, and the alignment of those alternatives with the Compact's objectives and capabilities.

Section 5 provides background on the New England renewable power market, identifies renewable power options that might be available through a cooperative, and outlines the alignment of these characteristics with the Compact's objectives.

Section 6 describes the financial arrangements that the Cooperative could employ to secure financing for renewable power projects.

Section 7 presents the possible business models identified by the Team for the Cooperative. It identifies the organizational structures and business functions developed by the Team for consideration as the Cooperative, and the Cooperative structural organizational alternatives. It then screens and prioritizes the various structures and describes them in detail.

Section 8 identifies the business models that could be used by the Cooperative and screens them against the evaluation criteria in Section 2. This section recommends certain models for further review in Phase II of this study.

Section 9 presents the overall conclusions from Phase I of the study and recommends further consideration and analysis of several specific questions and aspects.

The Report includes four technical appendices with certain additional background materials and details on renewable energy projects under development in the New England region, the potential positive financial effects of acquiring a portfolio of contracts or projects, and information on financing sources being tapped in support of renewable energy projects.

2.0: Methodology and Approach

2.1 Approach

The Compact's goals for Phase I of the study required consideration of multiple aspects of electric power supply and their interrelationships.

The Team started its investigation by obtaining a thorough understanding of the Compact's energy-related roles and objectives. The Team began with a focus on the consumer, defining the types of offerings that a Co-op could make available and that could help the Compact provide more stable pricing and "green" alternatives. Next, the Team looked at the power supply alternatives available to supply those retail offerings. This step included both renewable and non-renewable sources of supply as well as alternative degrees of market participation on the part of the Cooperative. In considering power supply alternatives, the Team assessed the relative scale and scope of the Co-op's potential undertakings relative to regional renewable energy supply opportunities.

The third step was to identify and evaluate the organizational structures that could enable the procurement of supply and the delivery of the retail offerings identified in the previous steps. In this step, the Team also identified the potential relationships between the Compact and the Co-op inherent in different approaches. These structures centered on the formation, governance and membership of a cooperative. Finally, the Team assessed the potential sources of financing which would be available to the organization and which are necessary to make the Cooperative viable.

The Team then screened these various modules, or components of working business models, for fatal flaws that appear to conflict with the Compact's goals and objectives. At this point the various business models—incorporating choices for retail offerings, supply strategy, organizational structure—were assembled and screened. These steps lead the Team to its recommendations of those business models for the Compact to consider for further study in Phase II, along with some broader recommendations for the Compact's consideration.

2.2 Evaluation Criteria

Based on initial discussions with the Compact's staff and its advisors, the Team developed evaluation criteria to screen potential business models and their components identified for the Cooperative. Business components considered included business organizational structure, cooperative function, retail supply, cooperative organizational and membership structure, power supply, and financing. The criteria identified fall into several categories. Some criteria serve as threshold requirements for further consideration. Failure to meet these criteria is considered a fatal flaw. Other criteria identify ideal or highly desirable traits. Failure of an approach to meet these requirements, or substantial risks associated with the criteria, represents a possible reason to reject a component or business model, unless the negatives are overcome by substantial strengths or alternatively, the approach may become viable at such a time that mitigation of the negatives becomes possible. The final category of criteria are those that relate to how effectively the component or business model aligns with the Compact's objectives and strengths, or conflict with its constraints. Some of these criteria are applied in Phase I at a qualitative or ballpark quantitative level, with more quantitative assessment reserved for the more detailed Phase II of

this study; others are identified here for potential application in Phase II. While collectively these criteria are used to sort through the alternatives available to meet the study's objectives, not all criteria are necessarily applicable to every component or overall business model.

The following criteria were used to guide the business model development and evaluations. They are first described, and then the method of their application—as threshold or fatal flaw criteria, as ideals whose negatives must be outweighed by positives or mitigated, or as indicators of effectiveness in Phase I and/or Phase II of this study—are summarized in Table 1:

- **Requires Special Legislation**—Approaches requiring special legislation are outside the bounds of this study, as the purpose of this study is to evaluate the ability to use existing statutory authority.

- **Links Governance & Fiduciary Responsibility**—Is there a strong linkage between cooperative governance and financial responsibility in the Cooperative membership? Does the model preserve the fiduciary responsibility by governmental organizations involved to manage pledges of public assets?

- **Triggers Government Entity Tax Liability**—Does the model trigger, or risk triggering, tax liability for previously tax-exempt government entities (the Compact members)? Doing so would be a fatal flaw.

- **Minimizes Tax Obligations**—To what degree can a model avoid tax liability (state, Federal, property, etc.) at all stages of development and implementation?

- **Bankability—**To what degree does the business model facilitate the ability to secure third party contracts and financing by enabling contract counterparties and capital providers to assess the capacity of the Co-op (or its follow-on customers) to meet their financial commitments under the contract or financing documentation in the absence of explicit credit support from the Compact Members?

- **Manageable governance structure—**Does the structure balance core democratic principal of co-ops with need for nimbleness in decision-making? The more tractable and efficient, the better, e.g. fewer parties, fewer disparate perspectives and priorities, etc.

- **Expandable to serve non-government entities**—Is the business model suitable to serve each of four tiers of accounts and corresponding electric demand that the RFP specified for consideration?

- **Ability to retain earnings to build reserves**—Can reserves be accumulated without violating the corporate form, triggering tax liability, or eroding benefits to members and consumers?

- **Ability to issue tax-exempt debt**—Can the Cooperative model issue tax-exempt debt? This is seen as an important tool for establishing bankability and cost-advantage.

- **Probability of Success**—How likely is it that the benefits anticipated can be realized given the substantial time, effort and cost invested?

- **Up-front Cost**—What is the initial investment required? Relative to potential benefits?

- **Risk of Loss of Up-Front Costs—**Is there substantial risk of realizing no success after substantial investment?

- **Timing**—How long would it take to implement?

- **Complexity, Degree of Administrative Burden and Management Expertise Required**—How complex is the model? What are the barriers to establishing and executing the functions required by the model? What are the management burdens relative to the benefits? What management skills and expertise are necessary and are they readily available to the Compact?

- **Financial Burden**—How large a financial burden would a model place on municipal and county governments?

- **Flexibility**—How much flexibility does the model provide to adapt in the future and grow in membership and scope?

- **Support for Renewable Energy Projects**—How much renewable generation can the model support?

- **Renewable Energy**—What fraction of renewable/green energy can the model provide to consumers on the Cape and Vineyard?

- **Impact on the Compact's Municipal Aggregator Role**—How does Co-op formation affect the Municipal Aggregation and its participants? Does the model preserve the current benefits (at least) of the Compact's Municipal Aggregation and its participants?

Table 1: Summary of Evaluation Criteria and Their Application				
Criterion	Threshold *failure = fatal flaw*	Ideal = *negatives must be outweighed by positives or mitigated*	Effectiveness Phase I	Effectiveness Phase II
Requires Special Legislation	✓			
Links Governance & Fiduciary Responsibility	✓			
Triggers Gov't. Tax Liability	✓			
Bankability		✓		
Manageable Governance Structure			Qualitative or Ballpark	Ballpark or Quantitative
Minimize Tax Obligations		✓		
Expandable to Serve Non-Gov't Entities		✓		
Can Retain Earnings to Build Reserves		✓		
Ability to Issue Tax-exempt Debt		✓		
Probability of Success			Qualitative	Ballpark
Up-front Cost			Qualitative or Ballpark	Quantitative
Risk of Loss of Up-Front Costs	✓		Qualitative	
Timing			Qualitative or Ballpark	Quantitative
Complexity, Degree of Administrative Burden and Management Expertise Required			Qualitative	More detailed
Financial Burden			Qualitative or Ballpark	Quantitative
Flexibility			Qualitative	Qualitative
Support for Renewable Energy Projects			Ballpark	
Renewable Energy			Ballpark	
Impact on the Compact's Municipal Aggregator Role	✓, *if* approach undermines the Compact's role		Qualitative	

The team also identified additional evaluation criteria that would influence the desirability of forming a cooperative, particularly in balancing of rewards and risks of the venture, identified as follows:

- **Supply Cost Benefits.** What is the degree of potential improvement to energy supply costs (in terms of price, volatility or both) that the model could provide to Government Accounts and other Accounts through Voluntary Participation Offerings?

- **Exit Cost—Co-op Termination**. What would be the exit cost exposure for Co-op members if the Co-op were terminated?

- **Cost Exposure to Co-op Member Departure.** What is the cost exposure for the remaining Co-op members if one member leaves? Would this require having an exit fee for a member wishing to leave?

While these criteria are not evaluated in Phase I, the Team suggests that they be considered in Phase II of the study.

2.3 Definitions

The following terms are used throughout and are presented here as a guide to the reader:

- aMW = Average MegaWatt = For any generator, "Average MW" or "aMW" means the capacity of a hypothetical generator which would produce the equivalent amount of energy in a year by operating around the clock, year-round. It is calculated by taking the annual energy production (in MWh) of a generator divided by the number of hours in a year. For instance, a wind farm of 30 MegaWatt (MW) capacity operating at a 33.33% capacity factor would produce 10 aMW.

- Bilateral Power Portfolio = "The Portfolio" = the Cooperative-arranged supply contracts, renewables and/or bulk power hedging. These contracts are at the wholesale level with the Cooperative as the buyer and several individual counterparties selling energy or other power market commodities, renewable energy credits or generation output to the Cooperative.

- Bulk Power Purchase = power transactions between two counterparties at the wholesale market level. These transactions could involve ISO-NE market commodities of energy, capacity or ancillary services, in either firm purchases or options to purchase.

- Committed Government Accounts = Government Accounts that voluntarily commit for some defined minimum term to take supply under offerings incorporating Cooperative-arranged hedge and/or renewable energy supply.

- Compact Aggregation = Municipal Aggregation providing (at a minimum) opt-out retail service to electric power consumers on the Cape and Vineyard as provided for under Massachusetts's electric restructuring law.

- Compact Members = all twenty-one municipalities on Cape Cod and Martha's Vineyard (the "Cape and Vineyard") and Barnstable and Dukes counties.

- Government Accounts = retail accounts of municipal and county entities plus other governmental and quasi-governmental bodies with accounts on the Cape and Vineyard.

- Hedge = A financial transaction or investment intended to reduce the risk of adverse price movements in an asset. Normally, a hedge consists of taking an offsetting position in a related security. In certain instances the term hedge applies to contracts to purchase power at a fixed price in the future, and thus avoid market fluctuations.

- ISO-NE = ISO New England = the independent organization that ensures the day-to-day reliable operation of New England's bulk power generation and transmission system, oversees and administers the region's wholesale electricity markets, and manages regional planning processes.

- Load Serving Entity (LSE) = The supplier of record at ISO-NE for each specific load account in ISO-NE, responsible for meeting requirements associated with load, including all energy, capacity, ancillary services and other associated costs. The LSE can meet its responsibilities through a combination of generation ownership, bilateral contracts with generators and other wholesale suppliers, and through purchases from ISO-NE-managed markets, such as the day-ahead and real-time energy markets. The LSE can either act as Retail Supplier directly or alternatively sell to retail suppliers and utilities acting as Retail Supplier for their consumers.

- Municipal Aggregation = the method by which local and county governments can buy electric power on behalf of the consumers within their borders. It is possible in Massachusetts due to the passage of state legislation in 1997 deregulating the electric power industry in the state. See the 1997 act: "An Act Relative to Restructuring The Electric Utility Industry in the Commonwealth, Regulating the Provision of Electricity and Other Services, and Promoting Consumer Protection Therein". The unique feature is the opt-out nature of the aggregation, whereby customers are automatically enrolled in the program unless they affirmatively elect to withdraw from the aggregation.

- MW = MegaWatt = Unit of electrical power equal to one million Watts. A measure of generation capacity for a power plant, or of instantaneous production or consumption of electricity (such as peak demand).

- MWh = MegaWatt-hour = A measure of energy production or consumption over time, equal to one million Watts produced or consumed over one hour.

- NEPOOL = New England Power Pool = The organization of stakeholder groups that participate in the ISO-NE planning and operation committees to provide ISO-NE Staff with guidance and to represent its members in various state and federal regulatory proceedings.

- Opt-In = refers to a product offering to which a customer must make an affirmative election to commit.

- Opt-Out = refers to a product offering which will serve a customer account unless that account takes affirmative action to elect an Opt-In offering, e.g., from a competitive supplier or a Cooperative-arranged Opt-In offering enabled by the Compact. There can only be one opt-out offering applicable to any particular retail meter.

- Renewable Energy Certificate (or Renewable Energy Credit) ("REC") = a tradable instrument representing the generation of one MWh of renewable energy, and carrying descriptive characteristics of the associated generator or "generation attributes". A REC has its own value apart from the commodity electricity with which it is associated, and can be traded separately from that electricity generation. A REC does not generally carry rights to indirect benefits (sometimes referred to as environmental attributes) such as tradable emission rights, although such rights are sometimes traded along with RECs. Possession of a REC represents a unique claim or title to the purchase of renewable energy and to the generation attributes associated with that MWh of generation. A REC tracking system creates RECs and tracks title to RECs and ensures no double claim to that MWh of renewable energy generation and its associated attributes. The ISO-NE uses the NEPOOL Generation Information System ("GIS") to create certificates for all generation settled within its system, for some customer-sited generation, and for imports from other control areas meeting certain requirements. Therefore, for most renewable generation of interest to the Compact, a REC will be an NEPOOL GIS certificate associated with the generator.

- Retail Supplier = Retail Supplier of Record = an entity licensed by the Massachusetts DTE to provide full requirements retail electricity service to retail meters within the Commonwealth.

- Stable C&I Account = Compact accounts for customers who are neither Government Accounts nor residential accounts, who share common characteristics including expected longevity, i.e., the ability to estimate their electricity consumption levels for an extended period, a willingness to commit to term purchase obligations, and sufficient credit strength to be a credible counterparty for such term contracts.

- Synthetic Hedge = a hedged, or stabilized cost or revenue, created by two offsetting hedge transactions, neither of which are stable themselves. In the power sector, a party buying energy to serve load at the spot market price might create a synthetic hedge by owning a power plant whose generation is sold into the same spot market. An upward or downward movement in cost of the purchased power would be offset by a parallel increase or decrease in sales revenue from the power plant.

3.0: Retail Offering Scenarios

As noted in Section 1, the Compact requested investigation of four tiers of potential recipients of Cooperative-arranged hedge and/or renewable energy supply. These included (1) the Compact's Government Accounts only; (2) the Government Accounts plus a limited number of the Compact's most stable, likely larger, retail accounts; (3) a substantial percentage of the Compact's load base; and (4) the Compact's entire customer base. Since Cooperative organizational and membership structural alternatives may be defined or constrained by definition of, and relationship between, their patrons (customers) and members, the Team translated these four tiers of supply into four corresponding Retail Offering scenarios through which the cooperative-arranged supply could conceivably be delivered. In addition, the available supply of renewable energy and/or hedge supply options has implications for match of supply approaches with the relative scale of these tiers.

Three of the retail offering scenarios involve *alternative*, *voluntary* product offerings with different pricing, commitment term or resource mix than the Compact's basic opt-out aggregation offering. Such products would be offered to some portion of the Compact's constituents, who could voluntarily choose to take service under such offerings. These offerings stand in contrast to the "opt-out" aggregation of the Compact. They are natural extensions of the Compact's past differentiation among Compact members, in which municipal accounts waived their opt-out rights through the current supplier's fixed pricing term, and received in exchange a different price. The fourth retail offering involves portfolio enhancement by folding Cooperative-arranged hedges or renewable energy supply into the Compact's Municipal Aggregation opt-out offerings. These scenarios are referred to respectively as:

- **Voluntary: Committed Government Accounts**;
- **Voluntary: Committed Government & Stable C&I Accounts**;
- **Voluntary: Unrestricted**; **and**
- **Opt-Out: Portfolio Enhancement**.

These retail offering scenarios are meant to address generic structural aspects of a Cooperative Business Model, rather than the specifics of any particular offering, and are therefore applicable for purposes of this analysis regardless of whether the Cooperative-arranged supply efforts involve renewable energy contracts or ownership, or bulk-power hedges. The description of each offering below outlines the ultimate retail electric supply to various accounts.

In all four Retail Offering Scenarios, the Retail Supplier supplying the offering on behalf of the Compact would be required to integrate the supply contracts, renewables and bulk power hedging secured by the Cooperative into its portfolio. The duration of the contract with a Retail Supplier may be shorter, e.g. three years, than the duration of renewables or hedge commitments, e.g., ten years, in which case integration of the Cooperative's supply contracts, renewables and bulk power hedging would be a condition of selection of the subsequent Retail Suppliers.

Note: For purposes of Phase I Business Model screening purposes in this Report, the number of cases considered has been reduced by treating the "Voluntary: Unrestricted" scenario as an

extension of the "Voluntary: Committed Government plus Stable C&I Account" scenario. This is a reasonable simplification for Phase I, as these two alternatives differ by degree (customers, supply, risk, and credit support) rather than structure.

3.1 Voluntary Scenarios

Each of the three Voluntary Retail Offering Scenarios shares the following characteristics:

- Supply, price, contract term and other tariff terms and conditions differ from those offered under the Compact Aggregation's opt-out offering.
- Customers who elect a voluntary option would contract with the Compact's chosen Retail Supplier for delivering this offering.
- The Retail Supplier may be the supplier to the Compact Aggregation, or may be a separate entity (dictated by factors other than the election of the Business Model).
- A Retail Supplier would be solicited to offer *either* a fixed price retail supply (fully-hedged), or alternatively, a partially hedged supply combining any Cooperative-procured supply contracts, renewables and bulk power hedging with the remainder on a market-priced basis.
- Depending on the Cooperative's functions, organizational and membership structure, power supply approach and contractual arrangements, the Cooperative's "patron" might be any of the Government Account, the Compact, or the Retail Supplier

***Voluntary: Committed Government Account* Scenario—**This retail offering scenario is offered only to Committed Government Accounts. Participating Government Accounts would commit to a long term power purchase for their accounts, with the specific duration depending on the underlying price, commitment duration and risk of the Cooperative-arranged Portfolio. Of the voluntary scenarios, this scenario has the potential for the longest commitment durations due to the stable and creditworthy nature of the Government Accounts.

***Voluntary: Committed Government & Stable C&I Account* Scenario**—This retail offering scenario is offered only to Government Accounts and Stable C&I Accounts, e.g., credit-worthy accounts, most likely large commercial, industrial and/or institutional, who are invited to execute a contract with the chosen Retail Supplier. Participating entities would commit to a long-term power purchase for their accounts, with the specific duration depending on characteristics of the Cooperative-arranged supply positions as well as the nature of the Stable C&I Accounts. The commitment duration for non-governmental accounts other than institutional load is likely to be shorter than for Government and institutional accounts due to ownership risk and turnover.

***Voluntary: Unrestricted* Scenario—**This retail offering scenario is offered to all eligible accounts within the Compact Aggregation. As a practical matter, Governmental Accounts and Stable C&I Accounts may be asked to commit to a longer term purchase commitment than smaller commercial and residential accounts, for which ownership risk, turnover and credit-worthiness factors (and the general inability to enforce performance cost-effectively) makes long-term contracts impractical.

3.2 Opt-Out: Portfolio Enhancement Scenario

In this scenario, the basic supply portfolio from which the Compact Aggregation is served via an opt-out offering is enhanced. Through the addition of Cooperative-arranged supply contracts, renewables or bulk power hedging, the price of the opt-out product may be partially stabilized, the supply mix may be differentiated, e.g. greener than NSTAR's or the general portfolio otherwise offered by a competitive supplier, or potentially (if below-market hedges are secured, see Section 5) the Compact's price might be reduced relative to market alternatives. Under this scenario, Government Accounts would forego their opt-out rights for some duration in exchange for securing longer-term supply commitments (as is done today); the ability to get meaningful term commitments from other accounts is unclear at best.

4.0: Power Supply Issues

The Team made several observations in its analysis of the electric power market that are pertinent to the potential capability, organization and objectives of a potential cooperative in the bulk power supply market. These observations relate to market price volatility, the ISO-NE marketplace, bilateral transaction structures, LSE requirements, and credit requirements. This information will influence the Compact's assessment of whether to pursue a cooperative, and the potential benefits and drawbacks of potential power supply alternatives that a cooperative might be developed to pursue.

4.1 Wholesale Market Conditions

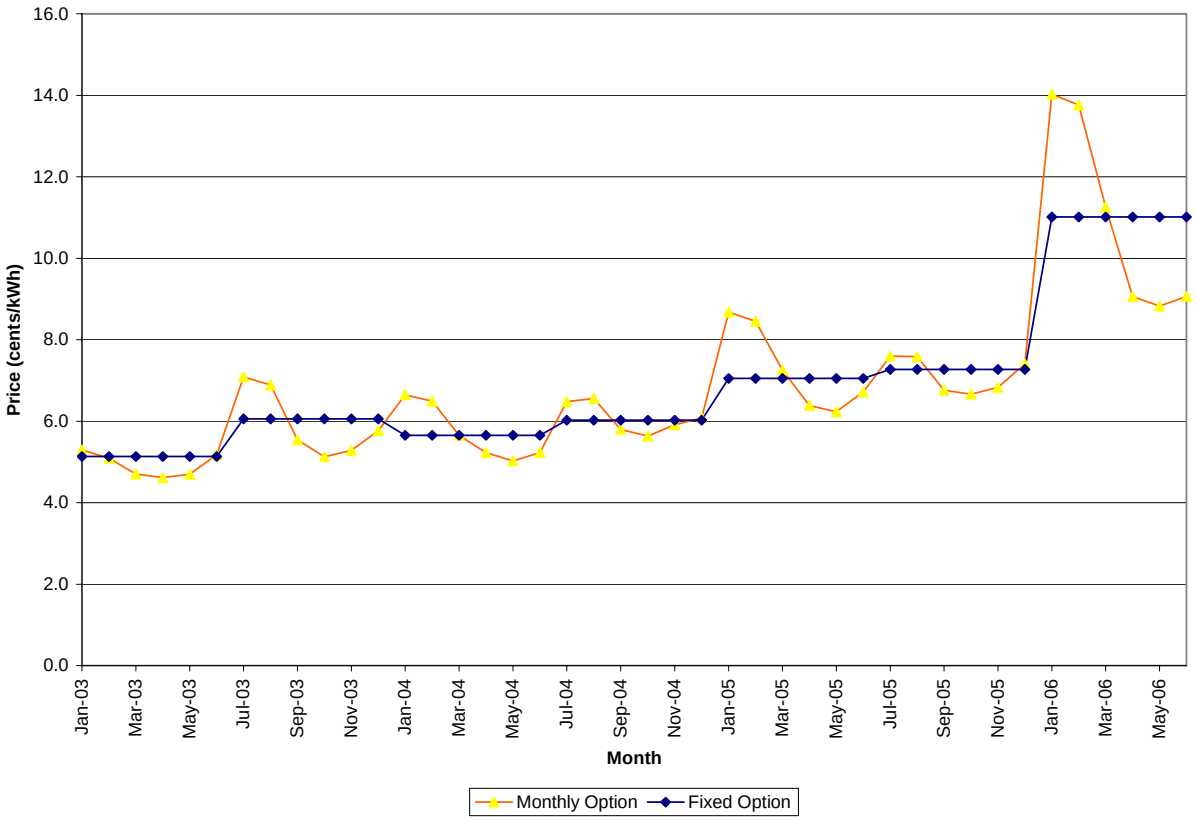
The wholesale market for electricity in New England has key characteristics that bring opportunity and risk to the buyers and suppliers of electricity. The basic volatility of wholesale power markets is what creates risks to consumers and the need to adopt thoughtful supply strategies. The principal market mechanisms for arranging supply are contractual arrangements with generators and intermediary marketers, participating in ISO-NE arranged markets, and ownership of generation facilities. The choice of the degree of participation in these activities varies with an individual organization's objectives, the degree of self-sufficiency and their tolerance for volatility and risk. The facilitated markets maintained by ISO-NE create an opportunity for entities of all sizes and scope to participate.

