COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
100 CAMBRIDGE ST., SUITE 1020
BOSTON, MA 02114
Internet: www.Mass.Gov/DOER
E mail: Energy@State.MA.US

Deval L. Patrick
Governor

Timothy P. Murray
Lieutenant Governor

Ian A. Bowles
Secretary, Executive Office of Energy and Environmental Affairs

Philip Giudice
Commissioner

TELEPHONE
(617) 626-7300

FACSIMILE
(617) 727-0030
(617) 727-0093

January 28, 2010

The Honorable Barry R. Finegold
Joint Committee on Telecommunications, Utilities & Energy
State House – Room 473-B
Boston, MA 02133

Re: Municipal Utility Report

Dear Chairman Finegold,

Pursuant to Section 107 of the Green Communities Act of July 2, 2008 ("the Act"), the Massachusetts Department of Energy Resources ("DOER") was required to conduct a study to examine potential impacts of municipalization of electric utility systems, which are primarily owned and operated by private investor-owned utilities ("IOUs"). In particular, Section 107 reads:

> *"The department of energy resources shall conduct a study of the fiscal impact, viability, statutory and regulatory barriers and long-term results of establishing and operating municipal-owned electric utilities in the commonwealth."*

The attached report is submitted to the Joint Committee on Telecommunications, Utilities and Energy in compliance with Section 107 of the Act. The DOER, with the assistance of La Capra Associates, has assembled information that provides background information and some pertinent basic analyses on the issues associated with formation of municipal utilities for use by the legislature, regulators such as the Department of Public Utilities ("DPU"), and other interested parties as electric service municipalization policies are considered.

Section 107 of the Act also established an advisory commission to provide guidance and advice regarding the study. There were four meetings held with the commission to review scope, study methodology, analyses and the draft report. In addition, in preparing the report, individual interviews were conducted with most commission members in order to insure that all relevant issues were identified and addressed. Both oral and written comments on this report were

received and every effort was made to incorporate relevant issues identified by commission members in a fair and balanced manner.

The study's findings provide a number of important insights into the differences between existing municipal electric utilities and investor-owned utilities in the Commonwealth, and the process and some potential impacts of establishing new municipal utilities. In all events, however, it should be evident that the consideration of establishing any specific municipal utility will pose unique issues that will require situation-specific assessments. The circumstances of each will vary and proper due diligence will be required in each case.

Highlights

New vs. Existing Municipal Utility

While this report presents a number of analyses comparing the Commonwealth's existing municipal electric utilities to its existing investor-owned utilities ("IOUs"), the report emphasizes that a new municipal utility will not likely resemble an existing municipal utility for a number of reasons. First, a new municipal utility will need to carry significantly higher debt levels than a typical existing municipal utility. Existing municipal utilities have been operating for over 80 years and have, over time, significantly reduced their debt levels. In addition, existing federal tax law effectively precludes a municipality from purchasing the assets of an IOU with tax-exempt debt. Consequently, a new municipal utility will have higher debt levels at a higher cost than an existing municipal utility. With respect to power supply costs, many existing municipal utilities either have an ownership interest in power plants or have long-term entitlements to the value of that power. These arrangements have provided them with a significant hedge against rising power costs. A new municipal utility will not have the benefits of these arrangements. Finally, to the extent new municipal utilities will be required to continue to comply with the Commonwealth's energy policy objectives with respect to energy efficiency, renewable portfolio standards and retail competition, these requirements will further distinguish a new municipal utility from an existing one.

Exhibit 10 of this report provides an illustrative example to try and better understand how the capital cost structure of a new municipal utility, under three different asset value scenarios, might affect its overall cost relative to existing IOUs. For all other cost components, averages for existing IOUs and municipal utilities were used except for power supply which was held constant for IOUs and municipal utilities. This exhibit suggests that even under the lowest asset value case, it may be difficult for a new municipal utility to match an existing IOUs costs, especially considering that no pre-acquisition or start-up costs are assumed in this exhibit for a new municipal utility. It should be emphasized again, however, that this exhibit largely relies on the best available operating cost data for existing utilities and that any analysis of the impacts for a specific municipality will depend heavily on the particular circumstances associated with that municipality and the facilities used to serve it.

Valuation

Valuation of utility assets continues to be controversial. There is only a single DPU case post-1940 involving the purchase of utility assets where the town of Stow desired to purchase the

electric distribution assets from the Hudson Light Department, a municipal utility that serves Stow. The DPU issued a ruling that utilized a methodology to value the assets based on an equal weighting of the original cost of the assets less depreciation ("net book") and the replacement cost of the assets less depreciation, adjusted for the condition of the assets. That methodology was upheld by the Massachusetts Supreme Judicial Court ("SJC"). In December 2009, the Massachusetts Appeals Tax Board issued a ruling on the value of National Grid's natural gas assets located in the City of Boston. In its decision, it utilized essentially the same methodology used by the DPU in the Stow-Hudson case and affirmed by the SJC. These rulings suggest that replacement cost of the distribution assets, not just net book, is an appropriate consideration for determining value.

Barriers to Municipalization

The most significant barrier to municipalization identified by proponents of municipalization is that the IOU has no requirement to sell its distribution assets to any municipality, regardless of the price it is willing to pay. The role of the DPU is as arbiter on the value of the assets and other related issues but there is no obligation on the part of the IOU to accept the DPU's findings and proceed with a sale even if the municipality is willing to accept those findings and proceed with the purchase. In addition, proponents argue that this barrier not only enables the IOU to thwart any sale but also deters municipalities from investing the necessary resources to determine whether municipalization of electric utility assets would be desirable.

From the IOU's perspective, the existing legislation is not a barrier at all but simply mirrors the process it uses whenever it is presented with an opportunity to sell all or some of its assets to any party, regardless of whether it is to a municipality, public corporation or private investors. Any offer of a purchase of assets is evaluated by management and if management determines the transaction offers shareholders superior value and is consistent with the public interest (the legal standard for DPU approval), then it has a fiduciary responsibility to its shareholders to proceed with the transaction or to recommend Board or shareholder approval of the transaction if such approval is required.

Local Control

One attribute of municipalization whose value is difficult to quantify is the attribute of local control. A new municipal utility, by definition, will allow for greater control and input by residents into utility investment policies and decisions, services and service levels. Unlike IOUs, a municipal utility is owned and controlled by the municipality through its local utility board, over which residents can exercise a much greater level of control. The presumption is that the electric municipal utility's "shareholders" share more common interests than those of the IOU and are likely to make different choices than those made by the IOU as well as be more responsive to local needs and issues.

From the perspective of the DPU and IOUs, the service quality standards approved and enforced by the DPU address the interests of all customers. While these standards do not cover every aspect of an electric utility's operations and are not location specific, they do cover every important service provided by electric utilities relating to system reliability, safety and other aspects of the customer's experience.

Finally, greater local control has potential implications for the Commonwealth's energy policy objectives. Existing municipal utilities are exempt from implementing many of the state's energy policies. Those policies include robust energy efficiency programs, renewable portfolio standards, net metering, retail competition and a variety of other initiatives under the Green Communities Act. While many municipal utilities have voluntarily adopted various aspects of the Commonwealth's energy policies, many have not. In addition, the initiatives of those municipal utilities that have adopted portions of these policies are far less robust than those of the IOUs in both scope and size. Serious consideration should be given to requiring new municipal utilities to comply with the Commonwealth's goals and initiatives regarding its energy future.

It was not the intent of this study to reach definitive conclusions regarding whether electric municipalization is, or is not, a desirable outcome. Moreover, that conclusion can only be reached by evaluating a specific transaction against a set of objectives and goals that may vary from municipality to municipality, and perhaps sometimes even between a municipality and the Commonwealth.

Regards,

Philip Giudice,
Commissioner

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January 28, 2010

The Honorable Michael W. Morrissey
Joint Committee on Telecommunications, Utilities & Energy
State House – Room 413-D
Boston, MA 02133

Re: Municipal Utility Report

Dear Chairman Morrissey,

Pursuant to Section 107 of the Green Communities Act of July 2, 2008 ("the Act"), the Massachusetts Department of Energy Resources ("DOER") was required to conduct a study to examine potential impacts of municipalization of electric utility systems, which are primarily owned and operated by private investor-owned utilities ("IOUs"). In particular, Section 107 reads:

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received and every effort was made to incorporate relevant issues identified by commission members in a fair and balanced manner.