4.1.1 Market Price Volatility

Wholesale electricity market prices in New England have been volatile over time frames ranging from hours to months to years. Substantial price volatility—in both the spot market and bilateral forward transactions—is likely in the future. Figure 1 shows the volatility of the monthly Basic Generation / Standard Offer pricing[3] from NSTAR from 2003 to 2006. This price reflects a fixed price requirements service product, and will likely be considered by members as a benchmark for the price of Compact offerings.

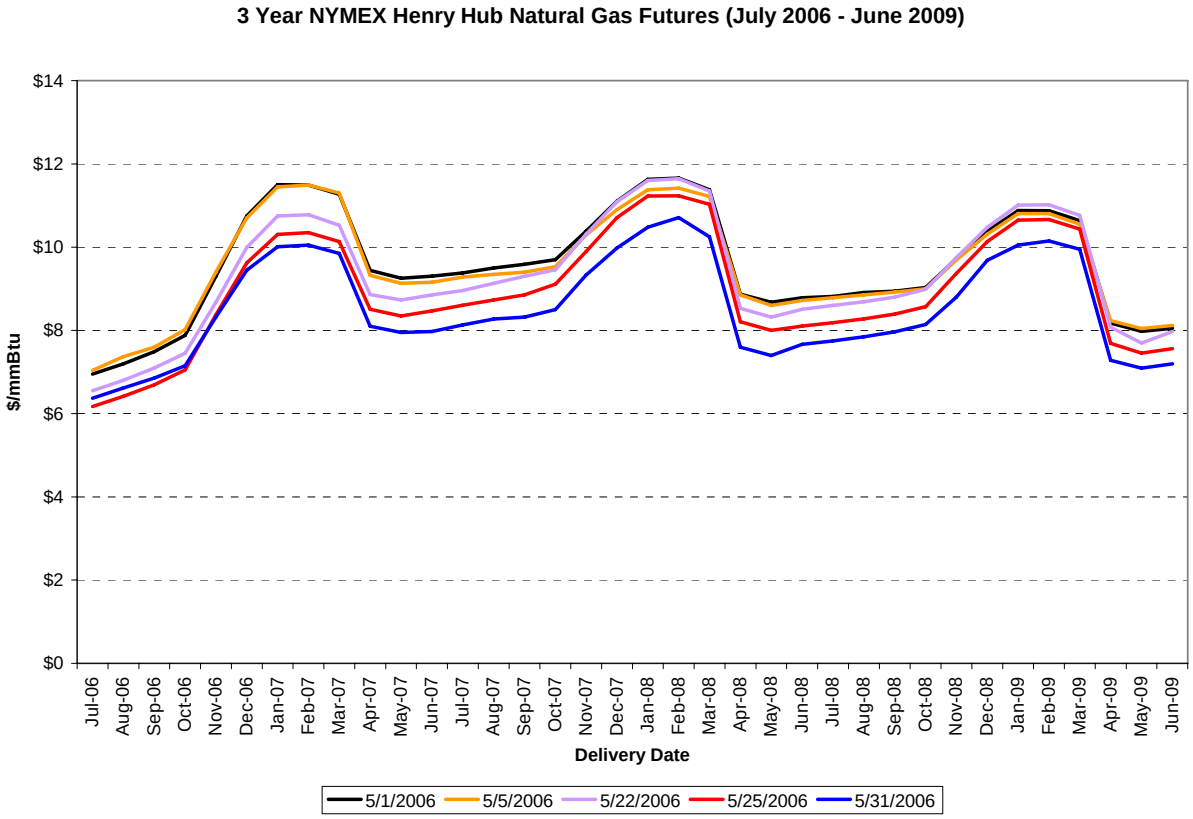
[3] Figure 1 depicts NSTAR pricing for small commercial accounts; these prices have approximated fairly closely the price levels and trends for residential accounts.

Figure 1
NSTAR—Comelec Default Service Prices
(Small Commercial)



Another significant consideration with respect to power supply strategy is the extent to which market price expectations (even for substantial periods) can change over time, and how quickly they can change. Figure 2 illustrates the volatility of multi-year futures contract prices for natural gas, which is a primary driver of electricity prices in New England. As shown in Figure 2, the market's view of forward pricing changed nearly 15 percent over less than one month's time during May 2006.

Figure 2
3-Year NYMEX Henry Hub Natural Gas Futures Contract Prices
(Delivery months July 2006 to June 2009)



It is reasonable to expect similar price variance in the future. Energy industry analysts currently are discussing intermediate term oil prices in the range from $50 to $100 per barrel and natural gas prices ranging from $5 to $11 per million BTU. For the foreseeable future, electricity price uncertainty is here to stay in New England, where natural gas or oil are the price setting fuels for electric generation most of the time. The price behavior shown here for gas futures contracts is representative of the type of variance that may be experienced in electricity forward prices. As discussed below, the potential for forward market prices to vary in this fashion is a significant driver of the performance assurance requirements associated with wholesale power purchasing.

4.1.2 ISO-NE Marketplace

The ISO-NE marketplace for electric power is a multi-product market. This means that it takes a combination of energy, capacity, ancillary services, transmission costs and other charges to determine the cost of serving retail customers with full-requirements electric supply. Full Requirements suppliers are referred to as the Load-Serving Entity ("LSE") within ISO-NE. They are responsible for serving the electricity demand for the accounts they serve and all the resulting requirements of ISO-NE. Con Edison Solutions is currently the LSE providing Full Requirements Service for the Compact's Municipal Aggregation. A LSE either owns generation, contracts with generation and transmission owners, or purchases individual products through the

ISO-NE facilitated markets to meet its obligations as a LSE under the ISO-NE rules and regulations.

Energy is transacted at the ISO-NE level in a two-settlement system, the day-ahead market and the real-time market. The energy costs represent roughly 80 percent of the costs to serve load. Based on the recent FERC settlement establishing details of the Forward Capacity Market ("FCM"), Installed Capacity costs may represent roughly another 15 percent of power costs. All other factors, such as ancillary services for voltage regulation and operating reserves, the costs of running local generation out of economic dispatch order (defined in FCM as Reliability Must Run), and other shared ISO-NE membership costs represent the remaining nearly 5 percent[4] or more of wholesale electricity costs. Translating these costs to the retail meter to account for transmission and distribution losses adds roughly another 10 percent to the total wholesale costs.

One implication of these percentages is that the vast majority of electricity costs and volatility are associated with two products, energy and capacity. Bilateral hedge transactions (such as fixed-price purchases of energy and capacity) are likely to be available through the commodity market for terms of up to several years. Such "commodity" hedges might be tapped by a cooperative to stabilize electricity supply costs for a group of customers, such as those associated with one or more of the voluntary product offerings discussed in Section 3.

Alternatively, long-term contracts with renewable generators (potentially available in terms of perhaps 8 to 20 years) could be used to provide stability, avoiding or reducing energy price fluctuations. Although the capacity value of land-based wind projects is typically modest, the fact that energy is by far the largest component of retail requirements service costs means that energy production from wind projects can be a useful component of electric supply.

The ISO-NE marketplace facilitates the participation by organizations in any number of roles. The role of generation owner, power marketer buying and selling any or all of the component products of electric service, transmission owner and consumer are all options, besides the full participation role as a LSE. A cooperative could choose to participate in buying and selling wholesale power products and not be the ultimate LSE for any or all of the Compact's accounts.

4.2 Wholesale Market Bilateral Contracting Activities

The Cooperative has the opportunity to make wholesale bilateral transactions—transactions directly with a counterparty as opposed to purchases through a spot market—to help stabilize energy prices and stimulate the development of renewable energy resources. Such bilateral transactions can take the form of physical electricity transactions which become a direct part of the power supply to retail customers, or alternatively, as transactions separate from (but in parallel to) power supply arrangements serving retail customers which indirectly hedge electricity bills. This section describes these alternatives and the associated credit requirements.

[4] Some of the costs associated with the products and services listed here are assigned on a locational basis, so that customers in load pockets will tend to pay more.

4.2.1 Bilateral Market Transactions Directly Stabilizing Compact Aggregation Prices

As discussed earlier, the Cooperative might access the wholesale market through a limited set of wholesale bilateral bulk power purchases. Such transactions would include electric energy, but may also include capacity, ancillary services, or RECs. The commodity market for electric energy and capacity is sufficiently competitive, deep and liquid to allow the Cooperative to competitively purchase these components for as long as three to five years into the future. Thereafter, these markets become very thinly traded. The market for RECs is more thinly traded and illiquid, although there are renewable energy project-specific opportunities for longer-term transactions for both power and RECs than available in the commodity market.

If the Co-op decides to limit its involvement to just bilateral purchases, the commodity purchased in this type of transaction would be sold to or assigned to an entity which acts as both the LSE at the ISO-NE level and the Retail Supplier for the Compact's Aggregation and/or the Voluntary Opt-In retail offerings. The Co-op would not need to interface directly with the spot market, thus avoiding incremental overhead costs and risks associated with that role. Implementation of a relatively straightforward set of bilateral purchases would enable the Co-op to offer significant price stability for voluntary offerings such as those discussed in Section 3. The LSE could then offer full-requirements service to the Compact's consumers at a fixed cost (similar to what the Compact does now, with the Supplier fixing the cost of the remainder of the supply). Alternatively, the LSE could be instructed to let the unhedged portion of the supply not covered by the Co-op's bilateral purchases float at market prices. The latter option may be desirable if the Compact believes the premium to fix the price of the non-bilateral portion of supply is unreasonably high. Suppliers would compete to serve that role of supplementing the Cooperative's "Portfolio" with additional energy, capacity and ancillary services to meet the full requirements service at the lowest cost possible. The financial benefits of the Cooperative's transactions would be realized by consumers who receive power from the supplier acting as LSE/Retail Supplier and ultimately responsible for providing full requirements service. Thus, in this bilateral arrangement, the costs of the Cooperative's supply transactions would be passed through the retail supplier to the consumers. This would require a coordination of timing as to when the Cooperative enters into bilateral contracts and the finalization of price offerings from the LSE or Retail Supplier.

For the Co-op's purposes, it is critical to note that the primary value provided by a bilateral commodity hedge transaction would be to increase price certainty, rather than to create the expectation that the buyer will consistently "beat the market" by locking in a fixed price. In fact, fixed price purchases could come at a modest premium to the market's expectations of future prices at the time the hedge is entered into. This premium is similar to an insurance premium protecting the buyer against even higher cost exposure. Since the likelihood that a conventional hedge transaction turns out to be above-market versus or below market over time is similar, the typical value of hedging comes from reducing or eliminating exposure to potential increases in market prices.

As discussed below, the feasible magnitude and duration of hedging transactions for a Co-op will depend in part on the amount of performance assurance, i.e., collateral that is required by wholesale suppliers, and the amount of capital that members are willing and able to provide.

Performance assurance would need to be available in the form of cash, liquid investments, or letters of credit issued by a financially strong third party. The Cooperative's status as a start-up entity with no financial history or assets means that it will have to rely on the credit strength of third party entities such as Compact Members. While the bank issuing the letter of credit would require a corresponding guarantee from creditworthy Compact Members (or other entities), such letters of credit would enable the Compact Members to avoid the need to post cash. This might be of interest to some Compact Members, since the performance assurance security does not ultimately represent cost and is gradually released over the term of the contract (except in the event of an actual hedge contract default). It would, however, preclude the use of an amount of guarantee authority by such Compact Members for other purposes during the duration of the power hedge contract.

The Portfolio of the Cooperative would include any renewable energy ownership and purchase contracts that the Compact has entered into. Regional renewable energy potential and economics are discussed in Section 5.

4.2.2 Separate Bilateral Transactions Indirectly Hedging Electricity Bills

The previous section described use of physical bilateral electricity transactions to improve the stability of electricity prices to the Compact's Municipal Aggregation or Voluntary Participation offerings. In such a physical hedging approach, where the Cooperative resells or assigns the production from its Bilateral Power Portfolio to the LSE/Retail Supplier, the financial benefits of the Cooperative's transactions are realized by consumers who receive full requirements service from this Retail Supplier. Alternatively, the same or similar financial result could be created independent of the electricity delivered via the Retail Supplier to the Compact's Municipal Aggregation or Voluntary Participation offerings through either a financial hedge or a synthetic hedge.

A financial hedge uses traditional financial hedge instruments such as a fixed-for-floating swap, or Contract for Differences ("CFDs"). Such a transaction is purely financial in nature, resulting in an exchange of cash between the parties to the transaction when an independent index moves above or below a "strike price". An example is combining a spot-market priced electricity purchase with a bilateral CFD with the owner of a wind project with a strike price at $70 per MWh. When the wind plant produced energy in hours in which local prices paid by the buyer under FCM exceed $70 per MWh, the owner would be required to make a cash payment to the buyer, effectively offsetting increases in market-priced electricity purchases in excess of $70 per MWh. The net effect is effectively the same as if a bilateral energy purchase from that same wind generator was incorporated into the buyer's full-requirements supply.

A synthetic hedge results from two independent, offsetting bilateral transactions. Their net effect creates a hedge by stabilizing the net financial position of the purchaser. For instance, an entity buying energy to serve load at the spot market price might create a synthetic hedge by owning a power plant whose generation is sold into the same spot market. An upward or downward movement in the cost of market purchases would be offset by a corresponding increase or decrease in sales revenue. This approach might be of potential interest to the Co-op if it elects to build a Bilateral Power Portfolio including long-term renewable energy contracts, or renewable project ownership. Consider the example of a community wind plant in the Bilateral Power Portfolio of the Co-op. Such a project's production could be sold in the spot or bilateral markets,

with the revenues flowing to the recipients of otherwise unhedged Co-op or Compact power supply. If the proceeds of these sales are distributed to the membership of the Co-op in the same proportion as their electric consumption, either directly or through the Co-op or Compact, this bilateral and financial transaction would produce essentially the same monetary benefits as would selling the wind plant's production to the LSE/Retail Supplier to fold into its power supply. The difference would be that the benefits accrue as the net of two separate transactions for the members/consumers, buying generation service from the Compact and dividend-like funds distribution by the Cooperative to its members.

Financial or synthetic hedge transactions could provide ways for the Co-op either to craft an overall power supply strategy or to implement individual transactions. One potential benefit of these transaction alternatives is that they need not interfere with or complicate electric supply transactions. The Co-op could elect to pursue such options if they simplify supply arrangements or eliminate transaction, management or credit support costs relative to alternatives. In addition, they might allow greater flexibility for variations between membership, e.g., a subset of the Compact Members form the Cooperative to allow different degrees of hedging by participating members with identical retail power supply, as they do not affect the timing of soliciting for new Retail Suppliers.

4.2.3 Bilateral Transactions—Credit Requirements

The negotiation of credit terms has in recent years become a central part of power contract negotiations, particularly for multi-year contracts under which the financial exposure (to the buyer or seller, depending on the circumstances) becomes significant. Fixed-price power contracts of significant duration and size are typically "marked to market" based on current forward market prices. That is, the contracts typically require that if forward market prices drop and the mark to market difference (contract price—new market price) exceeds a collateral threshold set in the power contract, the buyer must post security. The level of such security requirements is tied to the payment risk, e.g., 1 to 2 months of contract billings, that a supplier would face if a buyer were to unexpectedly default on its obligations. The standard way for market participants to provide security is to evidence an investment grade credit rating from a leading credit rating agency. The market accepts that entities with such credit ratings will have the ability and will to honor their contract obligations. If the Cooperative or any other non-investment grade entity seeks fixed-price bilateral purchases on a term basis (either on a limited basis or thorough full market participation) without such a rating, the entity would need to be able to provide substantial liquid collateral security, e.g., letters of credit, in the event that market prices subsequently decline.

Figure 3 illustrates the potential security requirements for a hypothetical 3-year fixed-price energy purchase in the event that forward market prices were to decline[5] by either $10/MWh or $20/MWh.

[5] Note that in this example, forward market prices are assumed to decline almost immediately after inception of the contract. If forward market prices were to decline later, the remaining contract MWh and mark-to-market exposure would be commensurately less.

Figure 3
Illustration of Potential Security Requirements for a Bilateral Forward Energy Purchase

Illustrative Terms of a Forward Energy Purchase

Size (all-hours average MW)		10
Term (years)		3
Price ($/MWh)	$	80.00
Typical Monthly Expense	$	584,000
Lifetime Contract MWh		262,800
Negotiated Collateral Threshold	$	1,000,000

Security Requirements (if market declines by $10/MWh)

Mark-to-Market Exposure	$	2,628,000
Plus: 2 Months of Billings	$	1,168,000
Less: Collateral Threshold	$	(1,000,000)
Equals: Required Security	$	2,796,000

Security Requirements (if market declines by $20/MWh)

Mark-to-Market Exposure	$	5,256,000
Plus: 2 Months of Billings	$	1,168,000
Less: Collateral Threshold	$	(1,000,000)
Equals: Required Security	$	5,424,000

The example above illustrates the method that would be used to determine security requirements for a fixed price purchase, and the order of magnitude of security requirements that might be required; we caution that Figure 3 is not intended as a firm estimate of requirements that a Co-op would actually face. The specific amounts of security that are needed vary by counterparty, because terms such as the collateral threshold are typically negotiated. The specific amount of security that a buyer must have available to cover potential mark-to-market exposures is also a matter of management judgment which may vary based on prevailing market conditions and the buyer's financial circumstances. In our experience, small utility buyers have tended to limit the size and duration of their fixed-price purchases so that their total credit capacity is sufficient to cover a relatively immediate price decline on the order of $10/MWh to $20/MWh on their fixed price contracts.

Given this example as illustrative, our work and experiences to date on this project suggest that the potential collateral requirements associated with a three-year fixed price supply for the Committed Government Accounts could be on the order of $3 million to $5 million. Credit requirements for bilateral hedging for the equivalent of the entire Compact Aggregation could be $75 million or more.

In addition, performance assurance terms tend to be relatively symmetrical with respect to the credit standing of trading partners. That is, buyers that are financially strong (and are perceived as such) are typically able to receive more favorable terms, e.g., a larger collateral threshold, than financially weaker buyers. As a new entity in the eyes of potential trading partners, and with a unique business model, it is likely that the Co-op would not receive the same such terms, at least at the outset.

In any case, the security required for bilateral purchase contracts would need to be available in the form of cash or liquid investments. In some cases as described earlier, the security is minimal until the market prices decline, at which point the amount of security required jumps precipitously. A letter of credit from a strongly rated financial institution could satisfy the security requirement, but the institution would want the letter of credit to be backed by a reasonably liquid asset and would charge a fee for the service. Alternatively, strongly rated Co-op members, e.g., investment grade Compact Members, could elect to provide a payment guarantee to the financial institution issuing the letter of credit. Security of these types usually does not represent an expense, as the collateral security is ultimately returned except in the event of an actual power contract default and a payment guarantee itself is not an expenditure of funds. In addition, the amount of required collateral or payment guarantee would decline over time. However, they would represent a use of capital (which precludes the use for other purposes) during the duration of the power contract. Note that the larger and longer term of the fixed price purchase contract, the more security typically that is required. For long-term bulk power hedges, the magnitude of the required security could become a significant fraction of the capital investment that would be required to own a renewable generation asset outright. This combined with the effective term of the direct ownership and investment being much longer than the power market transactions available make renewable investments particularly attractive.

In the absence of an actual negotiation, it is not possible to know today the specific performance assurance terms likely to be faced by the Co-op. If the Compact determines that multi-year hedging should be a significant part of the Co-op's power supply strategy, and if it is therefore important to examine more closely the specific amounts of security needed to implement bilateral contracts, such questions would be appropriate topics for research in Phase II of this study. In fact, if the parallel transaction strategy to accrue the benefits of the bilateral cooperative transactions is appealing, Phase II should include investigating whether pure financial hedging can reduce credit requirements.

4.3 Wholesale Market—Managing the Electric Supply

If the Cooperative wished to manage all the aspects of power supply for either some or all of the Municipal Aggregation or voluntary participation programs, the benefits expected should be greater than the incremental cost it would incur. In a self managed supply some cost of energy variability or volatility would remain. The Cooperative membership would need to become comfortable with the fact that consumer prices might vary to some degree based on fluctuations in actual power supply costs and revenues. Additional costs would be incurred that were previously included in the energy pricing from the suppliers. The primary increase in costs would be staffing or outsourcing the supply portfolio management function and the credit assurance costs of being a participant on a large scale for ISO-NE.

4.3.1 Full Market Participation—Becoming the Load Serving Entity

Full wholesale market participation, i.e., becoming an ISO New England LSE and creating full-requirements service, would offer the potential for some expected savings relative to purchasing fixed-price full-requirements service. Full market participation, however, would require a more complex trading operation, associated overhead costs, and an institutional capability to make power procurement decisions on a continuous basis. A cooperative serving only the Compact's Government Accounts, e.g., on the order of 20 MW, would not achieve scale economies enjoyed

by most regional market participants. This type of participation is a scale-economy game. Rarely do LSEs serving less than several hundred MW of peak load find the benefits of such full market participation outweigh the high fixed costs. This market observation is a good screening indicator as to the relative costs of staffing or outsourcing supply management.

Full participation in the ISO-NE electricity market might be an option for the Cooperative. Some municipal utilities and a few large commercial and industrial ("C&I") consumers in New England are direct ISO-NE market participants[6]. The primary benefits of full market participation would be the ability to transact directly in the ISO-NE spot market, and to purchase liquid wholesale market products, e.g., forward blocks of energy, without having to pay a price premium for full requirements service. The Team considers that full market participation does offer the potential for some savings (on the order of several dollars per MWh) in power supply costs relative to fixed-price requirements service. At the same time, the Cooperative would face some degree of cost uncertainty associated with spot market energy price volatility and the weather-related volume risk, and it would also lack the scale economies of larger market participants. For this reason, and considering the complexities of establishing or outsourcing the market interface function, the Compact may wish to consider if full market participation is a necessary step to achieving the Compact's objectives with respect to price stability and support for the development of renewable power generating capacity. The benefits of full wholesale market participation for the entire Compact load would be overshadowed unless a large portfolio of power market bilateral hedge transactions and renewable energy projects is assembled immediately. The full market participation strategies might be considered as a possible growth scenario for the Cooperative over time. Full market participation may warrant further consideration over time particularly as an option for serving a large fraction of the Compact's load, i.e., much more than the Government Accounts.

4.3.2 Full Market Participation—Credit Requirements

As for bilateral transactions, credit is a central part of power contract negotiations for wholesale market participation, particularly for multi-year contracts under which the financial exposure (to the buyer or seller, depending on the circumstances) can be significant. For the Cooperative, working capital and financial assurance requirements associated with full wholesale market participation would be substantial, particularly in the near term as the Cooperative would be a new market participant with little or no financial track record. Until the Co-op "Portfolio" is large enough to significantly affect the hedged nature of either the Compact's voluntary or municipal aggregation offerings, it appears that the relative credit and security exposures would be very large compared to the benefits.

There are three components of the credit assurances that would be required for a full requirements LSE. An LSE would be involved in self supply, bilateral transactions and purchasing its average net short position from the ISO-NE facilitated markets. The bilateral transactions would create the same needs for credit assurances as noted in Section 4.2.3. The portion of the load being served through bilateral contracts for one year or more could vary widely. Second, there likely would be the same two month revenue credit assurance that must be maintained. However, the amount of energy and thus revenue being handled by the Cooperative

[6] Other small utilities and end-users hedge a large fraction of their supply costs with bilateral contracts but outsource the ISO-NE market interface function to joint action agencies (e.g., CMEEC, VPPSA) or consultants.

acting as the LSE would increase significantly, especially if the Cooperative managed the supply of the entire Municipal Aggregation. The third component comes from the ISO-NE financial assurance policy, which requires participants, i.e., those lacking a credit rating or substantial capitalization, to put up credit for their net short positions. In this respect, a participant is required to post credit assurances for one month of estimated transactions. Thus, the Co-op acting as the LSE would be obliged to shoulder the risk and credit trade-offs of participating in ISO-NE markets and covering its energy requirements entirely via bilateral transactions. Phase I research by the Team suggests that the credit exposure from managing the supply of full requirements for just municipal and government accounts could easily be several million dollars. Further, Phase I research indicates that the cost of managing a load equal to the size of the Compact's Municipal Aggregation, including hedging ten percent of the energy, could exceed $20 million. Finally, collateral requirements for a one-year fixed-price self supply as LSE for the Compact's entire aggregation (including all customer classes) could amount to $50 million or more. This does not account for incremental costs of staffing or outsourcing.

The Team notes that municipal electric utilities, i.e., municipal lighting plants that provide generation, transmission and distribution service, receive relatively favorable financial assurance requirements from ISO-NE and bilateral trading partners. Further investigation of the ability of a cooperative formed by Compact Members to receive similar terms might be worthwhile in Phase II in the study, if the Compact decides to consider full market participation further.

As previously noted, the security would need to be available in the form of cash or liquid investments. Letters of credit from strongly rated entities could substitute for the need for the Co-op itself to post cash. While security would not ultimately be a cost—because it is returned except in the event of an actual power contract default –it would represent a use of the entity's guarantee authority (which would preclude its use for other purposes) during the duration of a power contract. Nonetheless, the larger and longer the fixed price purchase, the more security would be required under "mark-to-market" requirements. At a substantial scale and term, the magnitude of the required security may actually be less than required to own a generation asset outright.

The creditworthiness of the Cooperative as a buyer is an unanswered question. Most small buyers in the New England market (utilities and end users) either have an extended financial track record, a credit rating, or financial backing from a financially strong affiliate. A new cooperative would start from scratch depending on the market's perceptions of the credit ratings of the Co-op's member government's and the Compact's prior dealings in the power market. This question could be addressed in Phase II of this study. If the Compact goes forward with Phase II, the Team suggests testing the business model for creditworthiness with potential counterparties. The Team cautions that even at that point there will be some potential for 'false positives' when soliciting feedback from potential counterparties parties, i.e., expressions of willingness to trade with the prospective Co-op which may not materialize in practice.

4.4 Recommendations on Hedging Strategies

Based on the Phase I analysis, the Team suggests that the Compact consider the complementary nature of hedging using renewable energy and power market commodity hedges in the short term. For the longer term, contracting with or ownership of renewable energy projects can be an

effective hedging instrument for long term stability. The principal factors leading to this recommendation include:

- Achieving or creating initial credit-worthiness in ISO-NE terms for the Co-op, independent of support by the Compact Members, is likely to be difficult due to the Co-op's initial lack of a financial track record and ongoing cash flow generating capacity. At inception, the Co-op would have to rely on Compact Members or other resources to obtain the funds required by potential hedging counter-parties for credit assurance purposes.
- Any hedging program would need tangible financial support of the Compact Members. The amount of hedges that might be acquired would be limited by the extent of the funding commitments by the Compact Members. The Team believes that a substantive hedging program, i.e., one that results in a tangible level of price protection for the Cape and Vineyard or even for a more limited subset of the Compact Members, would require a significant level of funding per annual MWh of load (could be 20-35 $/MWh of credit assurances). The Compact Members may wish to assess the relative benefit of using credit to support conventional commodity hedges relative to utilizing such credit in support of direct participation in renewable energy projects.
- Phase I research suggests that directly managing hedging activity as an ISO-NE participant and at the scale being considered by the Co-op could entail significant costs. Entities hedging at a small scale in the NE-ISO market typically usually out-source their ISO-NE interface to a third party agent.
- While a limited conventional hedging program might be able to provide increased price stability to customers, thereby protecting against potential high electricity market outcomes, it is unlikely to meaningfully reduce the expected aggregate electricity prices paid.
- As discussed in subsequent sections of this Report, Team research suggests that a renewables-based hedging strategy could be implemented by entering into multi-year power purchase agreements or by seeking ownership interests directly in renewable power generation projects.

5.0: The Renewable Energy Market

The ability to support and promote renewable energy projects represents a core component of the Compact's exploration of the Co-op concept. The Compact identifies the desire to enhance the support and facilitation of renewable energy in New England as a key rationale for establishing the Co-op. The Compact is especially interested in securing regional renewable energy capacity as part of the supply to Compact load. Renewable energy also represents an important tool for achieving the Compact's price stability objectives.

For these reasons, an understanding of the regional utility-scale renewable energy landscape—the projects being developed, the motivations and needs of those developing them, and their economics—is important in shaping and what the Co-op can strive to achieve. In characterizing the renewable energy landscape on the Cape and Vineyard and the broader New England region, several important conclusions have been identified.

5.1 Development Activity

In large part because of the stimulus of state renewable portfolio standards and renewable energy funds throughout the region, a substantial volume of renewable energy development activity is underway. As shown in Tables 1 and 2 below, this activity is dominated in the near-term by wind power projects and to a lesser degree biomass projects (including landfill gas), at least in terms of name-plate capacity (MW). When measured on an annual output basis (in megawatt-hours), biomass is a more material contributor due to its greater capacity factor. The wind development activity consists of a wide range of situations, including customer-sited and community-scale installations of 1 or 2 turbines, on-shore clusters (3-10 commercial-scale turbines), and larger farms, including the large off-shore wind farms proposed in Cape Cod area waters.

Table 1
MA, RI or CT Class 1 RPS-Eligible Generation Projects in Operation or Under Development in New England (Capacity in MW, as of June 2006)

Fuel Type	CT	MA	ME	ME (NMISA)	NH	RI	VT	Grand Total
Biodiesel		0.05						0
Biogas		18					0.3	18
Biomass	105	112	299	96	141		189	941
Hydro		69	0.1		0.3		5	74
Landfill Gas	15	59			16	21	5	117
Pressure Recovery Hydro	0.04					0		0
Natural Gas Fuel Cell	52	1				0.4		53
Solar	0.46	0.82				—		1
Wave						1		1
Wind	55	958	468	542	276	7	347	2,653
Biomass Co-fired with Fossil		11						11
Grand Total	227	1,229	767	638	433	30	546	3,869

Source: Sustainable Energy Advantage, LLC

Table 2
Number of MA, RI or CT Class-1 RPS-Eligible Projects in New England (as of June 2006)

Fuel Type	CT	MA	ME (NEPOOL)	ME (NMISA[7])	NH	RI	VT	**Grand Total**
Biodiesel		1						1
Biogas		2					1	3
Biomass	7	7	11	3	7		7	42
Hydro		5	1		1		2	9
Landfill Gas	12	24			6	4	2	48
Pressure Recovery Hydro	1					4		5
Natural Gas Fuel Cell	23	8				3		34
Solar	3	4				1		8
Wave						1		1
Wind	2	61	11	2	11	5	15	107
Biomass Co-fired with Fossil		1						1
Grand Total	48	113	23	5	25	18	27	259

Source: Sustainable Energy Advantage, LLC

The resources available to the Co-op will be determined in part by proximity to the Cape Cod region and the objectives and range of load to be served. For supplying a material proportion of the Committed Government Account load on the Cape and Vineyard, the volume of local projects appears sufficient for the Co-op to focus locally, without consideration of the large off-shore wind projects. If and as the Co-op's objectives expand to serve or hedge a substantial portion of the Compact's overall load with renewable energy, the Co-op may need to consider accessing projects being developed beyond the immediate Cape Cod region or the off-shore projects. For perspective, Table 3 summarizes a sampling of publicly-known projects in the region, their scale, and likely on-line date, split into five categories: local community scale wind, other Eastern Massachusetts wind (including off-shore), Western Massachusetts wind, other New England Wind, and New England Biomass. Table 3 contains both nameplate capacity values, as well as *average* MW ("aMW") figures that represent the all-hours equivalent for ease of comparison between projects and with Co-op load quantities. The data represent a subset of the projects tracked in the database mentioned earlier. The year-to-year quantities are *cumulative*, and the table does not reflect the likelihood of successful completion of any single project. Appendix A shows detailed tables listing the specific projects reflected in Table 3.[8]

[7] In the territory of the Northern Maine Independent System Administrator

[8] Note that the figures in Table 3 represent a survey of development efforts which are in the public eye. While there is certain to be attrition (perhaps substantial attrition) as some of these fail to secure permits and/or financing, there are many other projects in the development pipeline which are not widely visible to the public yet (often, but not always, earlier in the development process). It would be speculative to assume that the attrition of listed projects would be precisely offset by success of other projects not represented in the table. As a result, the figures summarized in Table 3 should be considered indicative of the *potential* order of magnitude of available renewable resource development.

Table 3
Illustrative New England Renewable Energy Project in Development

Approx. Scale (cumulative) Capacity & *Average MW*	2007	2008	2009	2010+
Local/Community-Scale Wind (Cape Cod & other Southeast MA)	2—5 MW *~1—1.5 aMW*	15—20 MW *~5-6 aMW*	35—50 MW *~10—15 aMW*	35—50 MW *~10—15 aMW*
Other Eastern MA Incl. Off-Shore	0 MW	8 MW *~ 2.5 aMW*	30 MW *~ 10 aMW*	800 MW *~ 240 aMW*
Western MA	30 MW *~ 10 aMW*	42 MW *~ 12.5 aMW*	42 MW *~ 12.5 aMW*	92 MW *~27.5 aMW*
Other New England Wind	42 MW ~ 12.5 aMW	340 MW ~ 102 aMW	340 MW ~ 102 aMW	340 MW ~ 102 aMW
New England Biomass	45 MW ~ 38 aMW	45 MW ~ 38 aMW	45 MW ~ 38 aMW	85 MW ~ 73 aMW

5.2 Economics

Renewable energy costs are very project- and site-specific for a variety of reasons. These include:

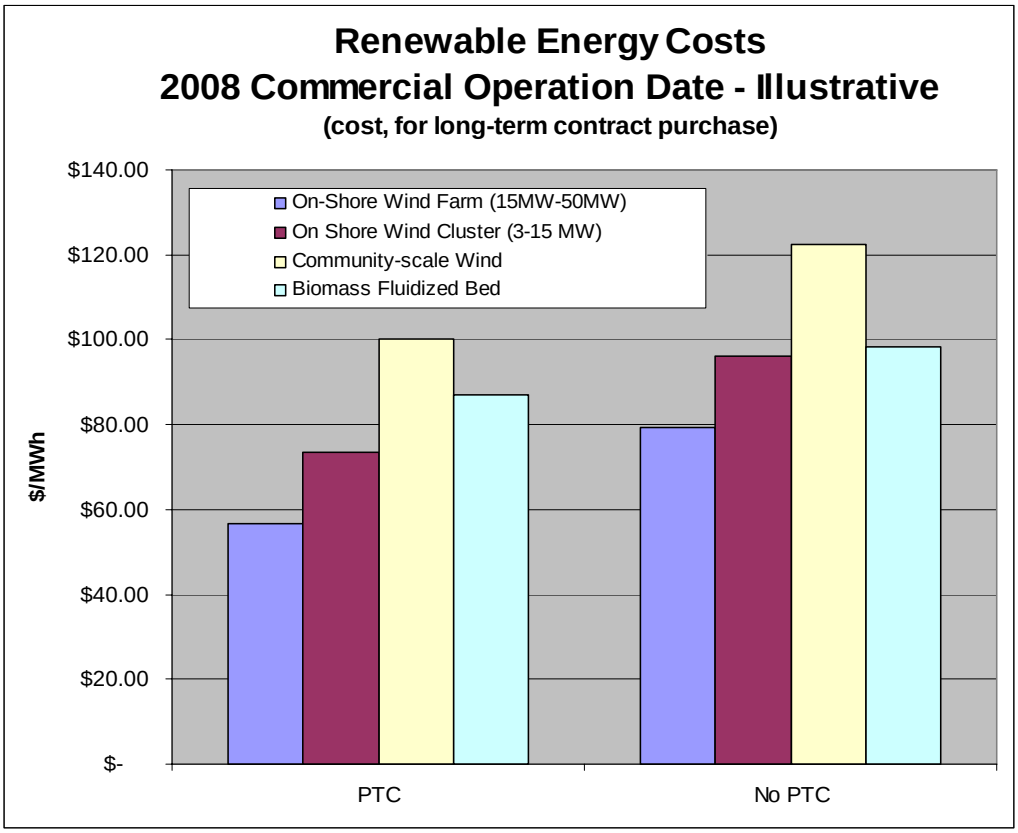
- **Project economies of scale**. For the same technology and resource (e.g. wind strength or biomass fuel supply), larger projects typically have lower unit costs than smaller projects. Such scale economies can be quite strong, with project per-MWh cost of energy varying by greater than a factor of 2 over the range of available sizes.
- **Resource**. Wind speed is a major determinate of wind economics, as the power output varies almost with the cube of the speed of the wind, so a little more wind can mean a lot more energy from the same turbine. Access to and price of various biomass feedstocks within a 50 to 100 mile range has a strong influence on biomass economics. Likewise, the water flow and rate of methane collection over time substantially influence the value of hydroelectric or landfill gas generation.
- **Site access and construction costs**. Site-related construction costs vary significantly. The need to construct or improve access roads and possible site-clearing, as well as more difficult transport routes, makes mountain ridge-based wind projects more costly than farm land-based projects. Offshore wind projects face their own construction hurdles.
- **Technology/fuel type**. Different technologies have different costs. Today, solar is far more costly than most wind or biomass (although solar's strong on-peak production make it worth more, partially offsetting this cost premium). It is important to distinguish off-shore wind as a distinct technology from on-shore wind projects, as the economics differ substantially. Off-shore wind has substantially higher capital, installation and operating costs than on-shore wind, plus greater costs of access to the transmission grid. These are offset in part by access to substantially stronger and steadier winds. However, off-shore wind is a less mature technology application, and its economics are less well understood than on-shore wind.
- **Transmission access** is also a significant factor, especially for larger wind farms which may not be located near load-centers.

- **Availability of tax credits or other public subsidies**. The Federal production tax credit ("PTC") is a policy tool designed to level the playing field between certain renewable energy technologies and other (fossil, nuclear) energy sources which benefit from a variety of direct or indirect subsidies. The PTC provides a substantial investment benefit for the owners of wind and, to a lesser degree, biomass projects. It is currently slated to expire before the end of 2007, meaning that if a privately-owned project cannot reach commercial operation by December 31, 2007, it will not be eligible to receive the PTC. While the PTC has expired and been reauthorized several times, and efforts are underway to enact an extension, there remains uncertainty over the long-term availability of the PTC. Non-tax-paying entities have available alternative Federal incentives including the Renewable Energy Production Incentive and Clean Renewable Energy Bonds, although there are significant budget limitations constraining the availability of these mechanisms. State renewable energy fund assistance such as the programs available through the Massachusetts Technology Collaborative can influence the cost of renewable energy projects on a limited scale.
- **Ownership/financing structure and cost of capital**. There are a variety of mechanisms for structuring the ownership and financing of renewable energy projects, encompassing a wide variety of factors, which can have a substantial impact on the per-unit cost of renewable energy projects, especially capital intensive technologies such as wind. These structures include, among others, the degree of debt leverage, the cost of equity or debt investment, whether the lenders can look to the project sponsor to back-stop loans to the project, and the degree of standardization of financing and ownership structure.

For illustrative purposes, Figure 3 compares the "all-in" levelized cost of energy[9] between some different types and scales of projects. These are the all-in costs to produce all products produced by a power generation project, including energy, capacity, and RECs. The revenue available from sale of RECs to third parties would have the effect of offsetting in part the net cost of energy and capacity. The figure shows levelized costs with and without the effect of the PTC. Receipt of the PTC enables the owners to lower their requisite power costs charged to off-takers. Note that the levelized costs shown are for wholesale power sales, i.e., from generators to utilities; they are not comparable to retail prices, i.e., the prices paid by consumers. Off-shore wind costs are not included in the comparison, due to the lack of sufficient cost data for such projects in the United States.

[9] The average cost per MWh reflecting amortization of fixed costs, return to investors, plus operation, maintenance and other ongoing expenses.

Figure 3
Levelized cost of energy between different types and scales of projects, with and without the effect of the Federal PTC



5.3 Hedging and Renewable Energy

Figure 4 compares the levelized costs of renewable energy technologies (assuming 15 year contracts) against commodity electricity forecasts of New England wholesale all-hours average locational marginal energy prices and futures/forwards prices available in the market contemporaneously with the forecast. The graph illustrates two key points with respect to hedging electricity prices. First, buying a long-term hedge in an illiquid electricity forward market comes at a premium, much like an insurance premium to guarantee the cost exposure. Second, when these wholesale costs are compared to the costs of long-term commitments to renewable energy projects of various types and sizes, some renewable energy commitments may be comparable to or less costly than hedges available in the long-term commodity market.

Figure 4
Levelized costs of renewable energy technologies against commodity electricity forecasts of New England wholesale all-hours average locational marginal energy prices (LMPs) [10] [11]

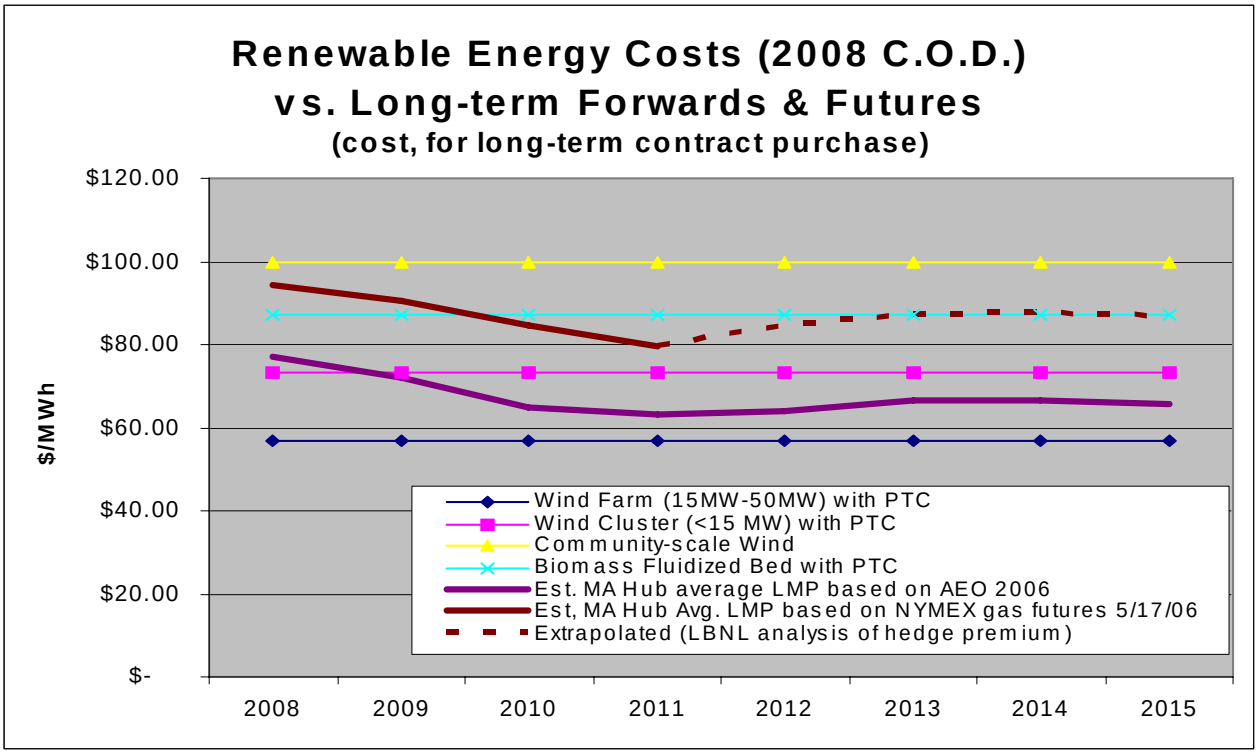


Figure 4 is not indicative of any particular community wind project. Also, it does not reflect project cost increases recorded in the last year resulting from turbine shortages and resulting price increases. And, as noted above, these are wholesale prices not reflective of line losses, ancillary services, load shaping and other costs associated with delivered retail electricity service.

These observations come with a few important caveats. If contracting with a merchant plant already financed or built without the benefit of Co-op ownership or contracting, there will be little chance of acquiring the renewable energy asset or contract at "cost." Rather, it is more likely that the plant owners will sell the project output at its commodity market value. However, the Co-op could seek to buy the energy, capacity and RECs at prices closer to their actual costs if the Co-op is able to enter either into long-term contracts for renewable energy that enables the project sponsor to obtain third party financing, or invests more directly in project ownership. As

[10] The forecast (the lower line) represents a derivation of the ISO New England MA Hub LMP price consistent with the Energy Information Agency's Annual Energy Outlook 2006 base case. The implicit futures prices represent a derivation of the same LMP consistent with the NYMEX gas futures contracts. Beyond the end of the NYMEX futures strips, these prices are extrapolated based on Lawrence Berkeley National Laboratory analysis of the inherent hedging premiums implicit in futures prices. See *Comparison of AEO 2006 Natural Gas Price Forecasts to NYMEX Futures Prices*, memo by Mark Bolinger and Ryan Wiser, Berkeley Lab, Lawrence Berkeley National Laboratory, December 19, 2005.

[11] The graph is simplified for illustration purposes. Individual renewable energy projects have production or variance risks not inherent in long-term commodity futures; as a result the figures are not directly comparable; in practice the renewable energy cost lines might be discounted by a few $/MWh to reflect comparable value. On the other hand, capacity value of the renewable energy generators also is not reflected; a comparable commodity price would therefore be increased by several $/MWh to reflect the purchase of an equivalent quantity of installed capacity.

can be seen from Figure 3, for some types of generation, renewable energy could enable access to a lower-cost hedge than available in commodity market.

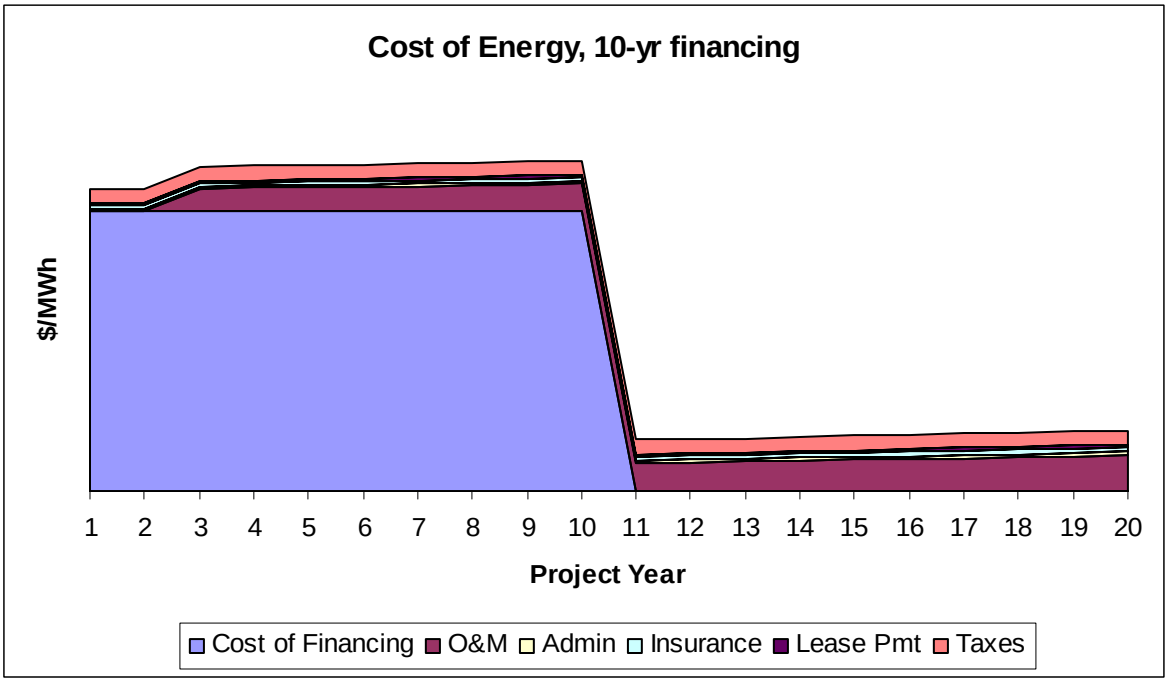
Furthermore, the potential for offsetting renewable energy costs through sale of renewable energy certificates (RECs) to other parties (by the generator or the Co-op) increases the likelihood of a renewable energy hedge being below what could be procured in the conventional electric commodity market. In the illustration shown, even a community-scale wind project could be a cost-competitive hedge if the RECs can be sold off long-term for greater than $20 per MWh. In some instances, all or some of the RECs might be retired—so that the Compact's purchases and sales are "green"—while still providing a hedge competitive with hedges available through conventional means. While the potential exists for long-term REC revenues to allow the effective cost of energy to be competitive from such projects, REC markets are subject to substantial political uncertainty. While there value may be reinforced, to a degree, by RPS demands from multiple states in the region (MA, RI, CT), it may be difficult to lean on expected REC sale revenues for financing or planning purposes.