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Finally, greater local control has potential implications for the Commonwealth's energy policy objectives. Existing municipal utilities are exempt from implementing many of the state's energy policies. Those policies include robust energy efficiency programs, renewable portfolio standards, net metering, retail competition and a variety of other initiatives under the Green Communities Act. While many municipal utilities have voluntarily adopted various aspects of the Commonwealth's energy policies, many have not. In addition, the initiatives of those municipal utilities that have adopted portions of these policies are far less robust than those of the IOUs in both scope and size. Serious consideration should be given to requiring new municipal utilities to comply with the Commonwealth's goals and initiatives regarding its energy future.

It was not the intent of this study to reach definitive conclusions regarding whether electric municipalization is, or is not, a desirable outcome. Moreover, that conclusion can only be reached by evaluating a specific transaction against a set of objectives and goals that may vary from municipality to municipality, and perhaps sometimes even between a municipality and the Commonwealth.

Regards,

Philip Giudice,
Commissioner

MUNICIPAL UTILITY STUDY

Technical Report
January 28, 2010

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Massachusetts Department of Energy Resources

Creating a Greener Energy Future for Commonwealth

www.mass.gov/doer

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Appendix A: Questions/Issues for Commission Member Interviews

Appendix B: Rates Data, 2004-2008

Executive Summary

A. Purpose of Study

Section 107 of the Green Communities Act of July 2, 2008 ("the Act") requires the Massachusetts Department of Energy Resources ("DOER") to conduct a study that includes an examination of various impacts of municipalization of electric utility systems, which are primarily owned and operated by private investor-owned utilities ("IOUs"). In particular, Section 107 reads:

> *"The department of energy resources shall conduct a study of the fiscal impact, viability, statutory and regulatory barriers and long-term results of establishing and operating municipal-owned electric utilities in the commonwealth."*

The DOER, with the assistance of La Capra Associates, has assembled information that provides background information and some pertinent basic analyses on the issues associated with formation of municipal utilities for use by the legislature, regulators such as the Department of Public Utilities ("DPU"), and other interested parties as electric service municipalization policies are considered. The study's findings provide a number of important insights into the current differences between municipal electric utilities and investor-owned utilities in the Commonwealth, and the process and potential impacts of establishing new municipal utilities. In all events, however, it should be evident that the consideration of establishing any specific municipal utility will pose unique issues that will require situation-specific assessments. The circumstances of each will vary somewhat and proper due diligence will be required in each case.

B. Potential Reasons for Establishing New Municipal Electric Utilities

The potential benefits of electric service municipalization put forth by proponents fall into four general categories. They are 1) reduced costs of electricity service, 2) more flexible supply options, 3) better system reliability and service, 4) more local control.

The analyses and discussion contained in this report attempt to provide some insight on these issues. This study is based on data available from public sources as well as specific information that was supplied by the Commonwealth's four investor-owned distribution companies and by some existing municipal electric utilities. In most cases, averages are utilized for the purpose of making comparisons. Average data, however, has limitations in its applicability to specific circumstances so we re-emphasize that the value of this study is not to determine the costs and benefits of a particular municipality creating an electric utility but rather to provide policymakers some insight into core differences between IOUs and both new and existing municipal electric utilities as well as issues related to their creation.

C. Findings

The data discussed below touches on a number of issues from valuation of assets to financing to overall rates of the different types of utilities, but does not draw any broad conclusions on whether municipal utilities are preferred to IOUs. It is important to note there are significant distinctions between existing municipal utilities and creating a new one. Except for several relatively small expansions of existing municipal utilities, no new municipal electric utility has been formed in Massachusetts since 1927 when the Town of Chester acquired the Chester Electric Light Company. Consequently, distinctions must be considered before concluding that a new municipal utility will have all the attributes of a typical existing municipal utility. For example, under current federal tax law a municipality is not able to use tax exempt general obligation bonds to purchase the assets placing a higher debt burden on that municipality. In addition, while existing municipal utilities have lower power costs than IOUs, their ownership of power plants and long term contracts for power have provided them with a hedge against rising power costs. New municipal utilities may not have such an advantage.

There are also several factors that skew comparisons of municipal utilities with IOUs. IOUs must comply with the Commonwealth's energy initiatives such as the Renewable Energy Portfolio Standard (RPS), but from which municipal utilities are exempt. There are also other state energy initiatives such as the newly expanded energy efficiency plans that are funded in part through a mandatory surcharge of $0.0025 per kWh. These plans provide a range of services, rebates, and opportunities for utility customers to reduce their usage and their bills. Municipal utilities are not required to assess such a charge, and are far more limited in their resources to conduct such expansive plans.

These issues and others are discussed in more detail below, but it is important to note that any conclusions drawn from this data largely represent a snapshot of conditions at this time. It is a recurring theme throughout this report that it was not the intent of this study to reach definitive conclusions regarding whether electric municipalization is, or is not, a desirable outcome. Moreover, that conclusion can only be reached by evaluating a specific transaction against a set of objectives and goals that may vary from municipality to municipality, and perhaps sometimes even between a municipality and the Commonwealth.

a. <u>Valuation</u>

For purposes of valuing distribution system assets, asset-based valuation methods (with some elements from earnings-based methods) are most relevant. The asset-based valuation method typically used for setting a utility's rates is original cost less depreciation ("OCLD"), also referred to as "net book." That is, it is the value of the assets (so-called rate base) on which the IOU's equity investors are entitled to earn a return and is the value of the assets in the most recent balance sheet. Another major asset-based valuation method utilizes replacement (or reproduction) cost new less depreciation ("RCNLD") instead of original cost. Use of RCNLD will result in higher valuations than use of the net book method. Replacement cost new less

depreciation has been used in other states as a valid way to measure fair market value of utility assets.

The most recent case involving acquisition of electric distribution assets by a Massachusetts municipality occurred in 1994 and involved the town of Stow seeking to create a municipal electric utility by acquiring the distribution assets of the Hudson Light and Power Department, a municipal utility that serves the town of Stow. That decision by the DPU valued the assets by utilizing an equal weighting of the OCLD method and the RCNLD method and resulted in a valuation that was approximately ten times the net book value of the facilities. The Massachusetts Supreme Judicial Court ("SJC") upheld the DPU's decision in that case with respect to the valuation methodology.

In a Massachusetts Appeals Tax Board ("ATB") decision issued December 16, 2009, the ATB ruled on the market value of National Grid's natural gas assets as a result of its appeal of the City of Boston's assessment of those assets for tax purposes. The ATB adopted essentially the same methodology utilized by the DPU in the Stow Hudson case and cited its reliance on the decision of the SJC in the Stow Hudson case. This decision resulted in a valuation equal to 1.56 times net book value. Although each of these cases used virtually the same valuation methodology, how that valuation relates to the net book value will be highly dependent on the types, age and condition of the facilities being valued.

Merger and acquisition ("M&A") activity can also provide some insights into the range of possible premiums above net book value that may be involved in purchases of utility assets. It is virtually certain that incumbent utilities will seek some form of acquisition premium and, if paid, these premiums will need to be included in the rates of the new municipal utility. For uncontested acquisitions, data (from 1995-1999) related to utility mergers and acquisitions show that assets have been acquired between 121 and 134% of net book value; contested acquisitions have resulted in even higher acquisition premiums, with examples from California and Oregon showing prices over 200% of net book value.

b. <u>Financing</u>

The Omnibus Budget Reconciliation Act of 1987 included provisions that "declare taxable as a "private activity bond" any bond issue if the lesser of 5% or $5,000,000 of the bond proceeds is used to acquire any interest in "output facilities" previously used or held available for use by a nongovernmental entity. This Budget Act effectively precludes a municipality from using tax-free general obligation bonds to finance the acquisition of an investor-owned electric distribution company's assets. The 1987 tax law does allow a number of exceptions to its general rule and allows a municipality to issue tax-exempt "private activity bonds" or "PABs", as long as a number of tests are met. The most significant test is the allocation of the "unified state volume cap." Because of the foregoing cap, there is competition for these funds and the allocation of these funds for specific purposes will depend on the particular state and its current

overall policy goals. PABs can also be, and are, used for a number of other purposes, including exempt mass commuting, water, and other public infrastructure facilities; mortgages; student loans; redevelopment projects; and enterprise zone facilities, among others.

c. Overall rates

Over the 2004-2008 period, municipal utility rates in Massachusetts have been substantially lower, on average, than IOU rates. Collectively, the growth in overall rates since 2004 has also has been higher for the IOUs than for existing municipal utilities. This growth in overall rates for both municipal utilities and IOUs is principally related to higher power supply costs. In 2008, the average system rate for municipal utilities was 13.34 cents per kWh and for IOUs was 16.90 cents per kWh or about 21% lower.