5.4 Long-Term Advantage of Wind Project Ownership

An important consideration in the development of a Co-op strategy is the cost structure of capital-intensive renewable energy, wind power in particular. The operating costs of wind power projects are quite low relative to the cost of capital and to the prevailing commodity electricity market prices. Much like many of the region's large utility hydro projects, once the initial capital costs are fully paid off, the effective per-MWh cost drops dramatically.

Figure 5 illustrates the point schematically for a hypothetical small wind project representative of either a privately-owned project with 20 year life using a 10-year capital recovery period, or a "flip ownership structure" in which the Co-op is a minority owner for the capital recovery period but assumes primary ownership after the PTC expires following the tenth year of operation. As can be seen, the per-MWh cost drops dramatically after the capital costs are amortized. This suggests that ownership (or contractual control mimicking the benefits of ownership) can create long-term low-cost advantages after capital costs are fully amortized. Such long-term cost advantages can play a role in mitigating migration risk of those customers for whom long-term contracts are not feasible, suggesting a role in expanding Co-op commitments to support load beyond the level of the Compact's government entities as projects get paid off and more become available. Appendix B shows the hypothetical cumulative effect of several smaller wind projects as their capital costs are amortized.

Figure 5
Long-term operating costs for a hypothetical wind power project



Summary of key motivators of renewable energy project development: Renewable energy projects are being pursued by an increasingly diverse set of developers and investors, including large private sector sponsors, public and investor-owned utilities, municipalities, cooperatives and not-for-profits. Some project developments combine two or more entities, each playing a specific role and seeking a specific benefit. The result is that not all projects share the same motivation or objective. For this reason, any entity seeking to partner with a project at a later stage—as an energy or REC purchaser for example—must look carefully at the project sponsors and make an effort to understand their interests and any other factors driving project development.

Projects developed for different reasons have different sensitivities: There are many pathways to successful project development. In today's complex political-economic environment, there are equally as many reasons for developing renewable energy projects. Depending on the investing party, the geographic location, and the timing, the primary driver for undertaking a renewable energy project may variously be the sponsor's desire to earn a financial return, create a hedge against electricity price volatility, comply with a government mandate, contribute to local energy diversity and security, produce environmental benefits, or respond to public demand. Likely as not, it is a mixture.

A party such as the Co-op approaching a project's developer must assess which of these interests is at the forefront, and negotiate involvement in a way that helps the project sponsor achieve its primary objective. If the Co-op is interested in buying energy or RECs, it will be helpful to assess whether the sponsor wants a long-term contract, to benefit from near-term prices, to sell the energy or RECs locally, or even to retain some of the energy or REC benefits.

6.0: Financing Considerations

6.1 Financing Landscape

A key interest of the Compact is in assessing whether establishing a separate Co-op will enhance the financial ability of the Compact to undertake longer-term power hedging transactions and activities. Financing considerations most commonly arise in connection with acquiring an asset and the need to draw upon third party financial resources to finance the asset purchase. The Compact seeks to understand whether a Co-op could show sufficient financial strength or "bankability" to support potential power marketing hedging transactions and renewable power supply activities with limited direct support from Compact Members. Note that while the focus on renewable power projects reflects the Compact's overall mandate, these considerations are broadly applicable as well for distributed conventional power generation projects. The Compact also seeks to understand if financing raised by the Co-op could be any cheaper, easier to obtain, and present fewer risks to Compact Members than financing raised directly by the Compact Members.

This Report is focused on three such potential hedging strategies being considered by the Compact for the Co-op to achieve its hedging goal:

- Entering into long-term power market hedges to offset future electricity price changes;
- Entering into long-term purchase contracts to purchase electric power and/or RECs directly from one or more renewable power generators; and
- Directly investing in or constructing renewable power generating assets.

For the first two strategies, the financing considerations can be recast as the means by which the counterparties to the Co-op can be made comfortable that the Co-op will be able to honor its contract obligations. The hedge counterparty wants to be assured that the Co-op will have the financial resources and willingness to make payments as required over the term of the hedge contract even if later electricity price changes cause the contract payment amounts to increase over the amounts initially contemplated, or cause the hedge to be substantially more expensive than alternatives then available in the market. Similarly, a renewable power generator signing a long-term power purchase agreement needs to be assured that the Co-op will make payments for the power delivered under the contract. This need typically is founded on the generator seeking to use the contract as part of the collateral security for obtaining financing to construct the renewable power generator. Thus, the generator needs to assure its own capital providers that the Co-op will honor its contractual payment obligations under the power purchase agreement as a source of cash flow to meet the generator's own obligations to its capital providers. This will be the same for the third strategy in which the Co-op seeks to own the renewable power generation capacity outright.

6.2 Bankability and Credit Quality

In the financial sector, bankability describes the relative prospects of a company or a project for obtaining third party capital in support of some planned transaction or investment. For the Compact, the principal focus is assessing whether the Co-op can demonstrate sufficient long-term credit quality or bankability in the eyes of hedging counterparties, renewable power generators, and financial institutions to be able to undertake such activities with limited credit

guarantees from Compact Members. A secondary interest is the ability of the Co-op to secure financing as needed to meet its short-term working capital requirements. For purposes of this Phase I Report, the Team assumes that the Compact Members will provide organizational working capital to the Co-op with ongoing working capital requirements met through financing for its broader operations. Section 4 discusses credit requirements for power market hedging transactions. The primary focus of this section is on the credit requirements of third party entities considering entering into long-term power purchase agreements with the Co-op or extending financing in support of the Co-op's acquiring or constructing renewable power supplies, and how the Co-op can address such requirements.

Long-term financing typically is extended to an entity either on a corporate basis or on a project basis. In corporate financing structures, the lender extends the loan based on comfort with the aggregate cash flow and resources of the borrowing entity. The alternative is to extend financing based on comfort with the cash flows expected to be generated by the activity being financed. This is usually defined as project financing. For municipalities, the analogy to a corporate finance loan is an unsecured general obligation bond backed by the full faith and credit of the issuing town. By contrast, the project financing analogy would be a revenue bond issued by a municipality to finance a specific public works project, e.g., a power plant, and supported only by the revenues of that project and not tax receipts.

Standard & Poor's ("S&P"), a leading global credit rating agency, assesses the credit quality of enterprises and projects. In its description of issue credit rating definitions (available at www.standardandpoors.com), it assigns debt ratings according to three broad factors: the likelihood of payment, i.e., the level of certainty that the obligor has the capacity and the willingness to meet its financial commitments on an obligation according to the terms of the obligation; the nature and provisions of the obligation; and the protection afforded by bankruptcy laws and other creditors' rights. In its October 2001 article, "*Project Finance Summary Debt Rating Criteria*," available at www.standardandpoors.com, S&P defines a project company "…as a group of agreements and contracts between lenders, project sponsors, and other interested parties that creates a form of business organization that will issue a focused line of business, and will ask that lenders look only to a specific asset to generate cash flow as the sole sources of principal and interest payment and collateral." S&P evaluates third party entities in project financings by focusing on default probability beginning with identifying and assessing project-level risks. Several broad steps for assessing project-level risk are identified, including, among others, the evaluation of project operational and financing contracts that serve as the basis of the project and the evaluation of the risks that customers and other counterparties present to the project company. An entity seeking external financing for a power generation plant, whether renewable or conventional, needs to structure such contracts and secure counterparties that present acceptable risks over the term of the requested financing.

It will be difficult at best for the Co-op to obtain corporate-style financing for its initial operations. At its outset, the Co-op will be a start-up enterprise with no financial history or cash flows. There will not be any basis on which third party contract counterparties or capital providers can assess ongoing credit quality. Most capital providers and contract counterparties do not treat letters of credit for fixed dollar amounts and fixed availability in time or comparable partial guarantees as adequate substitutes for demonstrated and projected cash flow generation (unless they are for the full amount and term of the debt obligation). To enable the Co-op to

borrow for the purpose of financing the acquisition of a power generation project (or the construction of a new plant) during this start up phase, explicit credit guarantees by Compact Members or other entities almost certainly will be needed for the Co-op to demonstrate a capacity to meet its financial commitments. The level of external credit support needed may lessen over time as the Co-op develops a satisfactory financial track record, including positive cash flows from long-term contracts and generating assets.

The Co-op may be able to obtain long-term debt financing to support its investments in renewable power projects if the debt is in the form of project financing. Under this structure, the loans would be extended directly to the renewable power project company. The Co-op would structure the project on terms that provide sufficient comfort to lenders that the project itself will yield sufficient ongoing cash flow to repay the debt. As a condition of extending debt financing to the Co-op, the lenders would be likely to require the Co-op to sell the power or RECs from the project under long-term purchase agreements with credit-worthy entities. If Compact Members or other Government Accounts, acting through the Compact, wish to purchase such power and RECs, the Co-op's lenders likely would require that the buyers be credit-worthy, e.g., have an investment grade S&P credit rating, and be willing to enter into fully binding purchase commitments lasting at least as long as the term of the debt financing. The details of the actual sales contracts would need to be meshed with the Compact Aggregation structure and the contract with the Compact's Retail Supplier. If there are more than a few purchasers or if the credit quality varies among the purchasers, the Co-op's lenders likely would call for these commitments to be mutually supporting so that the purchasers assume the risk of a payment default by any single purchasing entity on a joint and several basis. Project debt financing, if structured to be repaid by a project's own cash flow, typically covers roughly 50-60% of the total capital costs; the exact sustainable loan amount varies with the projected cash flow and the specific loan terms. The Co-op would need to source equity capital from the Compact Members or other third party investors for the balance of the capital costs. However, the lenders would not require direct loan guarantees by Compact Members. Instead, lenders would look to have the Compact ensure that the Co-op meets its own equity or any performance obligations, to the extent they exist.

The Co-op also may be able to facilitate long-term debt financing even in situations where the Co-op might seek not to purchase or invest in assets, but just to enter into long-term, i.e., multi-year, power or REC purchase commitments with third party project developers. The credit criteria described above for a project financing also will play a key role in these types of negotiations. The developer will face the same requirements from its own lenders and investors in obtaining term debt financing and equity capital to build the power plant. Thus, in order to induce developers to enter into a long-term power or REC purchase agreement, the Co-op still will need to show that the ultimate buyers are credit-worthy, e.g., have an investment grade S&P credit rating, and are willing to enter into fully binding purchase commitments lasting at least as long as the term of the debt financing provided to the developer. As with a direct investment, the Co-op would need to work through the details of reselling the power or RECs through the Compact Aggregation structure and the Compact's Retail Supplier to interested Government Accounts. The same sort of mutual support contract requirements would also likely be required by the developer's financiers, so that the payment default risk of any one Government Account is mitigated by a shared commitment by all of the participating Government Accounts to support the collective obligation.

It is important to recognize that S&P's financing criteria described above are proxies for the broader capital market. Even if S&P itself is not involved and no rating is sought, the same types of considerations will be raised by almost all potential counterparties and capital providers, including bond investors, tax-oriented institutional equity investors, as well as conventional lenders. Such financing requirements are not absolute, however. Some developers and financiers may have relative differences in their motivations and needs for entering into a transaction with the Co-op. As noted further below, such differences may create certain limited, but potentially useful, opportunities for the Co-op.

6.3 Financing Sources

While the Compact Members likely will need to provide some form of assurance to third party capital providers supporting the Co-op, the means by which that assurance can be provided will vary for the different hedging strategies and even among projects employing the same strategies. Each transaction opportunity will involve distinct counterparties, each with their own needs and motivations. This is more pronounced for renewable power project developers than for providers of power marketing hedges. As described in Section 4, power market hedges generally are offered by large, well-capitalized financial institutions as part of a large and highly structured market. The rules and contract forms for financial hedges are standardized; the desire for market liquidity militates against customized transactions that diverge from the standard requirements.

By contrast, as noted in Section 5, renewable project developers originate from each of the public, private, and non-profit sectors. Their motivations for undertaking the project, i.e., what they need to obtain from the project, vary. This is as true for projects developed in or near Cape Cod as in other regions of the country. In the last twelve months, wind projects installed in the New England region have been sponsored by a state agency, a municipality, a regional school district, a religious institution, a labor union, and a private sector developer. Section 5 notes the diversity in the sizes of pending wind projects being considered for the region. They range from single turbine installation to large wind farms. Not all projects will be realized, of course. Those that do will come to market at different times, both relative to each other and in terms of the completeness of their own development.

Multiple and varied financial institutions are active in financing renewable power projects. Appendix C lists indicative financial institutions active in financing renewable power projects in the United States. The list is broken out in two ways: by type of funds (debt, equity, and granting sources) and by whether the capital source is public or private. Entities geared towards supporting cooperatives are included. The list includes entities active in the New England region, certain ones focused in other regions, and entities working nationwide. Most are providing financing on a project-finance basis, i.e., based on comfort that the project itself will support the obligation or investment. Each capital source brings a differing set of rationales, capabilities, and focus on certain types of financing transactions. The Co-op will be able to access some capital sources more easily than others. While some sources are not actively supporting projects owned by cooperatives or otherwise not be interested in working with the Co-op, the Co-op will benefit from being conversant with as wide a financing pool as possible so as to be better able to craft a feasible financing plan for projects that come its way.

Certain financing sources and structures may be particularly useful for assisting the Co-op. These include debt and grant financing programs operated by the U.S. Department of Agriculture

(USDA), certain national cooperative financing entities, and certain emerging tax-oriented public-private partnership. The US Department of the Treasury's CREBs program also may be a financing vehicle for the Co-op in the future.

The USDA offers several debt and grant-related financing programs in support of rural electric cooperatives and municipalities (http://www.usda.gov/rus/electric/index.htm). As an example, the Washington Electric Cooperative (http://www.washingtonelectric.coop/) financed almost the entire cost of its landfill gas power generation project via a long-term low-interest Rural Utilities Service ("RUS") loan. Based on the USDA's Rural Business Loan Eligibility Identifier on the Department's website (http://www.ers.usda.gov/data/LoanLookup/), Cape Cod and Martha's Vineyard appear to be classified as rural areas. The Compact may want to confirm this as part of the Phase II review. Assuming the Cape and Vineyard are eligible, the RUS loan program may be a useful tool for the Co-op. While the RUS has supported multiple conventional power projects undertaken by electrical cooperatives and municipalities, it has not been particularly active in supporting renewable power projects. Team discussions with USDA officials indicate support for renewable power is increasing, however, so Co-op interest in the RUS facility may be timely.

Electric cooperatives also can obtain support from several entities established to assist cooperatives. These entities include the National Rural Electric Cooperative Association (NRECA) (http://www.nreca.org/), the Cooperative Development Institute (CDI) (http://www.cooplife.coop/aboutcdi.htm), the National Rural Utilities Cooperative Finance Corporation (CFC) (http://www.nrucfc.org/), and CoBank (http://www.cobank.com/). NRECA and CDI provide organizational support and sometimes seed money to cooperatives just beginning to form, while CFC and CoBank both offer long-term debt financing for specific renewable power projects. Both CFC and CoBank actively assisted municipalities and cooperatives earlier this year in applying for CREBs. In preliminary Team discussions with CoBank lending officials and NRECA, both entities expressed interest in assisting an electric cooperative in Massachusetts in part due to the paucity of such cooperatives in the New England region.

The US Treasury conducted earlier this year an auction of allocations of Clean Renewable Energy Bonds (CREBs). CREBs were established by the Energy Policy Act of 2005 (the Act) (www.cleanenergybonds.org). CREBs are long-term tax credit bonds; in a CREB financing, the holder of the debt instrument receives Federal tax credits in lieu of interest paid by the issuer. CREBs enable the issuer to borrow at a zero percent (0%) interest rate. Municipalities, their instrumentalities, and cooperatives are among the institutions able to issue CREBs. They are intended to finance most types of renewable power projects. It is important to note that the Act only authorized $800 million of CREBs to be issued in 2006 and 2007. Initial applications for CREBs allocations were due by April 26th of this year. The US Treasury received more than 700 applications and expects to allocate all of the available CREBs for to these applicants. Congressional action will be required to reauthorize the CREBs program and additional allocations; legislation already has been introduced to undertake these measures. The strong popularity of the CREBs program evidenced by the over-subscription improves the prospects for extension of the program. CREBs may an attractive option for financing future activities of the Co-op if the program is extended.

The USDA also operates a grant and loan guarantee program mandated by the 2002 Farm Bill in support of investments in renewable energy systems by privately-owned small businesses located in rural areas, http://www.rurdev.usda.gov/rbs/farmbill/index.html. While a Co-op established by Compact Members may not be able to access this program directly, the Co-op could assist and facilitate a private sector developer obtain such financing as part of a long-term power purchase commitment.

If it can be determined to be available, tax-exempt municipal bond financing could be a useful tool to support the Co-op's renewable power investments. Other than grants or subsidized programs such as RUS or CREB financing, tax-exempt municipal bonds could be the least expensive option for the Compact. Some aspects would need to be investigated further to confirm the true availability, the possible term, the cost, and the transaction complexity of such bonds for specific transactions. Other aspects to research include whether the power and possibly also the RECs generated by the contract or the investment project can only be sold to owners of the Co-op; the issue depends in part on the method by which the Co-op qualifies as a tax-exempt entity. How this is resolved may affect the ability to issue the bonds on a tax-exempt basis (as opposed to on a taxable basis). There may be some state limits on the ability of the Compact Members directly to issue bonds to support a renewable power project. The City of Brockton faced several legal roadblocks in attempting to issue a $1.6 million municipal bond to finance part of its 425 kW Brightfields photovoltaic project. Ultimately, the city secured state passage of home rule legislation to resolve the concerns. Information is at http://architecture.mit.edu/class/nature/student_projects/lrc/index.htm. The Compact's counsel believes that, by contrast, the Massachusetts Chapter 164 energy cooperative statute appears to give such a cooperative clear authority to issue bonds in support of its operations. With respect to credit issues, preliminary Team research suggests that a tax-exempt municipal bond issued by the Co-op might be structured either with direct recourse to Compact Members or on a project-financing basis with little or no support from Compact Members. The specific terms possible will depend on a particular transaction. If the Co-op buys power from a project under a long-term purchase agreement, the Co-op might be able to issue tax-exempt municipal bond financing and use the proceeds of such financing to pre-pay for power to be generated by the project. A leading renewable power investment advisory firm announced earlier this year that it is advising several public sector entities on the financing of a wind project using this method. Further evaluation by the Compact's legal counsel, bond legal counsel and underwriters likely will be needed to answer all questions to the satisfaction of potential bond investors.

In addition to the above financing sources, several novel financing structures have been developed in recent years to attract private sector equity financing in support of publicly-owned renewable power projects. These structures and tools include, among others, public-private hybrid ownership structures involving tax-oriented institutional investors, off-taker pre-payments for power or renewable energy credits, co-development with private power project developers, and utility bonds. Many such structures are designed to make use of Federal income tax-oriented investment incentives where the original project developer lacks sufficient taxable obligations to do so. Investment banking firms, law firms, advocacy groups, and state clean energy funds are adapting such tools for use by municipalities, public utility districts, and cooperatives undertaking their own renewable power projects but whose tax-exempt status makes them similarly unable to utilize such tax-oriented incentives. These tools and structures may be of potential use by the Co-op. One example of such a structure is referred to as a "flip" in which

the publicly-owned entity takes over long-term majority ownership after the tax advantages have been fully utilized by the private partner.

The size of any particular financing is necessarily tied to the project costs, the nature of the financing source, and whether repayment is expected from the project, i.e., a project financing, or from the project sponsors, i.e., a corporate-style financing. Each grant and official assistance program has its own size. For example, USDA Section 9006 grants must not exceed 25 percent of the eligible project costs, but can be from $2,500 to $500,000. USDA Section 9006 loan guarantees can be for up to 50% of total eligible project costs and be up to $10,000,000 per project. The sizes of project finance commercial loans are determined by the projects' projected cash flow levels and robustness. The specific amount typically is a function of the lender's required debt service coverage ratio, the loan term, and the interest rate. These are negotiated with the lender based on the lender's assessments of the financial model and project structure. For wind power projects, project finance debt typically covers about 50-60% of the project costs. The amount of equity that a given investor will contribute to a project, e.g., a tax-oriented institutional investor, similarly reflects the rate of return that the investor determines necessary, based on a review of the project's strengths and weaknesses. For some wind projects and financing structures, equity investors are willing to provide virtually all of the necessary capital in exchange for priority rights to the tax benefits and project cash flows during the first ten years or more of the life of the project. For other projects, the developer may need to provide or obtain additional equity to cover the gap between total costs and funds committed from grants, lenders, and tax-oriented investors. The project developer's responsibility is to assemble sufficient financing from the various sources to cover the costs; gaps have to be filled before the project can move forward. The developer itself needs to be creditworthy or bankable only to the extent that the financing structure calls for the capital providers to place reliance on that credit strength. The similar premise would hold true for the Co-op.

Some observations can be made from the variety of power project developers and capital providers: first, the combination of diverse developers and multiple capital sources increase the potential that multiple financing strategies and sources will meet the Co-op's needs for any given power purchase or investment opportunity. Second, this potential for multiple financing strategies underscores the need to treat potential strategies as means to achieve the primary goals set for the Co-op, rather than as objectives in themselves. Difficulty in implementing a given strategy or securing a financing commitment from a specific financing source can reflect an inappropriate pairing of strategy and sources for a given opportunity instead of an unattainable opportunity in itself. Third, the diversity in developers and financing sources should be viewed as an opportunity. Developing the familiarity and expertise to draw upon the panoply of financing sources to tailor financing strategies specific to each opportunity can be a competitive advantage for the Co-op relative to other potential competitors.

6.4 Typical Project Financing Strategies

Renewable and especially wind projects are being financed in multiple ways in reflection of the diversity in the types of developers and financing sources. Appendix D provides a snapshot of common financing plans used by public sector entities, private sector developers, cooperatives, and other non-profit entities in financing renewable energy power generation projects. The financing sources range from internal funds, third party equity sources, direct budget appropriations, prepayments of RECs, grants and loans from state clean energy funds, private

institutional equity, and commercial debt. For a given project, developers often combine financing from multiple sources.