A new municipal utility, however, will likely have higher rates than the typical existing municipal utility. Higher debt levels and the inability to access tax-exempt debt for acquiring the assets are the principal factors driving distribution costs higher. Costs will be impacted to the extent a new municipal utility continues to be subject to State mandates such as energy efficiency and renewable portfolio standards. With respect to power supply costs, a new municipal utility will not have the benefits of power plant ownership or long-term power plant entitlements and contracts, which significantly contribute to existing municipal utilities' lower power supply costs.

d. Distribution costs

Average distribution costs over the 2007-2008 period were lower for municipal utilities than for IOUs. While average O&M expenses and administrative and general expenses were lower for IOUs than for municipal utilities, including taxes, debt cost and income resulted in the average IOU distribution costs being about 1 cent per kWh higher than the average for municipal utilities. Again, for new municipal utilities, this difference will be significantly impacted by both higher financing costs and higher debt levels as compared to existing municipal utilities.

e. Power supply costs

Generation costs are generally lower for municipal utilities than for IOUs: 9.88 cents versus 11.55 cents in 2008. There are a number of factors which cause this difference. IOUs are limited to current procurement rules and regulations based on the 1997 Restructuring Act and cannot diverge from these rules unless they petition and receive approval from the DPU. These rules were developed to foster development of competitve retail markets. Municipal utilities are not subject to these rules and utilize a different power procurement strategy that relies on a more diverse portfolio approach. In addition, municipal utilities still own power plants or have long-term contractual entitlements to the value of power from power plants, which have served as a hedge against increasing power supply costs. Also, municipal utilities have no risk of customers migrating to competitive suppliers

since they are not required to offer retail choice. This has enabled them to secure medium and longer-term power supplies with little risk that those power costs will become stranded. It is unclear whether a new municipal utility can achieve power supply costs comparable to a typical existing municipal utility since it will need to build an entirely new supply portfolio without the benefit of attractive long-term contracts or power plant ownership enjoyed by most existing municipal utilities.

f. Taxes

Municipal utilities are exempt from state and federal income and municipal property taxes. Most municipal utilities do provide payments in lieu of taxes ("PILOTs") to the town or towns they serve. Though the amounts of the PILOTs vary by municipal utility, taken as a whole the PILOTs are similar to what IOUs paid in municipal taxes in 2008. Municipalization will cause tax collections at the state and federal level to decrease.

g. Energy Efficiency

As required by existing statute, energy efficiency programs have been a significant part of electric utility offerings in the Commonwealth. Historically, these programs have been funded by a mandatory $.0025 per kWh charge. Upon passage of An Act Relative to Green Communities, Chapter 169 of the Acts of 2008 ("Green Communities Act" or "GCA") signed into law on July 2, 2008, energy efficiency was granted a significantly greater importance as one of the Commonwealth's energy resources. Program offerings of the investor-owned utilities and municipal aggregators for the years 2010-2011 encompass virtually every end-use of electricity and every customer segment where opportunities exist to achieve cost-effective savings (compared to the price of generation) for customers. Over the next three-year period, the proposed budget for these programs is $1.6 billion with expected savings of 2,625,600 Mwhs over the three-year period, 30,884,096 lifetime Mwhs savings and net economic benefits expected to exceed $3.7 Billion.

By contrast, energy efficiency offerings by the Commonwealth's existing municipal utilities are significantly less robust. The lack of any centralized process for development and administration of energy efficiency programs by municipal utilities results in a high degree of variability of their offerings beyond residential energy audits and appliance rebates. The relatively small scale of most municipal utilities would make it difficult for them to support the independent administration of the types of programs offered by the investor-owned utilities.

h. Low-income rates

IOUs all have programs to assist low-income customers that (a) provide discounts on distribution rates and (b) provide arrearage management programs to help customers manage their payments. These programs resulted from both statute and DPU orders. Municipal utilities, by contrast, are not required to have these programs. Based on a review of such programs conducted for this study, only

three municipal utilities—Concord, Belmont North Attleboro—currently offer programs for low-income customers.

Though not many municipal utilities have low-income programs, the data shows that for 2008, the average municipal utility overall rate for residential customers was lower than the low-income rate charged by each of the four IOUs. This finding is largely a result of the higher generation costs that IOU customers pay through basic service, which is not impacted by rate discounts. Generation costs have fallen significantly in 2009, especially for IOUs, thus the actual difference between low-income customers in the different service territories will largely depend on the cost of generation service. As already noted, since a new municipal utility will likely have different power supply and distribution costs than most existing municipal utilities, the impacts on low-income customers for a new municipal utility are difficult to estimate.

i. Reliability

In Massachusetts, all IOUs collect and report reliability performance using a common set of definitions and are penalized if reliability metrics are below reference levels (which differ for each utility and are based on historical performance and expectations for improvements). It appears that for municipal utilities, however, reliability data that is collected is not collected in a consistent manner, either among the municipal utilities themselves or between municipal utilities and the IOUs. Though the data reviewed for this study are a small sample of the 41 existing municipal utilities, almost all the data points tend to support the position that existing municipal utilities provide reliable service at comparable levels to the IOUs. Over the long-term, there is no reason to believe that a new municipal electric utility could not achieve comparable reliability performance as existing municipal utilities or IOUs.

j. Legal and Regulatory Barriers

This report identifies several areas which potentially are barriers to municipalization efforts. The most significant and contentious issue related to municipalization, however, is whether there needs to be a legislative mandate requiring the incumbent investor-owned electric distribution company to sell distribution assets to a municipality. In order for a transaction to occur, there must be both a willing buyer and a willing seller. M.G.L. Chapter 164, Section 43 describes the process by which a new municipal light plant can be formed. Nothing in that legislation requires a sale by the IOU. The DPU can act as an arbiter to determine fair market value, but even then the IOU is not required to sell at that price or any other price.

Proponents of municipalization argue that the lack of a requirement to sell at fair market value permits the IOU to thwart any efforts towards municipalization and represents the most significant barrier to municipalization. In addition, the uncertainty of whether a transaction will occur at any price effectively deters

municipalities from investing the resources necessary to determine whether municipalization would be desirable.

From the IOUs perspective, the existing legislation simply mirrors how transactions occur in a competitive market. Any offer of a purchase of assets is evaluated by management and if management determines the transaction offers shareholders superior value and is consistent with the public interest (the legal standard for DPU approval), then it has a fiduciary responsibility to its shareholders to proceed with the transaction or to recommend shareholder approval of the transaction if such approval is required.

k. Local Control

A significant attribute of municipal utilities that is difficult to quantify is the attribute of greater local control. A new municipal utility will allow for greater control and input by residents into utility investment and policy decisions. Unlike IOUs, the utility is owned and controlled by the municipality, over which residents can exercise a much greater level of control. The presumption is that the electric municipal utility's "shareholders" share more common interests than those of the IOU and are likely to make different choices than those made by the IOU. There are, however, public policy implications for the Commonwealth associated with greater local control of electric utility services.

Creation of new municipal electric utilities under the same rules and regulations that apply to existing municipal electric utilities may dilute the effects of many of the Commonwealth's initiatives under the Electricity Restructuring Act, the renewable energy portfolio standards, and the Green Communities Act. It is certainly possible, however, to create a set of rules and regulations for new municipal electric systems that would not have these dilutive effects.

D. Conclusions

There are a number of economic and technical barriers to formation of a new municipal utility. While existing municipal utilities provide lower rates to customers at reliability levels comparable to those provided by the IOUs, it is unclear whether such benefits can be replicated by a new municipal utility.

The following are the primary factors that will most influence the ultimate costs and rates of a new municipal utility. Costs such as cost and amount of debt will be very specific to the municipality and the facilities that serve it. These factors are:

- Asset purchase price
- Start-up costs, i.e., costs associated with the development of the infrastructure necessary to operate an electric distribution system

- Costs to enable the municipality's distribution system to operate independently from the IOU's system
- Cost and amount of debt incurred
- Power supply procurement strategy

Existing municipalities that are customers of an IOU may be able to implement a supply procurement strategy different from that of the IOU without acquiring distribution assets. Under current Massachusetts law and regulations, current IOU customers are free to choose a competitive supplier for their generation service and/or form an aggregation. In Massachusetts, municipalities can be aggregators for its residents and businesses. The municipality can follow a supply acquisition strategy similar to what it would implement as a municipal utility.