Project financings vary by the degree to which the project developer asks third party financing sources to rely solely on, or have recourse to, the revenues and assets of the project to reimburse the lenders and/or provide an investment return for the investors. At one end of the spectrum, some project sponsors finance an entire project using internal funds, i.e., there is no third party financial source. A similar version of corporate financing is when the project sponsor obtains third party financing, but extends (or has its owners extend) a credit-worthy guaranty to the financial source; in that case, the financing source does not have any effective exposure to the project risks.

By contrast, a non-recourse project financing features no support whatsoever from the project sponsor or its owners. In such cases, the financing sources structure the terms of their financing and often mandate adjustments to the project design and contracts to improve the prospects that the project will perform as projected. The third party financing sources identify each potential risk to project performance and require that each risk is specifically allocated by contract to a particular project entity, e.g., the developer, the construction contractors, equipment manufacturers, purchasers of the project output, the operator, insurance companies, or other entities involved in the project.

Where third party financing is sought, it is most common for the project developer and/or its owners to provide some limited financial support and/or to assume certain defined risks. These financings are termed limited recourse project financings in that the sponsor's obligations to the project (and to repayment of the loan or other funding) is limited to certain defined financial or contract performance obligations. In all other aspects, the capital providers can look only to the project's cash flows and assets as sources of repayment. In some cases, the project sponsor may take on a defined risk because it is best-placed to manage the risk. In other situations, the project sponsor will assume the risk in the belief that the probability and/or magnitude of the risk are less significant than believed by the financing sources. In others, taking on a certain exposure is seen as simply the price to be paid to obtain needed financing. For example, a developer may assume the risk of construction cost overruns in the belief that the potential risk is small. In exchange, the lender is willing to disburse funds during construction and possibly at a cheaper interest rate.

Such commitments vary in type and extent across power generation projects. The forms of support usually are capped in time and/or in dollar amounts. They are negotiated on a project-by-project basis as needed to complete the third party financing. A project sponsor sometimes may accept a given risk in connection with the financing, but then will seek to have a third party assume the risk on its behalf. This enables the financing parties to rely on the sponsor's commitment, while the sponsor in turn secures comfort that the entity best placed to manage such risk is motivated to mitigate the risk. This happens most commonly with respect to construction-related risks.

The forms can include the following:

- Assumption of construction period contingent risks, e.g., delays or cost overruns.
- Assumption of certain potential risks relating to the power generation technology.

- Assumption of contingent risks relating to the tax structure of a project (sometimes utilized in projects involving institutional investors).
- Use of conservative assumptions in the financial projections (reduces downside project performance risks to the third party capital providers).
- Enhanced purchase contract terms (if the sponsor also is buying the power) .
- Up-front prepayments for power or RECs.
- Letters of credit to support power or REC purchase obligations.
- For projects sponsored by multiple entities, provisions requiring limited purchase obligations in excess of a given entity's own base purchase commitment (known as "step-up" provisions to cover potential of another buyer's potential default).

The interest rate, transaction cost, and complexity of various financing options will vary with the capital provider's assessment of the relative risks of the financing transaction. Municipal bond financing, e.g., tax-exempt bonds, typically will be the least expensive debt financing option. The low rates charged by holders of such bonds reflect their assessments of low default risk. As of August 7, the Bloomberg website listed the triple-A rated insured 15 year bond yield at approximately 4.36% (http://www.bloomberg.com/markets/rates/index.html). Rates are higher for project finance facilities where the lender has no recourse to the project owner and is relaying instead on project cash flows, i.e., is taking project-related risks. Lenders are offering to provide 15 year project finance loans to large, well-structured grid-oriented wind projects, e.g., exceeding 50 MW in size, at initial interest rates and margins equating to a fixed all-in interest rate of 7-8% in the interest rate market as of late August. A lender financing a small community-scale wind plant likely will charge a higher all-in interest rate, e.g., 8-10%, to reflect the higher perceived risks. Transaction costs and time commitments will vary as well, with corporate finance or fully-guaranteed loans being less expensive and quicker to closing than project finance facilities. Specific costs will be a function of specific contract or investment project transactions.

6.5 Co-op Competitive Position

Co-op Strengths: In crafting financing strategies for the Co-op, the Compact should identify and draw upon the Compact's and Co-op's potential competitive strengths. The Phase I review suggests such strengths include the following:

- Establishment of the Co-op should facilitate accessing debt financing sources that are geared to supporting public and cooperative entities. Some such sources are available only to cooperative entities.
- Establishment of the Co-op as a single entity may facilitate securing grant resources available to entities undertaking renewable power project development.
- The Co-op should be able to benefit from lower-cost tax-exempt bond financing issued either directly or on its behalf by its owners (the Compact Members).
- The Co-op's aggregation of buying power, even if initially focused on the aggregate municipal load, will present a larger commitment of greater interest for certain project developers, especially of smaller projects.

- The Compact Aggregation framework may be utilized to support projects or contracts serving Cape and Vineyard customers beyond the municipal load.
- The Members conceptually are willing to consider assuming certain levels and types of contractual or other limited financial support to facilitate the Co-op's contract or financing negotiations, subject to review in each instance.
- As neighbors on the Cape and Vineyard and owners of the Co-op, the Compact Members may be willing to adopt mutual support power purchase agreement or financing contract terms that increase the strength of purchase agreements or financing contracts in the eyes of potential counterparties or lenders by lowering the perceived default risks.
- The Compact Members have a long-term operating history unrivalled by almost any other region in the United States. The history can be used to underscore the long-term commitment to the Co-op's goals.
- As an entity owned by the Compact Members, the Co-op may be able to secure a negotiating advantage from those project developers who perceive a political value to a relationship with Cape and Vineyard communities.
- The Co-op's status as one of the only rural electric cooperatives in New England, and possibly the only one in Massachusetts, may facilitate securing additional organizational and financial support from national–level cooperative institutions, e.g., CoBank or CFC, tasked with supporting such cooperatives.
- The Co-op's status as a publicly-owned cooperative operating in the private sector arena can facilitate development of an expertise in blending financing from public and private sources.

Co-op Competitive Constraints: Several aspects will constrain the near-term ability of the Co-op to undertake certain financing strategies. These include the following:

- The Co-op's status as a start-up entity with no track record of financial performance, no cash-generating capabilities, and no balance sheet strength will make it difficult to secure corporate financing. Project-based financing is the more likely, most easily accessible, debt financing option.
- Project-based debt financing typically will be more costly and time- and resource-intensive than financing directly obtained by Compact Members. However, such financing will present fewer risks to Compact Members.
- The most stable and committable load available to support power purchase commitments, i.e., that of the Government Accounts, is small and composed of multiple individual accounts. The lack of a single entity or person in control of this load may complicate the Co-op's ability to marshal commitments of this load in connection with specific power purchase contract negotiations or with financing direct investment projects.
- The owners of the Co-op will hold fiduciary duty responsibilities that will oblige the Co-op to adopt similar principles in the use of public resources. Such principles may oblige

a focus on financing strategies with lower risks of financial loss compared with private sector competitors.

- The Co-op will face competition in acquiring renewable power output and project capacity from other, established buyers and developers in the region. These include:
    - Strong creditworthy entities, e.g., Massachusetts Municipal Wholesale Electric Company ("MMWEC"), PPM Energy, UPC Wind Management;
    - Near creditworthy entities, e.g., Constellation Energy, Mass Technology Collaborative and other state clean energy funds, Community Energy; and
    - Other entities, e.g., the Mass Energy Consumers Alliance.

6.6 Co-op Renewables Financing Strategy & Options

The diversity of financing sources and strategies indicates that the Co-op should be able to secure financing whether the Co-op opts to source renewable power through long-term purchase contracts or through direct investment in renewable power generation capacity. Phase I research indicates that bond financing backed by Compact Members, project-based financing with limited recourse to the Compact Members, as well as hybrid versions all appear to be feasible financing options. In general, creation of the Co-op should facilitate raising financing, if only by serving as a focal point in crafting the requisite contract and project structure and financing activities.

It is important to note that these financing strategies and options could be implemented by a Co-op organized using any of the business models outlined for further review in Section 8. Their successful use is based on the contract counterparty or capital provider's comfort that the underlying power purchase agreement or investment project is financially sound and that the ultimate recipient of the power is a creditworthy entity.

Over time, if the Compact elects to have the Co-op build a portfolio of investment assets, sustained cash flow from operating such assets may make it possible to attract debt and equity financing from sources based on the portfolio of project investments and related cash flow accruing to the Co-op. To the extent this is the case, the need for on-going Compact Member support would be reduced. Such financing might be available to refinance earlier single project-based financings or possible to support development or investment in new power generation projects.

Phase I research indicates that some sources will be more appropriate or readily available than others depending on several factors. Such factors include the ultimate ownership structure of the Co-op decided by the Compact, i.e., whether the Co-op is owned by public or private entities, the relative willingness of Compact Members to provide contingent or direct support for the financing, and the needs of the counterparty to the power contract or project developer. The interest rate, transaction costs, and transaction complexity of each financing similarly will vary for each project. In general, there is a trade-off between financing at low interest rates, transaction costs and complexity, but requiring recourse obligations to Compact Members, and financing options at higher interest rates and complexity, but which limit recourse to Compact Members. The Compact and Compact Members will want to weigh the balance of benefits in guiding the Co-op.

For any particular power purchase contract or investment opportunity, the principal financing need is to finance the initial construction of the generating plant. Arranging this financing is a one-time task of the project developer, typically late in the development of the project. For any given project, then, the Co-op's role as a financial advisor, in demonstrating creditworthiness, or bankability, or in securing such financing for its own investments occurs essentially once per project. It is important to note, however, that the multiple projects in development as listed in Appendix A are proceeding on different schedules, so the Co-op may be involved in preliminary or intensive discussions on financings for multiple projects at any one time.

This Report has identified multiple potentially feasible financing sources and strategies. In Phase II, the Team suggests that the Compact consider assessing selected financing sources and strategies in more detail. This analysis could be done with respect to one or two types of renewable power purchase contract or investment opportunities that the Compact believes it most likely will encounter in the near future. One possible example would be for the Compact to assess the terms under which the Co-op could purchase power and RECs from the community wind project co-developed by the Town of Orleans and the Massachusetts Technology Collaborative. The intent of such analyses would be to understand in detail what issues and tasks would need to be addressed by the Compact in order to secure a long-term power purchase contract or to enable financing for such a project. More broadly, such analyses would help the Compact to gain familiarity with likely financing strategies and sources, contract and project ownership structures, if the Compact Members decide to establish the Co-op to undertake such renewable power hedging activities. It also will be important for the Compact to review in further detail how it will coordinate the Compact's existing retail operations with any power received from such contracts and ownership.

The Compact may elect to limit or manage the financial exposure of the Compact Members during the Co-op's initial period of operation. Possible steps include, but are not limited to, the following:

- Setting a maximum size for the initial contract or investment projects to cap the absolute size of the transaction at a level comfortable for Compact Members, e.g., focusing initial efforts on community-scale wind projects of less than five MW in size.
- Focusing initially on supporting projects being developed by other parties, whether public or private.
- Focusing initially on purchase contract opportunities; deferring undertaking direct investment or direct project development activities.
- Focusing initial efforts on relatively simple purchase contract transactions intended to serve the internal electric load of the Compact Members, i.e., the Committed Government Accounts.
- Identifying contract possibilities where the project developer is more likely to be willing to accept a contract with the Co-op, e.g., where the project is already operational and the developer does not need the contract to support the developer's own financing needs.

Within the above framework, the Team suggests that the Compact consider having the Co-op undertake the following measures or steps to facilitate its contracting and financing ability:

- Fostering a perception of the Co-op as the default advisory, contract, and investment partner for facilitating Cape and Vineyard based community-scale renewable power projects by establishing the Co-op as an expert on advising on and implementing financially sound contract and financing options and tools for such projects;
- Creating the flexibility to consider wholly-public, wholly-private, and hybrid partnership structures as may make most sense to the developer and the Co-op for given projects.
- Drawing upon the Compact's strategic strengths and acknowledging its constraints. Using a specific financing strategy that ignores such aspects could increase the potential for delays, costs, and ultimate failure to secure financing on terms deemed acceptable to the Compact Members and counterparties.
- Assessing Compact Member willingness and ability to offer higher price commitments to power generators in early years in exchange for lower prices in later years; this would include assessing ability and willingness to offer extended term commitments, e.g., exceeding ten to twenty years.
- Considering developing template financing structures and documentation, such as a standard offer power and REC purchase contract or an equity participation agreement. Assessing details of meshing any renewable power contracts or power generation supply investments into the Compact's overall Portfolio, including the existing Opt-Out retail structure and any alternative retail offerings described in Section 3 that the Compact elects to undertake.
- Consider seeking selected Compact Member pre-approval of likely financing structures, contract terms, or financial exposures. Such efforts will reduce transaction costs and lead-time for implementation, which may be critical in competing for scarce project opportunities.
- Considering initiating relationships with likely key financing sources, especially those whose own missions lead them to be interested in supporting the Co-op. Such entities might include CFC, CoBank, the RUS, a regional commercial bank, or a tax-oriented institutional investor.
- Considering whether the Co-op can feasibly facilitate local renewable power projects whose output is intended principally for consumption on-site. There may be little power available by such projects for sale to Compact Members. Still, where a town or another entity has an on-site project but is unable or unwilling to own it, the Co-op may want to consider such projects as meriting Co-op support assistance.
- Exploring potential lender interest and terms for financing contracts or projects where the Co-op acquires a larger amount of renewable power, i.e., beyond the Government Accounts.

6.7 Financing Scenarios

The Team believes multiple financing strategies and sources likely are feasible for the initial opportunities most likely to be presented to the Co-op. The following describes several potential scenarios and suggests a corresponding financing strategy. The scenarios and the financing strategies are indicative and illustrative, rather than specific to an actual project. The Team suggests that the Co-op can consider further analysis to assess the availability of financing from the entities identified in the financing strategies, both in general terms and with respect to specific projects. Modifications or wholly different financing strategies may prove necessary.

Scenario #1—Co-op Ownership

Background: A Cape municipality is interested in buying renewable power to meet its municipal needs and, more generally, in supporting renewable power. The municipality (the "Host") has an appropriate site on municipal land for a community-scale, e.g. 3 MW, wind power generation project. The municipal electrical demand is diverse and not adjacent to the site. The projected project costs are about $7 million. The Host has no interest in committing funds or issuing bonds to cover the cost of the project and no particular interest in project ownership.

Co-op Interest: The Co-op elects to purchase the rights to the project and to develop the project as it is located on the Cape.

Co-op Contract: The Co-op sells the power to the Compact for ultimate use by the Host and, possibly, other interested Compact Members on a long-term contract basis that matches or exceeds the length of the third party financing. The Co-op and the Compact ensure that the sales are meshed with the Compact Aggregation structure and the contract with the Compact's Retail Supplier. The power prices are adjusted to enable the Co-op to service the third party financing costs; the Compact is able to lock in a fixed price during this period. Alternatively, the Compact might prefer to arrange for higher prices in early years to amortize the third party financing quickly and to enable the Co-op to offer lower prices in later years. The Co-op works with the Compact to include contract features supporting the debt financing, e.g., a joint and several commitment or mutual purchase support provisions by credit-worthy entities. The Co-op confirms its legal authority to sell RECs to third parties and explores opportunities to sell RECs to third party power marketing firms under term agreements. The Co-op works with the Host to sell power from the project and set other revenue flows, e.g., land lease payments and property taxes, on terms that balance compensating the Host for hosting the project with the overall project economics.

Co-op Financing Strategy: The Co-op explores the potential for issuing bond financing to finance the project costs. Depending on the economics, the bond might be issued either with recourse to Compact Members or on a project financing basis, backed by the power contracts between the Co-op and the participating Compact Members. If the CREBs program has been reauthorized, the Co-op might apply for an allocation of CREBs to finance the capital costs. If the program is not available, the Co-op might seek loans or loan guaranties from the RUS, CoBank, or CFC. The Co-op might seek third party entities, e.g., the Massachusetts Technology Collaborative, to pre-pay for some or all of the RECs to be generated by the project. The Co-op

would seek funding commitments from the Members to pay for those Project costs not covered by the third party financing.

Scenario #2—Private Ownership—Co-op power purchase contract

Background: A private sector for-profit developer (the "Developer") is developing a three turbine, 4.5 MW, wind power generation project. The project is located on the Cape and the cost is about $9 million. The Developer wishes to retain an ownership interest in the Project, but does not have the financial strength to do so.

Co-op Interest: The Co-op elects to support the project by offering to buy the power under a long-term purchase contract. The Co-op assists the Developer in finding the equity and debt financing for the project on terms that enable the Developer to enter into the power purchase contract with the Co-op.

Co-op Contract: The Co-op buys the power from the project on a long-term basis that matches or exceeds the length of the third party financing sought by the Developer. The Co-op resells the power to the Compact for ultimate use by interested Compact Members via a long-term follow-on contract that matches or exceeds the length of the Co-op's contract with the project. As above, the Co-op and the Compact ensure that the sales work through the Compact Aggregation structure and the contract with the Compact's Retail Supplier. The Co-op works with the Developer and the Compact to adjust prices for the direct and follow-on power sales contracts to enable the Developer to repay the project's third party financing costs and to provide an acceptable equity return to the Developer. The Compact is able to lock in a fixed price during this period. The Co-op works with the Compact to include contract features that support the Developer's third party financing, e.g., a joint and several commitment or mutual purchase support provisions by credit-worthy entities. If needed, the Co-op explores opportunities for the Developer to sell RECs to third party power marketing firms under term agreements. The Co-op works with the Developer and the town hosting the project to facilitate agreement on project benefits to be extended to the town, e.g. power sales and land lease and property tax payments, and other town issues, e.g., environmental site impacts.

Co-op Financing Strategy: The Co-op assists the Developer to identify and secure equity financing from a third party tax-oriented investor and possibly debt financing from lenders already comfortable with the Co-op and its power contract documentation. The Co-op assists the Developer to identify and secure a financing commitment from a third party tax-oriented institutional investor (the "Tax Investor"). The Co-op assists the Developer and the Tax Investor to craft a hybrid ownership and financing structure that enables the Tax Investor to utilize Federal tax incentives supporting renewable power development, while enabling the Developer to retain minority ownership during the first ten years of operation and an option to acquire full ownership thereafter. The Tax Investor contributes up to 99.9% of the equity funds needed for the capital costs, depending on the project economics. The Co-op also could help the Developer to lenders seek debt financing. Possible sources could include USDA Section 9006 grants or guaranteed loan financing as well as commercial banks familiar with hybrid ownership structures. The Co-op can facilitate the process by having previously met with the USDA and selected banks to familiarize them with the Co-op and its power contract documentation. To the

extent there remains a financing gap, the Co-op could explore partial pre-payments by Compact Members for power produced by the Project.

Scenario #3—Non-Compact Cooperative/Private Ownership—Co-op power purchase contract

Background: A New England community outside of the Cape and Vineyard, i.e., not affiliated with the Compact, is interested in developing a two turbine wind project that will bring ownership benefits to that community. The community has formed a cooperative to undertake the project (the "Off-Cape Cooperative"). The Off-Cape Cooperative has an appropriate site. The projected project cost is about $7 million. The Off-Cape Cooperative is unable to gather the funds to cover the cost of the project. The Off-Cape Cooperative is willing to have the project owned initially by a private sector entity to take advantage of Federal tax incentives accruing to private sector owners of renewable power projects. After the initial financing is paid off, the Off-Cape Cooperative wants to control the project.

Co-op Interest: The Co-op elects to support the project by offering to buy the power under a long-term purchase contract. The Co-op elects not to buy the project as it is not located on the Cape or Vineyard. The Co-op assists the Off-Cape Cooperative in finding the equity and debt financing for the project on terms that enable the Off-Cape Cooperative to enter into the power purchase contract with the Co-op.

Co-op Contract: The Co-op devises the same long-term power purchase and resale arrangements as described above in Scenario #2. The Co-op works closely with the Compact, the Compact's Retail Supplier, and the Off-Cape Cooperative to fashion acceptable sales arrangements. As requested, the Co-op explores opportunities for the Off-Cape Cooperative to sell RECs to third party power marketing firms under term agreements. The Co-op works with the Off-Cape Cooperative to balance the provision of benefits to the community hosting the project, e.g., land lease, property tax and other payments to the community, with the overall project economics.

Co-op Financing Strategy: While the financing strategy is similar to that devised for a project with pure private sector ownership, the participation by the Off-Cape Cooperative potentially opens up additional financing options. As above in Scenario #2, the Co-op may assist the Off-Cape Cooperative to identify and secure a financing commitment from a Tax Investor. The Co-op assists the Off-Cape Cooperative and the Tax Investor to craft a suitable hybrid ownership and financing structure that enables the Tax Investor to utilize Federal tax incentives supporting renewable power development during the first ten years of operation, while giving the Off-Cape Cooperative an option to acquire full ownership thereafter. The Tax Investor contributes up to 99.9% of the equity funds needed for the capital costs, depending on the project economics. The Co-op can assist the Off-Cape Cooperative in applying for debt financing for the remaining costs. In addition to the sources described above in Scenario #2, possible debt financing sources could include those geared toward financing cooperatives, e.g., CFC and CoBank. The Co-op can help by meeting with CFC and CoBank to familiarize them with the Co-op and its power contract documentation. If a financing gap remains, partial pre-payments by Compact Members for power produced by the Project may be an option as well for this scenario.

Scenario #4—Town Ownership—Co-op power purchase contract

Background: A Cape municipality (the "Town") is interested in developing a community-scale two turbine (3 MW) wind power generation project. The Town has a site on Town-owned land and wishes to use some of the power output from the project for adjacent Town facilities. The Town would like to own the project and has obtained special legislation that would allow it to own the wind generation project. However, the Town is reluctant or unable to commit funds or issue municipal bonds for the entire cost of the project. The projected project cost is about $7 million. The project's indicative financial return is low. The project enjoys support from the Massachusetts Technology Collaborative ("MTC") under the Community Wind Collaborative.

Co-op Interest: The Co-op elects to support the project by offering to buy the balance of the power under a long-term purchase contract. The Co-op assists the Town in finding financing for the project on terms that enable the Town to enter into the power contract with the Co-op.

Co-op Contract: The Co-op devises the same long-term back-to-back power purchase and resale arrangements as described above in Scenario #2. The Co-op works with the various parties to fashion acceptable sales arrangements. As requested, the Co-op explores opportunities for the Town to sell RECs to the MTC or third party power marketing firms under term agreements. The Co-op works with the Town to structure the Town's purchases of power from the project as well as other revenue flows, e.g., land lease payments and property taxes to balance the net benefits to the Town for hosting the project with the overall project economics.

Co-op Financing Strategy: The Co-op assists the Town to finance the project capital costs by facilitating the Town's application for long-term debt financing oriented towards publicly-owned projects, e.g., RUS loans or CREBs (if the latter is available). The Co-op can assist the Town in applying for financial support from the MTC to fund development costs as well as to apply for other MTC programs. If additional funds to support initial construction costs are needed, the Co-op could assist the Town in seeking grants or REC prepayments from the MTC or other public sources. The Co-op could explore the feasibility of the Compact Members and the Town pre-paying for a portion of the power as additional sources of initial financing. The Co-op can explore the feasibility of issuing bonds, either directly or by Compact Members buying the power, to fund such pre-payments.

7.0: Cooperative Business Models

7.1 Introduction

This Section summarizes the structural business models that were developed, considered and either dismissed or incorporated in further analysis during Phase I. These models include certain other types of business structures that may serve the Compact's need for a sister wholesale power entity. The Section next considers business scope and functional alternatives. Finally, it evaluates cooperative structural organization and membership alternatives. In doing so, the Team 's objective is to identify and consider a comprehensive set of alternatives, and then apply evaluation criteria discussed in Section 2.2 to eliminate unsuitable models from further consideration. This chapter describes the screening process and concludes with a recommendation on business models warranting further consideration.