I. Introduction

The Massachusetts Department of Energy Resources ("DOER") has reviewed the underlying issues and potential impacts of establishing and operating municipal-owned electric utilities in the commonwealth and offers this report documenting that review. DOER conducted this study with technical assistance provided by La Capra Associates, Inc. and in consultation with a Commission comprised of various stakeholders and government officials (discussed below). Section 107 of the Green Communities Act of July 2, 2008 ("the Act") requires the DOER to conduct a study that includes an examination of various impacts of municipalization of electric utility systems, which are primarily owned and operated by private investor-owned utilities ("IOUs"). In particular, Section 107 reads:

> *"The department of energy resources shall conduct a study of the fiscal impact, viability, statutory and regulatory barriers and long-term results of establishing and operating municipal-owned electric utilities in the commonwealth."*

The goal of this report is to meet the requirements of Section 107 of the Act. The DOER has assembled information that provides background information and some pertinent basic analyses on the issues associated with formation of municipal utilities for use by the legislature, regulatory bodies, such as the Department of Public Utilities ("DPU"), and other interested parties as municipalization policies are considered. The intent of this document is not to determine whether municipalization of utility assets—in general or in any particular case—will be beneficial; nor should it be used for that purpose. Nevertheless, the study's findings provide a number of important insights into the current differences between municipal electric utilities and investor-owned utilities in the Commonwealth and the process and impacts of establishing new municipal utilities. In all events, it should be evident that the consideration of establishing any specific municipal utility will pose unique issues that will require situation-specific assessments. The circumstances of each will vary somewhat and proper due diligence will be required in each case.

Municipalization can be defined generally as the transfer of ownership of property from one entity (either a private or government entity) to a municipal entity, typically at the town or city level in New England, but often at the county level in other parts of the country. For the purposes of this study, we focus on the acquisition of electric utility assets from investor owned utilities ("IOUs"). But municipalization can also consist of the acquisition of other assets, such as water and natural gas infrastructure; and it can involve the sale of assets from an existing municipal utility -- serving more than one town – to a town that wants to establish its own municipal utility. A relatively recent example of this in Massachusetts was the attempted purchase of utility assets, in the mid-1990s, by the town of Stow from the incumbent Hudson Municipal Light Utility. That municipalization effort was abandoned and Hudson Municipal Light continues to serve the town of Stow.

Municipalization, of course, is not a new idea. In Massachusetts, except for formation of Devens in 1996, the other 40 municipal utilities were all formed prior to 1915—with over 1/3 of these founded in the 19th century. Nationally, most publicly owned utilities were also established prior to 1950 and there has been slow growth in the number of utilities since 1986. However, while

the number of investor-owned utilities has fallen over this time period, the number of publicly owned utilities has increased. Industry consolidation can account for some of decrease in the number of IOUs. But the IOU percentages of total sales and of the total number of customers have also decreased, while they have increased for publicly owned utilities and cooperatives.

Exhibit 1 below shows the number of full service (or vertically integrated entities that deliver as well as procure or generate power) energy providers by type. Data are shown for IOUs, publicly owned utilities ("POUs"), which include municipalities, state power agencies, and municipal marketing authorities, cooperatives[1], federal agencies, and facilities that purchase electricity directly from independent generators. Exhibit 2 shows the percentage of total customers and total sales, for each of these entity types.

Exhibit 1 – Full Service Electricity Providers by Type, 1986, 1996, 2007
United States

	1986	1996	2007
IOUs	240	210	210
Publicly owned[2]	1928	1953	2009
Cooperatives	905	873	883
Federal	6	7	9
Facility	0	0	55
Total	3079	3043	3166

Source: EIA

[1] Unlike municipal utilities, cooperatives are not owned by a government entity, such as a city or town. Rather, they are owned by the customers they serve and are run by a board of directors and not by any municipal or state officials. Similar to a municipal utility, they are generally non-profit with any excess returned to customers, who are located in the cooperative's service territory, or re-invested in the system. IOUs, on the other hand, are for-profit and owned by shareholders who may or may not be customers located in the IOU service territory. The data shown here are for full-service providers that deliver as well as procure or generate power. Municipal aggregators, as found in Massachusetts, are a form of cooperative but do not deliver power to its customers.

[2] The data shown are from U.S. summary statistics. Summing up data for individual states and the District of Columbia show 1951, 1959 and 1934 publicly owned utilities in 2007, 1996, and 1986, respectively.