7.2 Business Organizational Structures

7.2.1 Alternatives

In principal, a cooperative may not be needed to accomplish many of the Compact's objectives identified for this study. Alternative forms of business organization could serve many of the functions and meeting many of the objectives identified in Section 1. In addition to a **Cooperative**, several additional forms of business organization were considered including:

- A **Limited Liability Company** ("LLC") owned by some or all of the municipal and county governments on the Cape and Vineyard.
- A **For-Profit C Corporation** owned by some or all of the municipal and county governments on the Cape and Vineyard.
- A **For-Profit S Corporation** owned by some or all of the municipal and county governments on the Cape and Vineyard.
- A **Tax-Exempt Non-Profit Corporation** (which of course has no outside owners).

Each of these types of organizational forms are sometimes used for special-purpose entities because they have different advantages in certain circumstances, with regard to such issues as protecting owners from liability, tax minimization, control, or distribution of obligations and benefits. Any individual form is not always appropriate for the purpose being considered.

7.2.2 Screening Evaluation

The evaluation of alternative forms of business organization focused on their capabilities and limitations. In particular, the Team considered several specific evaluation criteria including whether use of the business form by the municipal and county governments on the Cape and Vineyard would: (i) enable the ability to raise capital or enter into term purchase commitments on acceptable terms (be bankable); (ii) allow the entity to build capital from retained earnings without triggering tax obligation which would erode benefits; (iii) risk triggering a tax liability for any of the government entities; or (iv) require special legislation for the municipal and county governments of the Cape and Vineyard to establish.

While each alternative carries its own limitations, special state legislation would be needed for the Compact Members to establish *any* of the non-cooperative entities to perform the various functions as described in Section 1. Without such legislation, none of these alternatives, if owned by the Compact Members, could own power projects, which was identified as a fatal flaw for the purposes of this study. By contrast, the Compact's legal counsel believes that a cooperative formed under G.L. c. 164, § 136 would enable the Compact Members to establish such a cooperative to perform all the various functions desired, including project ownership, without having to obtain special legislation. As a result, and for the purposes of this Report, the Team does not consider the non-cooperative forms any further, and focuses exclusively on the alternative forms and functions of a cooperative organized under G.L. c. 164, § 136.

7.3 Business Scope and Functions

The Team next considered at the highest level the electricity services functionality for the Cooperative. The basic power supply and renewable energy roles to be studied (as described in Section 1) involve only wholesale power supply. However, the Cooperative could perform additional roles (other than power supply functions) relating to the sale or delivery of electricity in addition to its basic wholesale power supply function. In this section we consider a few of those additional functions.

7.3.1 Alternatives

In addition to basic wholesale power-supply-related functions, the Team also considered three additional high-level functions which the Cooperative could conceivably perform. These include:

- **Ownership of Distribution Facilities (poles and wires)**. This role would entail the Co-op owning or erecting its own poles and wires in cases where it made economic sense to do so.

- **Retail Generation Services**. This role would entail the Cooperative becoming the Retail Supplier and selling the generation service products provided today through the Compact's selected retail supply partner and/or those electric energy products envisioned in Section 3 of this report. Energy would be procured at wholesale and resold as full-requirements electric supply to the retails meters of end-use customers.

- **Taking over the Utility Franchise for Generation Service**. This role would involve taking over the position of NSTAR as basic generation service provider. If the Cooperative performed this role in addition to the poles and wires role, it would essentially be similar to a conventional integrated utility.

7.3.2 Screening Evaluation

In screening these potential additional roles for possible further consideration, the Team primarily considered the objectives delineated in Section 1.2 and the evaluation criteria described in Section 2.2.

- **Ownership of Distribution Facilities.** This function would generally require condemnation and municipalization of the poles and wires. Condemnation procedures are involved and can take several years to implement. Since this approach is simply not

necessary to fulfill the Compact's stated objectives in this study, it therefore would not seem to be a priority to divert the Compact's attention and resources to this end. However, where the Co-op is a participant in or purchaser from a local community renewable project, it may be appropriate for it to build or own associated interconnection and/or distribution facilities.

- **Retail Generation Services**. The Team did not identify any fatal flaws or other systemic reasons to reject a retail role from further consideration. Rather, some of the particular business models may be more or less suited to take on this role. Therefore, because the decision on who takes title to electricity and resells it to end-use customers at retail—the Cooperative, the Compact or the Compact's Retail Supplier partner—may be appropriate to evaluate at a later date when the Cooperative is fully functional.

- **Taking over the Utility Franchise for Generation Service**. This role might reduce somewhat the degree of migration risk faced by the Compact Aggregation today, by removing the fallback and price benchmark to the Compact's service. Nonetheless, because it has no basis in current law, it would require enabling legislation. Subject to confirmation by Compact counsel, this would constitute a fatal flaw. Unlike condemning the poles and wires, taking over the franchise without the poles and wires has no precedent that we are aware of, suggesting an uncertain outcome. The steps required to enact this role could take several years, and the substantial legal and expert costs could be expended to no avail. Finally and perhaps most importantly, this approach is simply not necessary to fulfill the Compact's stated objectives, and therefore does not appear to merit further consideration.

7.4 Co-op Organizational Issues & Structural Determinates

7.4.1 Cooperative Organizational Issues

Several inter-related issues dictate the feasible alternatives to organizational and membership structures capable of meeting Co-op objectives discussed in Section 1. These include:

- Who are the members? This issue relates to balancing governance and the fiduciary responsibility associated with managing any pledge of public assets with the basic cooperative tenet of one member, one vote.

- Does the design take advantage of the taxation status of the founding government entities? Does the design avoid creation of tax liabilities, and to a degree, considerations for preserving access to tax-exempt financing.

- Who are the patrons? This issue involved who actually buys what the cooperative sells, and is constrained by limitations (with taxation consequences) on sales to non-members and the necessity that the cooperative be formed primarily for the benefit of its members.

- Can capital reserves be efficiently built from earnings? This issue, related to both corporate form and taxation, drives an important avenue to building the credit strength of the organization.

In considering alternatives, the relationship between the Compact and the Co-op is critical, and the degree to which the Compact or its selected Retail Supplier partner is a buyer (patron) of what the Co-op sells (which would require involvement in the flow of title and cash, at least contractually) is an important determinate of some of the alternative models.

The Team developed and considered a range of alternative models for a Cooperative and how it interacted with its members and patrons.

7.4.2 Key Structural Determinants

The alternate cooperative organizational and membership structures depend on characteristics of governance, product sales, tax minimization, and the ability to build reserves for working capital and business expansion.

Governance: A cooperative typically is made up of members who are also patrons, e.g. purchasers of the goods or services provided by the cooperative. Under both the Federal tax code and G.L. c. 164, § 136, these members can include a wide range of organizations and individuals. Under the Massachusetts statute, membership options include direct membership of all ultimate patrons, representative membership open to specific types of entities, and different classes of membership. Each alternative must meet the basic cooperative democratic principal of one member, one vote (distinguishing the cooperative from a traditional business structure where governance falls in proportion to investment).

Tax Minimization: The primary objective in this category is to avoid material erosion of the benefits of the Co-op through taxation of those benefits at the federal, state and local level. The most obvious way to meet this objective is by maintaining tax-exempt status (applicable to federal and potentially state income taxes), which may be available through one of two means (based on information provided by the Compact's legal counsel). There are two broad avenues to establishing the Co-op as tax-exempt. Under the first, a Cooperative might qualify as tax exempt as an instrumentality of its members, if its members themselves are all exempt from federal taxation. Under the other, a Cooperative could have a broader range of membership and sell to a broader range of patrons and remain tax exempt under Federal law by meeting the provisions of Federal Internal Revenue Code Section 501(c)(12) which, among other requirements, includes the requirement that at least 85% of its income must come from sales to its members (the "85/15 Test").

Alternatively, the organization failing to maintain tax-exempt status could be operated so as not to make any (or to minimize) profit (and therefore in practice to minimize tax liability). This last option, however, could lead to inadvertent tax obligations[12] and would hinder retention of cash flow for working capital or capital purchases as noted below.

Product Sales: The key here is who buys what the Co-op sells? This is important for two reasons: the legal requirements of a cooperative, and the taxation status discussed further below. First, under Massachusetts G.L. c. 164, § 136, it is critical that a cooperative "shall be organized and shall conduct its business primarily for the mutual benefit of its members as patrons of the

[12] To avoid these issues, the Compact considers the triggering of any tax liability for the currently tax-exempt Compact Members as a fatal flaw that it is not institutionally equipped to or prepared to accommodate.

cooperative". As a result, if enough of the Co-op's sales (including liquidation of surplus energy or RECs) were made to non-members to violate this requirement, it might violate the conditions of establishment as a G.L. c. 164, § 136 cooperative. While there is no case history to provide guidance as to what proportion of sales might no longer meet a "primarily for the benefit of" standard, this does suggest that direct sales to a non-member – such as sales of surplus RECs to non-members, spot energy sales into the ISO-NE spot energy markets, sales to the Compact's retail supplier -- could be problematic if they occur at too substantial a volume.[13] For Phase I purposes, based on the advice of Compact counsel, we are assuming that the requirement under G.L. c. 164, § 136 that a cooperative organized under this statute must be "organized and shall conduct its business primarily for the mutual benefit of its members as patrons of the cooperative" will not be a barrier to formation of the Cooperative though it will need to be taken into account when structuring outside sales transactions.

Second, in certain circumstances, the pattern of product sales could affect the Co-op's Federal tax status. If a Co-op that enjoys Federal tax-exempt status pursuant to Federal I.R.C. Section 501(c)(12) derives revenues from non-members, i.e. patrons that are not members of the Co-op, the Co-op risks losing such tax exempt status in any year in which it fails the 85/15 Test. This could constrain the consideration of what products can be sold by the Co-op and to whom. For instance, the Team and the Compact's legal counsel analysis of this issue[14] raises uncertainty whether this requirement might be violated if the Co-op sells RECs or energy to the wholesale spot market above cost. In addition, if envisioned as an option under a business model, sales to the Compact's Retail Supplier (if not a member), above cost, might also trigger this issue. By contrast, these issues are not relevant if the Co-op's tax exempt status is secured by virtue of the Co-op being treated as an instrumentality of its members, and all of the members are themselves tax-exempt municipalities and other government entities.

Building Reserves: As an ongoing business, the Co-op or other organizational structure envisioned would need to develop the ability to build reserves for purposes of working capital (enough cash on hand to remain solvent through the fluctuations of receipts and outlays) as well as for building credit support for hedge contracting or funding investments (for instance, in renewable energy projects). A cooperative operating solely as an instrumentality of government members would be able to build reserves in the same manner in which its member governments could do so. A cooperative under Federal I.R.C. 501(c)(12) can retain a portion of its "savings" (the net excess of revenues over costs) as "patronage capital" – recorded in an account associated with each member—rather than distributing to patrons as "patronage dividends." On the other hand, a non-tax-exempt cooperative that attempted to retain surplus cash to build reserves might trigger a tax liability, thus eroding the benefits for forming the cooperative owned by non-taxable government entities.

7.5 Cooperative Organizational & Membership Alternatives

Based on the Cooperative organizational issues and the key structural determinates identified in the previous two subsections, the Team identified two primary alternative organizational and

[13] This point may require further legal research.
[14] E. GENERAL SURVEY OF I.R.C. 501(c)(12) COOPERATIVES AND EXAMINATION OF CURRENT ISSUES by Michael Seto and Cheryl Chasin. The legislative history described in this resource suggest that this test applies to any and all sales and revenue sources, not just the primary product of the cooperative, and therefore would presumably apply to sales of surplus RECs.

membership structures for evaluation. These include (1) the Public Co-op and (2) the All-Consumers Co-op. The Public Co-op relies on a representative form of democratic governance, limiting membership to government entities, e.g. the towns and counties of the Cape and Vineyard, acting in the interests of their constituents, the citizens, businesses and institutions in their jurisdictions. In contrast, in the All-Consumers Co-op, all retail customers would be members.

In addition, two variations on the Public Co-op were identified, each with one additional type of member. These include: (3) the Nested Co-op; and (4) the Supplier Co-op (with the Compact's Retail Supplier Partner as a Member).

In the electric utility industry, rural electric cooperatives involved in the generation and transmission of electricity are traditionally organized as cooperatives whose members are other cooperatives, i.e. electric distribution cooperatives, thus utilizing a representative form of government. This analogy is the genesis of the Nested Cooperative, in which retail customers other than the governments of the Cape and Vineyard would participate through a second-level cooperative. The two variations do not appear to add functionality to the Public Co-op but rather are raised for consideration if necessary to provide additional tools to serve some of the voluntary retail offering scenarios that would serve non-government retail accounts if needed to address legal barriers to tax-exemption.

As described further below, each organizational and membership structures may or may not be well-suited to each of the four retail offering scenarios described in Section 3. Table 4, below, summarizes the alignment of organizational and membership structures and retail offering scenarios described in the sections that follow. Note that alignment does not imply that the approach is feasible or desirable, just that there is a model with the membership identified which is not structurally precluded from serving the identified retail offering scenario. A "yes" indicates that the Co-op structural and membership model is conceptually capable of enabling the applicable retail offering scenario.

Table 4
Co-op Structure & Membership—Alignment with Retail Offering Scenarios

Retail Offering Scenario → Co-op Model	Voluntary: Committed Government Account	Voluntary: Committed Government & Stable C&I Account	Voluntary: Unrestricted	Opt-Out: Portfolio Enhancement
Public Co-op	Yes	Possibly, *if* Compact is involved in chain of title	Possibly, *if* Compact is involved in chain of title	Yes
All-Consumers Co-op	Yes	Yes	Yes	No: Impractical to get Opt Out customers to join the CO-OP
Nested Co-op	Yes	Yes	Yes	Yes
Supplier Co-op	Yes	Yes	Yes	Yes

7.5.1 The Public Co-op

This model relies on a representative form of governance by limiting membership to government entities, e.g. the towns and counties of the Cape and Vineyard. A cooperative limited to government members could enable retail offerings in two different ways, through sales to members, or sales to the Compact.

Sales to Members: Under this structure, sales of blocks of energy, hedge or renewable energy output can be made by the Co-op directly to members of the Co-op, who in turn assign these physical supply components to a Retail Supplier for purposes of creating full-requirements to the retail meters of the Co-op's members. Provided that the Co-op's members are government entities owning the retail accounts served by the Co-op, this corresponds to the *Voluntary: Committed Government Account* retail offering scenario. By limiting sales to members of the Co-op, this approach preserves the Co-op's ability to maintain Federal I.R.C. 501(c)(12) tax-exempt status. In this model, making sales to non-members—such as in the *Voluntary: Committed Government & Stable C&I Account* or *Voluntary: Unrestricted* retail offering scenarios—could put the Co-op at risk of failing the 85/15 Test. However, compliance with this test would not be required, if the Co-op instead is established as tax-exempt by virtue of being an instrumentality of its members who are themselves tax-exempt.

Separately, there would be some risk that a substantial degree of sales to entities that are not members of the Co-op might violate G.L. c. 164, § 136 that requires such a electric cooperative shall be "organized and shall conduct its business primarily for the mutual benefit of its members as patrons of the cooperative." The Compact's counsel advises that because the Compact Members as governments represent their constituents, this requirement might be satisfied. However, the Compact's counsel also advises that the statute does not answer the question of whether a municipal member of a cooperative is limited to using the co-op's products for its own municipal accounts, as opposed to more broadly using them to serve all of its residents and businesses. Therefore, this issue may require further legal research and/or guidance from the Massachusetts Department of Revenue.

Sales to Compact: Alternatively, sales of blocks of energy, hedge or renewable energy output could be made from the Co-op to the Compact, which in turn would either:

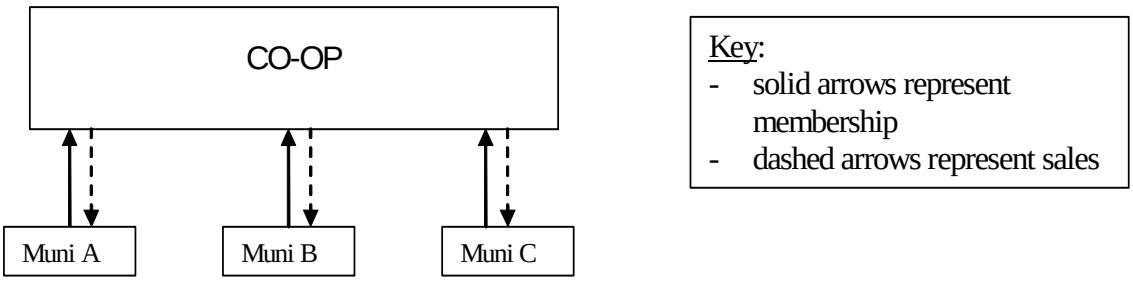
(a) bundle those sales into a voluntary retail offering for the benefit of the Compact's Committed Government Accounts. In addition, so long as the Compact is involved in the chain of title, this structure appears suitable for eventual expansion of product offerings to non-governmental entities (i.e. the other Voluntary retail offering scenarios);[15] or

(b) bundle those resources into the Compact's opt-out product (i.e. to enable the *Opt-Out: Portfolio Enhancement* Retail Offering Scenario).

In either case, the Compact could cause the bundling of the Co-op's supply into a full-requirements retail supply either through resale to the Compact's Retail Supplier serving the Compact Aggregation, or potentially serving as a Retail Supplier itself. By inserting the Compact into the chain of title, the issue of sales to non-members causing a violation of either the 85/15 Test or the "business primarily for the mutual benefit of its members as patrons of the cooperative" test of Massachusetts G.L. c. 164, § 136 would be removed, although the Compact itself might need also to be a member in this case.[16]

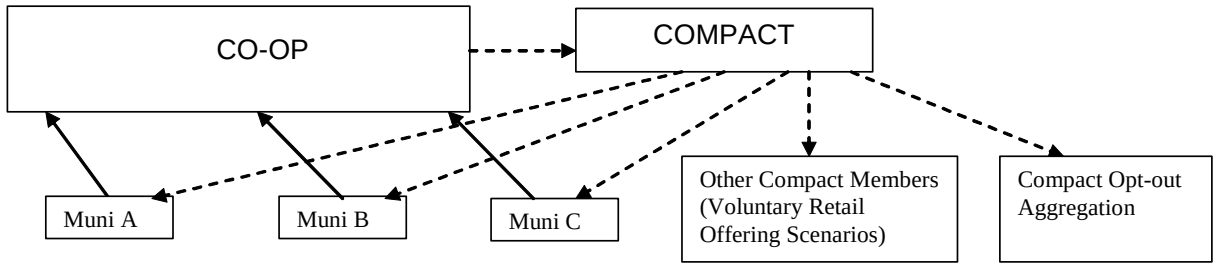
Figures 6 and 7 below depict this organizational alternative in its two sales variations.

Figure 6
Public Co-op, Sales to Members



[15] Initial research by Compact's legal counsel suggests this role for the Compact is feasible; additional legal research may be required to confirm this preliminary conclusion and define its details.
[16] One or the other of these entities is responsible for creating full-requirements service to retail meters.

Figure 7
Public Co-op, Sales to Compact



Evaluation

With respect to the evaluation criteria spelled out in Section 2.2, the Public Co-op structure appears feasible for at least some if not all of the Retail Offering scenarios, and has a number of advantages. Use of G.L. c. 164, § 136 authority should simplify the task of establishing the Public Co-op, as it could involve a limited number of parties of common interest in the objectives of this study and that share a history of successful collaboration on electricity issues for several years. The Public Co-op maintains a linkage between governance and fiduciary responsibility to manage pledges of public assets. It would allow for tractable and efficient governance. It would maintain tax exemption, not trigger any government tax liability, and would avoid erosion of benefits through income taxation at any level. It appears to allow for tax-exempt debt issuance, as well as retention of earnings to build capital reserves. It would be bankable to the extent of pledges of limited capital, credit, purchase or other credit-like commitments by the member government entities, as discussed further in Section 6.

The Public Co-op model is also flexible. Subject to further research in Phase II and possibly formation of an exploratory entity in order to seek a private letter ruling from the Internal Revenue Service, the Public Co-op may be sufficiently flexible to allow for possible extension to each of the four Retail Offering scenarios if the Compact is in the chain of title to electricity purchases. In addition, barriers identified in Phase II or during the development of a full business plan may be mitigated through some of the structural variations discussed further below.

If the Compact is in the chain of title, i.e., a party to the purchase contract, so that sales are made to the Compact and not directly to non-governmental entities, this model may be limited in its ability to expand to supply non-governmental accounts without failing the "business primarily for the mutual benefit of its members as patrons of the cooperative" test of G.L. c. 164, § 136. However, minor variations are available to address this potential limitation, as discussed further below.

In summary, this simple and straightforward alternative appears to be feasible and most suitable for further revaluation in Phase II.

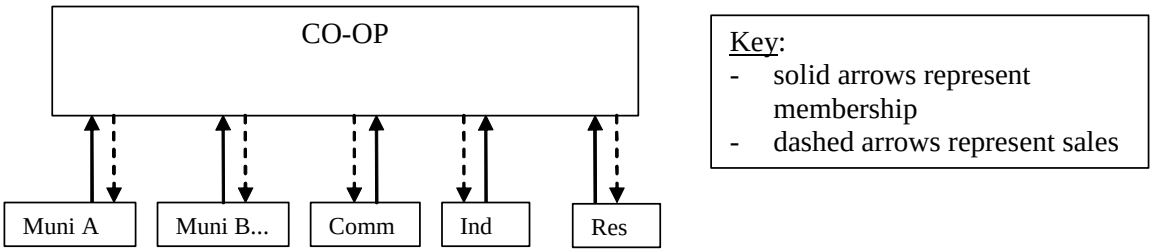
7.5.2 The "All-Consumers" Co-op

This model relies on a direct form of governance. Under this approach, the Co-op's bylaws could allow for any retail customer within the Compact Aggregation to join, or a subset of customers meeting certain qualifications. In practice, it could initially be set up with membership limited to government entities, e.g. Compact Members, with other, non-governmental members perhaps being allowed to join at a later date under whatever conditions are required. Since it envisions non-government entities joining at some point, this model could not rely on being an instrumentality of tax-exempt entities to secure Federal tax-exempt status. Instead, securing Federal tax-exempt status would have to be done via the other pathway described in Section 7.4.2, i.e., form the Co-op as a Federal I.R.C. 501(c)12 cooperative.

Under this approach, sales would be made directly to members under any of the three Voluntary Retail Offering scenarios. The customer could then assign blocks of energy, hedge or renewable energy output to a full-requirements Retail Supplier for purposes of serving their retail meters, through a standard contractual provision. Since all sales would be to members, this approach would not risk the possibility of violating the "business primarily for the mutual benefit of its members as patrons of the cooperative" test of Massachusetts G.L. c. 164, § 136.

Figure 8 provides a schematic of this organizational framework.

Figure 8
All-Consumers Co-op



Evaluation

Using the evaluation criteria spelled out in Section 2.2, the All-Consumers Co-op's main benefit would be its ability to include a full range of non-government end-users who might purchase the Co-op's supply resources under two of the tiers identified for study, and to do so without risking failure of the 85/15 Test required to maintain federal 501(c)(12) tax exemption. However, alternatives appear available to address this desire under the Public Co-op approach which are simpler, and which do not carry the baggage of this alternative.

The All-Consumers Co-op approach does not fare well with respect to several of the evaluation criteria. For instance, it fails to maintain the linkage between governance and fiduciary responsibility to manage those limited pledges of credit support that the Co-op's public members would commit to make the Co-op bankable. This would occur if the duty and goals of the Co-op no longer match identically the duty and goals of the member towns. Thus, because of the cooperative principle of one member, one vote, those government members pledging credit support could lose decision-making authority over those pledges under this governance structure.

Compact counsel has identified this as an untenable risk for the Compact Members, and consequently it represents a fatal flaw.

This approach also is likely to raise serious bankability concerns by hindering the ability of contract counterparties and capital providers to assess the creditworthiness of the buyers of the power. In general, contract counterparties and capital providers find it too costly and difficult to undertake credit analyses of a plethora of small buyers. Moreover, unlike with the relatively stable Government Accounts, it is unrealistic to bind many small customers to term contracts that would approach or match the term of the Co-op's power hedge commitments or support long-term financing. Solvency requirements dictate that migration risk by such small customers would fall upon the larger, more committed members, and that small customer bad debts would fall upon those members still paying the bills. Compact Members are unlikely to be willing to underwrite the migration or bad debt risk of non-government members, and in fact may be precluded by law from doing so, depending upon the type of activities the All-Consumers Co-op may undertake. The Compact's counsel has advised the Team that the Massachusetts Constitution prohibits the Commonwealth and municipalities from pledging their credit to loan, aid, or benefit a private individual or entity. Also, the ultimate source behind a municipalities' pledge of credit – the money raised by taxation – can only be used for public purposes and not for the benefit of private individuals or entities. In an instance where a private party is a member of, or otherwise exercises control over the management of the Cooperative, Compact counsel believes that this constitutional prohibition may be implicated. This may be a fatal flaw, at least until such time in the future when the Co-op is ultimately able to raise and rely entirely its own creditworthiness without Compact Member credit backing.

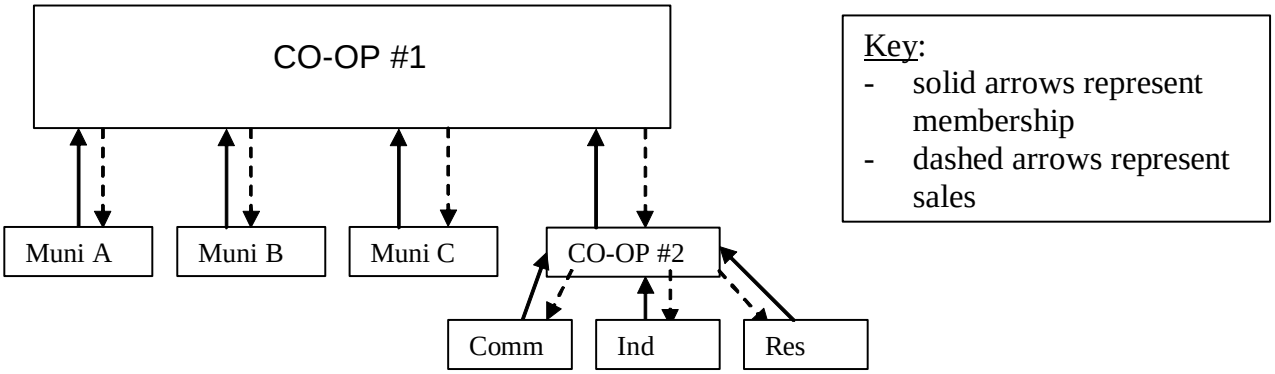
Finally, this model cannot avoid taxation by virtue of being an instrumentality of tax-exempt members, instead relying on 501(c)(12) status to avoid tax liability. However, sales of surplus RECs or energy to ISO-NE spot market would potentially violate the 85/15 Test if high enough in volume. As triggering any such liability would be considered a fatal flaw, avoiding this risk would severely limit its functionality to carry out the range of transactions envisioned, relative to the Public Co-op. It is also unclear whether it would allow for tax-exempt debt issuance.

7.5.3 Nested Co-op

The Nested Co-op approach is a variation on the Public Co-op in which, in addition to government entities, there could be one additional member, namely a second cooperative whose members in turn could be individual retail customers. A Nested Co-op could be set up from the outset to enable membership by another cooperative, or a Public Co-op could be converted into a Nested Co-op at a later date through a change in bylaws to allow membership by either government entities or one or more additional Massachusetts G.L. c. 164, § 136 and 501(c)(12) cooperatives.

Like the basic "Sales to Members" Public Co-op structure, sales of blocks of energy, hedge or renewable energy output could be made directly to members (who may then assign blocks of energy, hedge or renewable energy output to a full-requirements Retail Supplier for purposes of serving their retail meters). This situation is depicted in Figure 9. Alternatively, sales could also be made to the Compact, analogous to the "Sales to Compact" variation of the Public Co-op model (not shown).

Figure 9
Nested Co-op



Evaluation

The Nested Co-op variation satisfies several of the evaluation criteria. Starting with the simple Public Co-op offers the flexibility to adapt to future opportunities, constraints and priorities by adding the Nested Co-op feature. In the event that issues or barriers arise with involving the Compact in the chain of title (as in the Public Co-op "Sales to Compact" approach), this structure is expandable to make sales to non-government members—such as in the *Voluntary: Committed Government & Stable C&I Account* or *Voluntary: Unrestricted* retail offering scenarios—without risking failure of the 85/15 Test, if such sales are so desired. In addition, this structure might provide a long-run outlet for involvement of the Compact's broader constituency without severing the linkage between governance and fiduciary responsibility of the government members to manage their pledges of public assets[17], if that became a priority and potential concerns could be mitigated (see more below). It also promises more tractable and efficient governance than the All-Consumers Co-op, although somewhat less so than the Public Co-op by adding different issues and perspectives to the mix.

There are several possible concerns and limitations present, some of which might be mitigated if certain conditions were placed on the formation of a Nested Co-op's and on its role in the primary Public Co-op:

- Maintaining tax exemption. If a Nested Co-op were not to be tax-exempt, it could put the Public Co-op's tax-exemption at risk (as well as potentially putting at risk the ability to issue tax-exempt debt. Because the Nested Co-op's members would not be solely tax-exempt public entities, it could not achieve Federal tax-exempt status by virtue of being an instrumentality of its members. However, this concern might be mitigated if membership in the primary co-op was open only to government entities and federal

[17] Government members would need to maintain the governance majority position sufficient to match authority with responsibility, perhaps by limiting the number of Nested Co-ops that are members of the main Co-op. In fact, that number might never exceed one.

501(c)12 cooperatives meeting the 85/15 Test to maintain their own tax exemption. Further legal research would be needed on this issue.

- Credit-worthiness and risk exposure. As in the All-Consumers Co-op, under most circumstances government entities are unlikely to underwrite the migration or bad debt risk of all of the non-government members. However, if the secondary co-op could place conditions on its members requiring, as a condition of membership, that the members make cash investments of patronage capital (sufficient to provide working capital, credit, and to cover the perceived migration and bad debt risks), this might increase the credit-worthiness of the cooperative. Such capitalization or credit support—if secured in sufficient magnitude to put the secondary co-op on roughly equal footing with the government entities with respect to contribution, risk and credit—could in turn be a minimum standard of entry for membership to the primary Public Co-op. Nonetheless, such capitalization is unlikely by itself to establish bankability at the outset of operation, and the degree to which concerns are mitigated in the eyes of prospective financing parties would relate to the proportionality of capitalization to the transactional volume and related credit requirements.

- Fiduciary control. As with the All-Consumers Co-op, Compact Members may be precluded by law from underwriting the migration or bad debt risk of non-government members. The Compact's counsel has advised the Team that the Massachusetts Constitution prohibits the Commonwealth and municipalities from pledging their credit to loan, aid, or benefit a private individual or entity. Also, the ultimate source behind a municipalities' pledge of credit—the money raised by taxation—can only be used for public purposes and not for the benefit of private individuals or entities. In an instance where a private party is a member of, or otherwise exercises control over the management of the Cooperative, Compact counsel believes that this constitutional prohibition may be implicated. This may be a fatal flaw, at least until such time in the future when the Co-op is ultimately able to raise and rely entirely its own creditworthiness without Compact Member credit backing.

Additional issues are present as well, which may require further research or consideration. First, additional research is required to confirm that this structure would allow for tax-exempt debt issuance (if all members are tax-exempt). There is also the possibility that the Nested Co-op would have a different agenda or seek a different supplier than the Compact's partner(s). It is not clear if this presents any risk to the primary Government Co-op, but such issues would need to be evaluated if this model is considered further.

In summary, based on this assessment, the Nested Co-op alternative might provide a viable alternative if needed, but only if and when the identified concerns can be resolved. While a less attractive alternative than the basic Public Co-op, it might be implemented as an add-on to a Public Co-op in the future if issues or limitations arise with the Public Co-op model. It does not appear to be a preferable starting point for the Phase II investigation for a number of reasons. First, establishing additional cooperatives would add additional complexity to getting a Cooperative capable of meeting the Compact's immediate objectives off the ground. Second, it could delay the implementation substantially, as raising capital through patronage capital investment from the members of the secondary co-op to the Nested Co-op sufficient to make the

secondary co-op bankable and put it on equal footing with government members of the primary co-op would take considerably longer than would actions by the government entities on the Cape and Vineyard to establish and capitalize a Public Co-op. Third, the assessment of renewable energy supply (and the table in Section 8.3 comparing loads of each Retail Offering Scenario with available renewable energy supply) suggest that it may take several years for there to be enough renewable energy supply available to match more than the load of the Government Accounts in a meaningful way. Finally, the functionality of this approach may not be needed (or justified) unless constraints to the basic Public Co-op are identified.

7.5.4 Supplier Co-op

Like the Nested Co-op, the Supplier Co-op approach is a variation on the basic Public Co-op in which, in addition to government entities, the Compact's Retail Supplier(s) would also be member(s), but only for the duration of the Retail Supplier(s) contract with the Compact. This approach is posed as a potential solution to meeting the 85/15 Test in the event that providing benefits of a power supply hedge to non-governmental customers is desired and the Compact itself cannot be the recipient of the sale from the Co-op for some reason.

Evaluation

The Team found this approach to be problematic for a number of reasons, including:

- the temporary nature of the Retail Supplier's contract with the Compact is not well suited to co-op membership;
- the presence of a for-profit among the members eliminates the ability to be tax-exempt by virtue of the Co-op being an instrumentality of its members;
- the fiduciary interest of the Retail Supplier and the other members are likely to be at odds, and it is untenable for the vendor to have any governance say in the management of pledge of public assets (a potential fatal flaw);
- A Retail Supplier's membership is likely to complicate if not prevent the Co-op's ability to raise tax-exempt debt.
- So long as the Co-op is backed by pledges of credit from Compact Members, this structure is also flawed for the same constitutional concerns as identified by the Compact's counsel for the All-Consumers Co-op and Nested Co-op structures.

Given these factors, and the likelihood that such a structure is unnecessary to address the potential concerns raised, the Team does not recommend further consideration of this alternative.

8.0: Constructing Business Models for Phase II Consideration

To construct feasible business models for consideration by the Compact, the Team drew together the information developed in this Report for individual components. We selected those cooperative organizational and membership options that deserve further consideration for the near term in Phase II, those which should be preserved for possible future use, and those that we suggest be rejected. We then screened the Retail Offering Scenarios for those to be considered further for the near term in Phase II and those that should be preserved for possible future use. Next, the Team identified which Retail Offering Scenarios would appear to work best with the selected cooperative organizational and membership options. We then used the groupings from the previous step to develop business models for further consideration by the Compact. Finally, we took the business models and matched them with associated supply capabilities, strategies, tactics and limitations, as well as identifying key characteristics of the business models. These characteristics include the impact on the Compact's existing opt-out Municipal Aggregation offering, the structure and options for relationships with other entities such as Retail Suppliers, the implications for term of customer commitment, scale of hedging, and options for which entities could serve as Retail Supplier and LSE for the Compact Aggregation.

8.1 Recommendations: Cooperative Organizational & Membership Alternatives

Based on the Phase I evaluation described in the preceding Sections of this Report, the Team has identified cooperative organizational and membership options that appear to be feasible. We suggest options for the central focus of Phase II evaluation, those which should be preserved for possible future application, and those which have been screened from further consideration. The results are summarized in Table 5 below.

Table 5
Summary of Cooperative Organizational and Membership Alternative Recommendations

Cooperative Organizational & Membership Alternative	Recommendation
Public Co-op—Sales to Members	Feasible and recommended for Phase II
Public Co-op—Sales to Compact	Feasible and recommended for Phase II
Nested Co-op	Potential future alternative under certain limited circumstances, if concerns mitigated
All-Consumers Co-op	Screened from further consideration
Supplier Co-op	Screened from further consideration

The Nested Co-op has a number of issues that may or may not be resolvable; if there are problems or issues which the Public Co-op cannot handle, the Nested Co-op may be an option in the future if concerns identified for this model can be either addressed or mitigated. Likewise,

the Compact Co-op may serve as a modest modification to the Public Co-op if it is determined that the Compact must be a member of the Co-op itself in order to purchase from the Co-op.

8.2 Screening: Retail Offering Scenarios

The Team was asked to evaluate four tiers of potential recipients of the Co-op-arranged hedge and/or renewable energy supply, as translated into the four Retail Offering Scenarios. In this section, we discuss our assessment and conclusions with respect to two factors that dictate the feasibility of implementing each scenario: bankability and the availability of renewable power generating capacity.

Bankability

With respect to bankability, the Team's Phase I assessment is as follows:

- **Voluntary: Committed Government Account Scenario**: This scenario likely is financially feasible, or bankable, if and to the extent capital or credit is contributed by the participating government members and there is a Committed Government Account term commitment of a length matching the term of the Co-op's hedge or financing for the construction of the renewable energy supply.

- **Voluntary: Committed Government & Stable C&I Account Scenario**: This scenario does not appear to be bankable at present, as the Team believes that the participating government members are unlikely to be willing to assume full migration risk and bad debt risk for non-Government Accounts. Expanding service to Stable C&I Accounts might become feasible over time, if some stable and creditworthy C&I accounts, e.g., larger institutional customers, show willingness and an ability to provide necessary term commitments and credit. However, these customers are the most likely comparison shoppers, and the most likely to have alternatives available to them. There also is very little experience with such customers making sufficiently long term commitments to eliminate the migration risk. The Committed Government Accounts likely would be exposed to migration risk over time if the private sector accounts commit for periods shorter than the term of the Co-op's power hedges or of financing incurred to finance renewable energy sources. This scenario might become more feasible in the future if, for example, the Co-op successfully builds a long-term, renewable energy-based cost advantage relative to conventional fuel pricing, thereby mitigating migration risk. The green power program for the utility serving Austin, Texas, has been extremely popular as the program offers ten year fixed price contracts and exempts customers from periodic fuel price adjustments. In that program, large customers are required to commit for a minimum of five years.

- **Voluntary: Unrestricted Scenario**: This scenario does not appear to be bankable today for the same migration risk and bad debt risk reasons as noted above. There is little ability for non-governmental accounts (outside perhaps some Stable C&I Accounts) to enter term commitments or provide credit, exposing the participating Government Accounts, i.e., the Committed Government Accounts, to migration risk. As with the Committed Government & Stable C&I Account Scenario above, the Unrestricted Scenario might become bankable at some point in the future if the Co-op successfully

builds a long-term, renewable energy-based cost advantage that has mitigated migration risk in the long-term.

- **Opt-Out: Portfolio Enhancement Scenario**: This scenario might be financially feasible to the extent that the credit support issues can be addressed, e.g., at levels for which the participants are willing to provide the requisite credit support. The amount of such requisite support will depend on the scale of the underlying investment projects or hedging objective. As discussed in Section 4.4.2, the credit requirements to obtain one to three year hedge contracts for the whole load of the Compact Aggregation have the potential to reach over $50 million. The Compact may decide to initiate this scenario assuming smaller investment projects or more limited hedging activities, e.g., to cover interested Government Accounts.

Scale of Available Supply:

The other major driver for focus on Retail Offering Scenarios is the availability of supply to the Cooperative. The availability of renewable energy supply is most limiting (as conventional hedges are capital-constrained rather than availability constrained). Table 6 below summarizes the relationship between the availability of resource and the degree of price stabilization.

Table 6
Degree of Price Stabilization
(as measured by hedged percent of total energy)

Average MW (aMW) of Renewable Power Resources Available for Price Hedging	Voluntary: Committed Government Account	Voluntary: Committed Government plus Stable C&I Account	Voluntary: Unrestricted	Opt-Out: Portfolio Enhancement
5	50%	25%	10%	2%
10	100%	50%	20%	5%
50	100%	100%	100%	25%
100	100%	100%	100%	50%
200	100%	100%	100%	100%

Conclusions:

Based on both bankability and the potential for available resources to provide meaningful rate stabilization benefits in the near term, the Team suggests that the Compact consider the *Voluntary: Committed Government Account* Scenario as the primary focus for Phase II of this study.

The *Opt-Out: Portfolio Enhancement* Scenario may be bankable for short durations and modest quantities of hedging; however, the effect would tend to be quite diluted at these levels. In the near term, sufficient volumes of renewable resources do not appear to be available to contribute to meaningful price stabilization. If sufficient supply does become available, the challenge then will become bankability, which is questionable in the absence of long-term cost-advantage. A few years out, the availability of sufficient supply to provide meaningful rate stabilization for the Compact Aggregation may depend on Compact Member interest and ability to secure purchase contracts or invest directly at levels beyond local community-scale renewable energy projects.

The *Voluntary: Committed Government plus Stable C&I Account* Scenario and the *Voluntary: Unrestricted* Scenario do not appear to be near-term options due to both bankability concerns and the near-term availability of sufficient resources to provide meaningful rate stabilization. However, if the Co-op is able to build a long-term cost advantage in the future through long-term purchase contracts and/or renewable generator ownership, these negatives might be mitigated. If so, these scenarios may become viable under certain future conditions, e.g., lower than market cost mitigating migration risk or if the potential incremental customers are creditworthy and willing to make term commitments in their own right.

8.3 Aligning Organization & Membership Alternatives with Retail Offering Scenarios

Combining the results of the previous two sections, along with the characteristics of the organizational and membership structures provides a view of feasible and recommended combinations. These combinations, summarized in Table 7, become the core of the business models that the Team suggests be considered further in Phase II.

Table 7
Alignment of Organizational and Membership Alternatives with Retail Offering Scenarios

Cooperative Organizational & Membership Alternative	Voluntary: Committed Government Accounts	Voluntary: Committed Government plus Stable C&I Accounts	Voluntary: Unrestricted	Opt-Out: Portfolio Enhancement
Public Co-op—Sales to Members	Preferred	No	No	No
Public Co-op—Sales to Compact	Preferred	Yes, but under limited future conditions	Yes, but under limited future conditions	Preferred, or under limited future conditions
Nested Co-op—Sales to Members	Feasible (but unnecessary unless pursued for other purposes)	Under limited future conditions	Under limited future conditions	No
Nested Co-op—Sales to Compact				Under limited future conditions

8.4 Business Models Recommended for Further Study in Phase II

The business models suggested for further review are characterized by several elements. Each Business Model was built up starting with the Cooperative organizational and membership structure and the associated Retail Offering Scenarios. The Team then matched feasible supply capabilities, tactics and limitations with each business model, and identified additional key characteristics.

Salient characteristics of these Business Models are described below:

- **Co-op Organization & Membership Structure** – Which entities are members in the Cooperative?
- **Co-op Output Sales Transaction Structure** – To whom does the Co-op sell the output (energy products and/or RECs) of it's portfolio of hedge contracts and/or renewable energy contracts or ownership?
- **Retail Offering Scenario** – Which accounts are eligible to receive generation service incorporating supply from the Co-op's portfolio? How is that offering made to the eligible consumers, on a voluntary (opt-in) basis, or through the Municipal Aggregation Opt-out offering?
- **Supply Components** – Which elements of the Compact's objectives for renewable energy and hedged power transactions does the particular model support?

- **Impact on Compact Aggregation** – What changes to the Compact's existing opt-out Municipal Aggregation offering, if any, result from the activities of the Co-op?

- **Term of Commitment to Co-op** – In order to provide the Cooperative with stability creditworthy load commitments to allow it to engage in long term supply commitments, membership may be required to make a minimum commitment to the Co-op offering.

- **Retail Supplier / LSE** – What options fit the business model for who can serve as Retail Supplier and/or wholesale ISO-NE LSE?

Three feasible and preferred business models developed by the Team in Phase I survived the prior screenings, and may warrant further study in Phase II. They are described as follows, and summarized in Table 8 further below.

The Public Co-op Selling to Government Accounts Model

The membership of the Co-op in this business model is open to Government Accounts in the Compact's service territory. These members who voluntarily join help provide the Co-op with initial capital and credit support in order to make the Co-op operational. The longer the Government Accounts can commit to membership in the Co-op and the requisite limited credit support, the more easily the Co-op can secure longer term power market transactions, including ownership and investments in renewable energy projects and bilateral wholesale forward market purchases.

In addition the Committed Government Accounts also agree to purchase their pro-rata share of the Co-op's portfolio of generation output, RECs, energy contracts, capacity contracts, etc. (the "Portfolio"). The Committed Government Accounts sell or assign their Portfolio to the Retail Supplier used to create full-requirements service to the retail meters of the Committed Government Accounts. The Retail Supplier takes all volumetric risk in this illustration. The offering is now more 'green' and/or less volatile than the Compact Aggregation. The only impact this model has on the Compact Aggregation comes from the removal of the Committed Government Accounts from the Compact Aggregation.

With the formation of a Cooperative, options will exist for managing costs through direct and indirect supply procurement strategies. Section 4.3.2 of this Report discusses one such indirect concept of the Co-op utilizing its Portfolio to deliver hedging and "greening" benefits to the Co-op members through parallel financial transactions without blending the Co-op's power into either the Compact Aggregation or any Voluntary Participation offering. Note that this can be accomplished under the Public Co-op Model. The impact on the Compact Aggregation is then zero, as there would be no involvement by the Retail Supplier(s) to the Compact Aggregation and no need for Voluntary Participation offerings.

The Public Co-op Selling to the Compact for Voluntary Offerings Model

The membership of the Co-op in this business model is also open to Government Accounts in the Compact's service territory. These members who voluntarily join help provide the Co-op with initial capital and credit support in order to make the Co-op operational. As with the prior business model, the longer the Government Accounts can commit to membership in the Co-op

and provide the requisite limited credit support, the more easily the Co-op can secure longer term power market transactions, including ownership and investments in renewable energy projects and bilateral wholesale forward market purchases.

The primary distinction between this model and the previous one is that while the Committed Government Accounts agree to take their generation service under the Voluntary Participation offering, they do not purchase a share of the Co-op's Portfolio directly. Instead, the Portfolio is sold to the Compact and in turn is assigned by the Compact to the Compact's Retail Supplier serving the voluntary participation offering with full requirements retail generation service.

The Retailer or LSE blends the Co-op's Portfolio into its overall portfolio to deliver full requirement retail generation service to the Committed Government Accounts, and possibly other non-Government Accounts as allowed by the Compact. The supplier takes all volumetric risk in this illustration. The offering is now more 'green' than the Compact Aggregation.

As with the previous model, the only impact this model has on the Compact Aggregation comes from the removal of the Committed Government Accounts (and if applicable, the other retail accounts) from the Compact Aggregation. This would tend to reduce the load factor of the aggregation as well as remove the accounts that either have committed to taking service under the Compact Aggregation or are viewed as the least likely accounts to "opt-out" of the aggregation. Again, this might put some upward pressure on the prices that the Compact Aggregation as a whole receives from its Retail Supplier. As with the previous model discussed above, parallel financial hedges are a tactic available under this model with the same issues and benefits as with the previous model.

The Public Co-op Serving the Opt-Out Municipal Aggregation Model

The membership of the Co-op in this business model is the same as in the prior two models – Government Accounts in the Compact service territory. These members who voluntarily join help provide the Co-op with initial capital and credit support in order to make the Co-op operational. As with the prior business models, the longer the Committed Government Accounts can commit to membership in the Co-op and provide the requisite limited credit support, the more easily the Co-op can secure longer term power market transactions, including ownership and investments in renewable energy projects and bilateral wholesale forward market purchases.

In this model, the Committed Government Accounts agree to take their generation service via the Compact Aggregation offering. They do not purchase a share of the Co-op's Portfolio. Instead, the Co-op sells its Portfolio to the Compact, which in turn assigns the Portfolio to the Compact's Retail Supplier serving the Compact Aggregation.

The Retail Supplier or the LSE blends the Co-op's Portfolio into its overall portfolio to deliver full requirement retail generation service to the entire Compact Aggregation. This dilutes the hedging and greening benefits of the Co-op's Portfolio since the same set of transactions is blended into the much larger offering. The size of the Portfolio would have to be substantial to have a meaningful hedge effect, but might be used to green the opt-out portfolio at more modest volumes. As the Compact's current Retail Supplier, Con Edison Solutions, does today, the Retail Supplier takes all volumetric risk in this illustration.

The impact that this model has on the Compact Aggregation is direct. Prospective bidders for the right to be the Retail Supplier for the Compact Aggregation will have to commit to blending the Co-op's Portfolio into their own portfolio as the Co-op's contracts or capacity investments occur. Thus the success of the Co-op to hedge and green its supply will be felt by the Compact Aggregation customers.

These characteristics are summarized for each business model in Table 8 on the next page.

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Table 8
Business Models for Consideration

Co-op Organization & Membership Structure	Transaction Structure	Retail Offering Scenario	What Supply Components can it accommodate?	Impact on Compact Aggregation	Term of Commitment to Co-op	Who is the Retail Supplier / LSE?	Recommendation
Public Co-op	Sales to Members	Voluntary: Committed Government Accounts	Renewable Energy; Bilateral Hedges; Financial Hedge	Unchanged structure, Load shifted to Co-op Voluntary products	Long term, possibly up to Ten years	Third Party or Compact	Preferred
Public Co-op	Sales to Compact	Voluntary: Committed Government Accounts (expandable to other accounts)	Renewable Energy; Bilateral Hedges; Financial Hedge	Unchanged structure, Load shifted to Co-op Voluntary products	Long term, possibly up to Ten years	Third Party or Compact	Preferred
Public Co-op	Sales to Compact	Opt-Out: Portfolio Enhancement	Renewable Energy; Bilateral Hedges; Financial Hedge	Retail Supplier/LSE accommodates Co-op supply components into portfolio	Shorter term	Third Party or Compact	Feasible but effectiveness depends on credit support and availability of sufficient hedge quantity

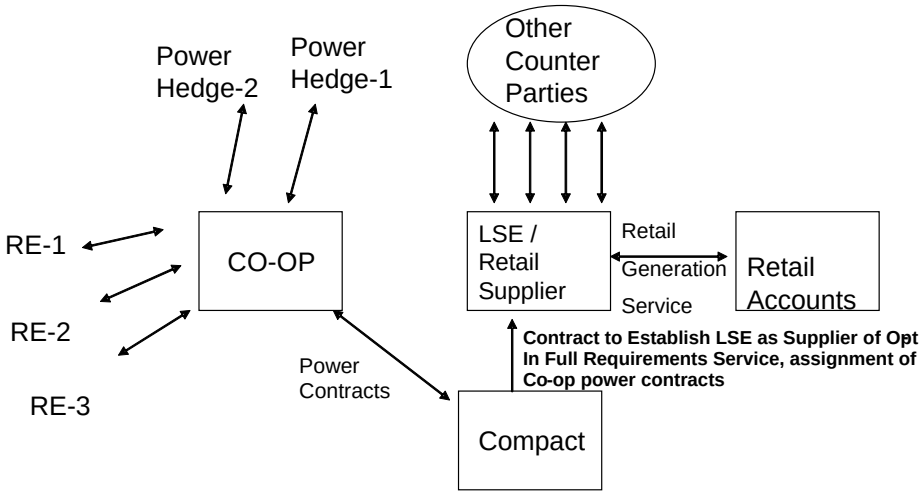
8.5 Contractual Arrangements for Business Models

There are many contractual arrangements that could occur depending upon the details of the particular business models and associated tactics chosen. The list below contains most of the relationships and transactions for which contracts or agreements would need to be executed in the chosen cooperative business models suggested for Phase II consideration.

- Compact to Co-op members for assignment of power to ISO-NE LSE serving the Voluntary products
- Voluntary Retail Accounts buying from Retail Supplier (could be Compact's partner, Co-op or Compact)
- Retail Supplier buying from ISO-NE LSE, if it is not the same entity
- Co-op selling power supply components (or financial hedges) to the Compact to be either resold or assigned to ISO-NE LSE
- Co-op buying from Renewable Energy Project(s)
- Co-op ownership of Renewable Energy Project(s)
- Co-op buying Bulk Power Hedged Supply (energy and /or capacity)
- Co-op disposing of surplus or entire wholesale position of the Co-op's "Portfolio" of Bulk Power or Renewable Energy Project Output (i.e. REC sales, spot or bilateral energy sales)
- Co-op or Compact – ISO-NE membership, if they serve as LSE or wish to engage in spot market liquidation of bulk power or renewable power, or out-sourcing to a third party this function
- Co-op Membership contracts
- Financial Hedging with Renewable Energy or other Counterparties

Figure 10 below is an illustrative schematic representation of what the network of contractual relationships described above might look like for a potential voluntary product strategy.

Figure 10
Contractual Schematic Involving Voluntary Products



9.0: Conclusions and Recommendations

This Report, representing Phase I of the study, provides the results of the screening analysis of potential cooperative business models. Section 8 identifies feasible cooperative organizational and membership options for further consideration by the Compact. Along with the screening analysis, the Team assessed several aspects of establishing and operation of an electric cooperative. These include reviewing the Co-op's prospects to obtain financing with limited credit support from Compact Members in connection with entering into power or REC hedging contracts, long-term power purchase contracts, or investing in renewable power projects. The Report also provides an overview of renewable power project development opportunities in the New England market so that the Compact can frame such financing capabilities and options in the context of likely opportunities to buy or invest in pending regional renewable power projects. From the screening analysis and the other Report components, the Team proposes several overall conclusions and recommendations for consideration by the Compact. These conclusions and recommendations are intended to assist the Compact and the Compact Members in deciding whether and how to proceed with further analysis and implementation of an electric cooperative.

The Phase I research has led the Team to offer several conclusions for consideration by the Compact to assist the Compact and the Compact Members in determining whether and how to proceed with Phase II of this effort and ultimately in the formation of a cooperative. These are summarized here.

<u>Cooperative Structure & Organization</u>

- A Co-op formed under G.L. c. 164, § 136 appears more capable than other potential business structures to complement the Compact's operations from the perspective of governance compatibility, financing and maintaining non-taxable status.

- The Team recommends the Public Co-op model for further review. This model appears capable of providing hedging for power prices, while supporting the development of renewable generation in the region. Other identified models do not appear to be workable.

- The Team recommends the Voluntary: Committed Government Account retail offering scenario as the primary focus for Phase II of this study. The Team suggests the Compact further assess the optimal chain of title for the Co-op's sales of its power and RECs, i.e., the relative feasibility and benefits of the Co-op selling power and RECs to Compact Members and other Government Accounts who join the Co-op versus sales directly to the Compact where the Compact itself is in the chain of title. The Opt-Out Portfolio Enhancement Scenario has some issues and practical limitations on its effectiveness, but may have some utility in later stages of the operation of the Co-op.

- Choices concerning Co-op membership and governance are critical to a successful Co-op. Those choices will drive what the Co-op can do and whether it will be viable.

Hedging Power Price Volatility

- Participation by the Compact or the Co-op or the Compact Members in meaningful levels of power market hedging transactions will impose credit exposure on the participating entities during the life of the hedge contract. The required credit amounts may reach significant levels depending on the extent of hedging desired.

- Price volatility will be hard to hedge through conventional hedging contracts without the contract counterparty requiring significant security requirements.

- Power price volatility also could be hedged by entering into long-term renewable power purchase agreements or by undertaking direct investments in renewable power projects.

- There are enough viable renewable generation projects under development in the region to provide multiple opportunities for the Compact and the Co-op to enter into power purchase contracts or consider direct investments in pursuit of the objective of hedging against power supply price volatility for at least the Government Accounts load in the near term, and perhaps the overall Compact Aggregation portfolio in the long term.

- There are several ways to set up a Co-op to access renewable power generation supplies, including several that appear to be able to integrate the renewable power into power supply for some or all retail accounts on the Cape and Vineyard.

- The Compact will want to review in further detail integrating new power purchase contracts or investments with its existing Opt-Out offerings.

- The simplest way to incorporate Co-op-sponsored 'green' and 'hedged' supply resources is in separate Opt-In product offering(s), blended into Full Requirements Service by a Retail Supplier. This is likely the best fit with Government Accounts.

Securing Co-op Financing & Bankability

- Multiple sources and financing structures are available that are geared to financing projects involving public, private, and cooperative ownership.

- Financing Co-op renewable power purchase contracts or investments will need to take into account the Co-op's start-up status and initial lack of financial strength. Corporate-style financing likely only will be feasible to the extent that the Compact Members assume contingent payment obligations. Project-based financing supported by strong power purchase commitments by Compact Members may be the most effective means for securing financing at an acceptable trade-off amongst these aspects.

- The ability of the Co-op to issue tax free bond financing to finance its investments in renewable power projects will improve the economics of such projects by enabling lower-cost financing and, ultimately, a lower required price for the power. The Co-op appears able to access such tax-exempt financing for certain projects, but further legal and bond underwriter analysis likely will be needed to resolve eligibility questions.

If the Compact undertakes further research, the Team recommends an early focus on certain questions, consideration, and tasks:

- Exactly how would a separate Voluntary Participation offering mesh with the Compact's existing Municipal Aggregation service?

- Legal research to confirm the Co-op's ability to issue tax-exempt bond financing, and to confirm that potential Co-op power or REC sales activity would not imperil either the tax-exempt status or the bond issuance capabilities.

- Focusing on one or more specific potential contract or investment opportunities so as to address detailed Co-op organizational, contract, and financing questions on a practical basis.

- Estimating the magnitude of bilateral power purchase transactions that would provide significant hedge value to the Compact's Members.

- Creating an indicative schedule of renewable energy project participation or investments to gauge concomitant financing requirements for the Co-op.

- Exploring the specific amounts of security that the Co-op would require in order to implement bilateral contracts for multi-year hedging.

- If engaging in financial hedging of power supply transactions to mirror the benefits of fixed-price power transactions is appealing, the Team suggests that Phase II research include investigating whether such pure financial hedging can reduce credit requirements.

Appendix A: Regional Renewable Power in Development

The following tables provide an illustrative look at the number and project size of commercial-scale wind and other renewable power projects known to be in near-term development in the Cape Cod region, in Massachusetts, and in the overall New England region. The information was gathered by the Team from public sources. See Section 5.2 for further information. Note that all on-line dates are approximate projections by the Team.

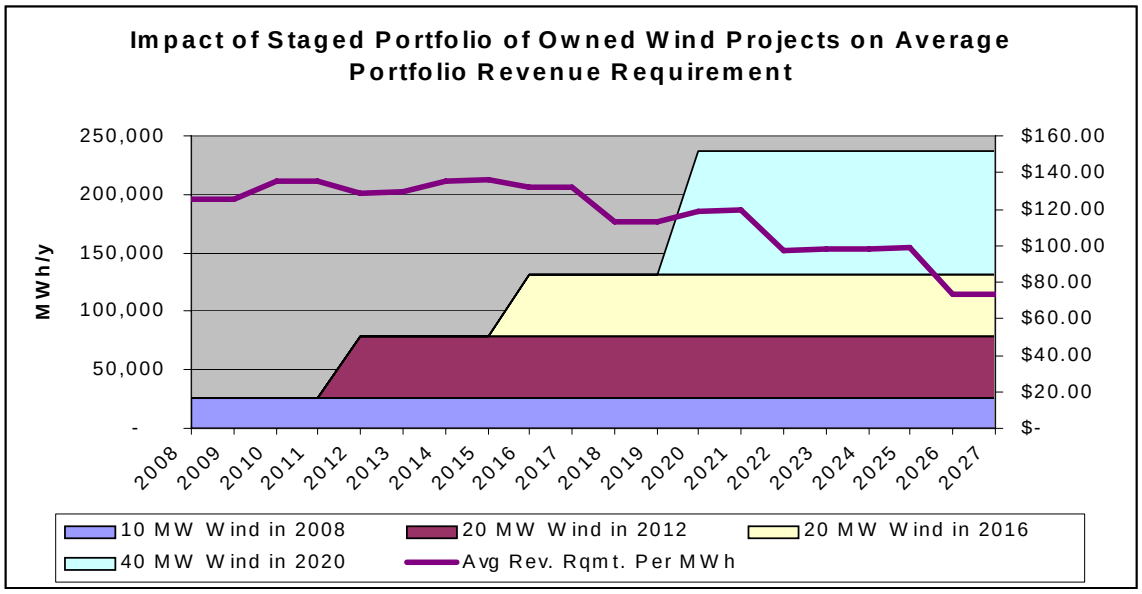
Project Inventory—Commercial Scale Supply Opportunities (Local/Community-Scale Wind)			
	2007	**2008**	**2009**
Approx. Scale (cumulative)	2—5 MW capacity ~1—1.5 aMW	15—20 MW capacity ~5-6 aMW	35—50 MW capacity ~10—15 aMW
Examples & Approximate Commercial Operation Date.Year:			
Bourne		**1**	
Brewster			**1**
Dennis			**3**
Eastham		**3**	
Fairhaven		**3**	
Fall River			**1.5**
Falmouth			**1.5**
Mattapoisett/Marion/Rochester			**1.5**
Orleans	**3.3**		
Wareham			**2**
Wellfleet			**1**
Yarmouth		**0**	
Other		**7.5**	**15**

Project Inventory—Commercial Scale Supply Opportunities (Other Massachusetts & Offshore)					
		2007	**2008**	**2009**	**2010+**
Approx. Scale (cumulative)		0 MW	8 MW ~ 2.5 aMW	30 MW ~ 10 aMW	800 MW ~ 240 aMW
Examples & Approximate Commercial Operation Year:					
Eastern	**CEI MassWind**		**3.3**		
	Hull Offshore Wind			**14**	
	Boston Harbor Wind		**4.5**		
	Cape Wind				**468**
	Ipswich Wind			**1.5**	
	Kingston Wind			**1.5**	
	Lynn Wind			**1.5**	
	Marshfield Wind			**1.5**	
	Scituate Wind			**1.5**	
	Patriot Renewables				**300**
Approx. Scale (cumulative)		30 MW ~ 10 aMW	42 MW ~ 12.5 aMW	42 MW ~ 12.5 aMW	92 MW ~27.5 aMW
Examples & Approximate Commercial Operation Year:					
Western	**Hoosac Wind**	**30**			
	Russell Biomass				**50**
	Minuteman Wind-Savoy		**12.5**		

Project Inventory Commercial Scale Supply Opportunities (Other New England Wind)					
		2007	**2008**	**2009**	**2010+**
Wind—Approx. Scale (cumulative)		42 MW ~ 12.5 aMW	340 MW ~ 102 aMW	340 MW ~ 102 aMW	340 MW ~ 102 aMW
Examples & Approximate Commercial Operation Dates:					
Wind	**Kibby Mtn. (ME)**		**130**		
	Evergreen (Mars Hill, ME)	**42**			
	Sheffield (VT)		**52**		
	Maine Mountain Wind		**90**		
	CEI New Hampshire Wind (NH)		**24**		
Biomass—Approx. Scale (cumulative)		45 MW ~ 38 aMW	45 MW ~ 38 aMW	45 MW ~ 38 aMW	85 MW ~ 73 aMW
Examples & Approximate Commercial Operation Year:					
Biomass	**Schiller (NH)**	**45**			
	GenPower Athens (ME)				**40**

Appendix B: Phased Portfolio of Wind Ownership—Illustrative

The following diagram shows the potential cumulative effect of investing in several smaller wind projects as their capital costs are amortized. As can be seen, the per-MWh cost required revenue requirement (as expressed in the requisite average power purchase price shown on the right hand side of the diagram) drops dramatically as the initial capital costs are paid off. This suggests that ownership (or contractual control mimicking the benefits of ownership) can create long-term low-cost advantages after the capital costs of the projects are fully amortized. Such long-term cost advantages can play a role in mitigating the migration risk of those customers for whom long-term contracts are not feasible. Section 5.4 provides further information.



Appendix C: Institutions Financing Renewable Power Projects

The following tables provide examples of sources of financing being utilized by existing renewable power projects in the New England region and elsewhere in the United States. The tables are organized into groupings of public and private sources offering debt financing, public and private sources providing equity financing, and grant and other official funding sources. See Section 6.4 for more information.

Public Sources—Debt

- US Department of Agriculture (USDA) Rural Utilities Service
- USDA Rural Development Electric Programs (Farm Bill Section 9006 financing)
- US Treasury Clean Renewable Energy Bond program
- Massachusetts Technology Collaborative Renewable Energy Trust
- Other state-level agencies and clean energy funds, e.g.
    - Energy Trust of Oregon
    - State of New Jersey Board of Public Utilities
    - Wisconsin Focus on Energy

Private Sources—Debt

- CoBank
- National Rural Utilities Cooperative Finance Corporation (CFC)
- GE Capital Energy Financial Services
- George K. Baum & Company (municipal bond underwriter)
- Commercial banks, e.g.,
    - AgStar Financial Services, Inc.
    - BNP Paribas
    - Dexia Crédit Local
    - Hypovereinsbank
    - HSH Nordbank
    - Nord L/B
    - Royal Bank of Canada
    - TD Bank North

Private Sources—Equity

- Babcock & Brown, LP
- CH Energy Group
- Energy Investors Funds
- GE Capital Energy Financial Services
- Goldman Sachs & Company
- International Brotherhood of Electrical Workers
- John Deere Credit
- John Hancock Financial Services

- JPMorgan Capital Corporation
- G. MacNeilus, LLC
- MMA Renewable Ventures
- New Energy Capital, LLC
- Palmer Capital Corporation
- Ridgewood Renewable Power
- Trust Company of the West
- US Renewables Group
- Union Bank of California
- Wells Fargo Bank

Private Sources—Equity (Developers) (investing in projects developed by other entities)

- AES Corporation
- Airtricity, Inc.
- Caithness Energy, L.L.C.
- Community Energy, Inc.
- CPV Wind Ventures, LLC
- Edison Mission Energy
- Enel North America, Inc.
- Eurus Energy America Corporation
- Invenergy, LLC
- FPL Energy
- PPM Energy
- UPC Wind, LLC

Public and quasi-Public Sources—Equity & Grant-making
(Also includes entities making advance or ongoing production incentive payments and/or purchasing renewable energy credits)

- Rural Utilities Service, United States Department of Agriculture
- USDA Rural Development Electric Programs
- Massachusetts Technology Collaborative Renewable Energy Trust
- Other State-level agencies and clean energy funds, e.g.
    - Connecticut Clean Energy Fund
    - Illinois Clean Energy Community Foundation
    - New York State Energy Research and Development Authority
    - Ohio Department of Development Energy Loan Fund
    - Rhode Island Renewable Energy Fund

For details on state clean energy fund programs, see the Clean Energy States Alliance website: http://www.cleanenergystates.org/index.html. Also see a Clean Energy States Alliance/ Lawrence Berkeley Laboratory publication, The Impact of State Clean Energy Fund Support for Utility-Scale Renewable Energy Projects, April 2006.

Appendix D: Renewable Power Project Financings

The following tables provide examples of the financing being obtained by existing renewable power projects in the New England region and elsewhere in the United States. The tables are organized into groupings of projects owned by public entities, private sector entities, and those owned by cooperatives, community, or other similar groups. Note that many projects secure financing of more than one type or from more than one source, e.g., a project combining grants, debt, and equity. See Section 6.5 for more information.

Projects Owned by Public Entities

Method	Examples (support, name, type, size, sponsor, state)
Internal funds	• Hull Wind 2, wind, 1.8MW, Town of Hull, MA
Appropriations or grants from parent entities, e.g., state	• MA Maritime Academy, wind, .66MW, MA • Santa Rita jail and other Alameda County facilities, solar, 2.5MW, CA
Grants and other official and state clean energy fund support, including pre-payments for power, RECs, and/or green tags	• (Forgivable loans), Eurus Combine Hills I, wind, 41MW, Eurus Energy, OR • (Grants) Orleans wind project, wind, 3MW, Massachusetts Technology Collaborative, MA • (USDA Sec. 9006 grant), bio-digester, Cayuga County Public Power Agency, NY
Bond financing	• Ainsworth wind farm, wind, 60MW, Nebraska Public Power District/consortium of municipal utilities, NE • Nine Canyon Wind Project, wind, 63MW, Energy Northwest, WA • Community wind projects using clean renewable energy bonds (CREBs) (pending), 1-5 MW, multiple sponsors
Public/private partnerships	• Fairhaven wind project (proposed), wind, 1-3MW, Town of Fairhaven, MA

Projects Owned by Private Sector entities

Method	Examples (support, name, type, size, sponsor(s), state)
Equity from the project developer	• Maple Ridge Wind Farm, wind, 200MW, Horizon Wind Energy/PPM Energy, NY
Third party equity joining the original developer as a partner	• Jersey-Atlantic Wind Farm, 7.5 MW, Community Energy, Inc./Atlantic Counties Utility Authority, NJ • Minnesota projects (multiple), 1-10 MW, John Deere, MN • Velva Wind Farm, wind, 12MW, Global Renewable Energy Partners/Acciona Energy, ND

Grants and other official and state clean energy fund support, including pre-payments for power, RECs, and/or green tags	• (Up-front REC purchases by two clean energy funds & forgivable loans), Berkshire Wind Power, LLC, wind, 15MW, Disgen, MA • (Upfront grants + 5 year production incentive payment), Jersey-Atlantic Wind Farm, 7.5 MW, Community Energy, Inc./Atlantic Counties Utility Authority, NJ • (USDA Sec. 9006 grants), Wolf Wind Farm, wind, 6.25MW, family ownership, MN • (USDA Sec. 9006 grant), Wasatch Wind, wind, 19MW, UT • (5-year production incentive payments), multiple solar and wind projects, California Energy Commission, CA • (Up-front production incentive), Mendota Hills Wind Farm, 50MW, Navitas Energy/Gamesa, IL
Debt financing	• (Commercial banks), Kaheawa Wind Power, LLC, wind farm, 30MW, UPC Wind, HI • (Commercial banks), Judith Gap Energy Center, wind farm, 135MW, Invenergy, MT

Projects owned by cooperatives, community, or other groups

Method	**Examples (support, name, type, size, sponsors, state)**
Equity by cooperative/community entity owners	• Minwind I/Minwind II, wind, 3.8MW, Minnesota • Portsmouth Abbey wind turbine, .66 MW, Portsmouth Abbey School, RI
Third party equity joining the original developer as a partner	• Trimont Area Wind Farm, LLC, wind, 100MW, Trimont farmers/PPM Energy, MN
Grants and other official and state clean energy fund support, including pre-payments for power, RECs, and/or green tags	• (USDA grant), single wind turbine, 1.65MW, Nobles Cooperative Electric, MN • (upfront grants, green tag purchases), single wind turbine, 1.65MW, Illinois Rural Electric Cooperative, IL • (multiple USDA sec. 9006 grants), Community Wind North, wind, 30MW, MN
Debt financing	• (Rural Utilities Service low-interest loan), landfill gas to energy, 4.5MW, Washington Electric Cooperative, VT • (Rural Utilities Service low-interest loan), wind turbine, 1.65MW, Illinois Rural Electric Cooperative, IL • (Unidentified bank), Minwind I/Minwind II, wind turbines, 3.8MW, MN • Various wind projects, AgStar Financial Services (lender), MN