Exhibit 2 – Percentage of Customers and Sales by Type, 1986, 1996, 2007
United States

% Of Sales	1986	1996	2007
IOUs	76.9%	75.6%	71.2%
Publicly owned	14.2%	14.6%	16.1%
Cooperatives	7.0%	8.3%	11.1%
Federal	1.9%	1.5%	1.2%
Facility	0.0%	0.0%	0.4%
% of Customers	**1986**	**1996**	**2007**
Publicly Owned	13.7%	13.7%	14.8%
Cooperatives	10.1%	11.1%	12.9%
Federal	0.0%	0.0%	0.0%
Facility	0.0%	0.0%	0.0%

Source: EIA

The increase shown in Exhibit 1 in the number of publicly owned utilities did not occur in the Northeast. Exhibit 3 shows the number of publicly owned utilities for all states in the Northeast over the past 20 years.

Exhibit 3 – Publicly Owned Utilities in the Northeast

	1986	1991	1996	2001	2007
Connecticut	6	6	7	7	8
Delaware	9	9	9	9	9
Maine	6	5	5	6	4
Maryland	5	5	5	7	5
Massachusetts	**40**	**40**	**40**	**40**	**41**
New Hampshire	5	5	5	5	5
New Jersey	9	9	9	9	9
New York	49	48	48	50	48
Pennsylvania	34	34	34	36	35
Rhode Island	1	1	1	1	1
Vermont	15	15	15	17	15
Total					

Source: EIA

Exhibit 3 shows that, except for Connecticut[3] and Pennsylvania and the non-contested formation of the Devens municipal utility, there have been no new municipal utilities created in the

[3] The increase in Connecticut publicly owned utilities was due to the formation of the Mohegan Tribal Utility Authority and the purchase of the Bozrah Light & Power Company by Groton Utilities. Both of these were non-contested.

Northeast since 1986. As we discuss below, municipalization can be an expensive and lengthy process when the acquisition is hostile (i.e., not supported by the incumbent utility). Given the age of the incumbent utilities and, at least in this part of the country, the absence of utility franchises that expire at some point in time, it seems likely that municipalization efforts in the Northeast would be more contested and thus more difficult than in other parts of the country. In some states, condemnation proceedings specifically geared toward municipalization of electric utilities are permitted.

An examination of Massachusetts-specific data shows that the publicly owned utilities' share of electricity sales has grown over the last 20 years. Exhibit 4 shows these percentages for different utility types. Interestingly, though the share of customers in publicly owned utilities has remained stagnant, their share of sales has increased. This relationship between the two implies that average consumption per customer has increased at a faster pace for publicly owned utilities than for IOUs.

Exhibit 4 -- Percentage of Customers and Sales by Utility Type, 1986, 1996, 2007
Massachusetts

% Of Sales	1986	1996	2007
IOUs	87.3%	86.4%	85.4%
Publicly owned	12.7%	13.6%	14.1%
Cooperatives	0.0%	0.0%	0.0%
Federal	0.0%	0.0%	0.0%
Facility	0.0%	0.0%	0.5%
% of Customers	**1986**	**1996**	**2007**
IOUs	87.1%	87.0%	87.0%
Publicly owned	12.9%	13.0%	13.0%
Cooperatives	0.0%	0.0%	0.0%
Federal	0.0%	0.0%	0.0%
Facility	0.0%	0.0%	0.0%

Source: EIA

There may be many possible reasons for the increased share of total electricity sales by publicly owned utilities, such as increased incomes in POU territories, greater penetration of energy efficiency measures in IOU territories, or shifts in the composition of customer base in POU territories to larger customers. This report does not attempt to study or explain the underlying trends. Nonetheless, it is important to point out both that publicly owned utilities deliver (and generate in some cases) a significant portion of Massachusetts total sales and that this share has

been increasing. Though it is true that the number of municipal utilities in Massachusetts has only increased by one over the past 80 years, municipal utilities continue to provide electricity to a substantial number of customers – about 13% of all Massachusetts customers -- and a growing share of the state's total electricity usage – about 14% of the electricity used in Massachusetts.

A. Legislative Requirements

In order to develop the scope of work for this document, we reviewed the specific legislative requirements of the Act. To begin, Section 107 lists specific provisions for this study. As written in the Act:

> *"The study shall: (a) address any existing inequities or other barriers preventing the establishment of municipal-owned electric utilities in current statutes or regulations; (b) provide a financial overview of the purchase of an investor owned utility's assets by a municipality; and (c) include a review of the impact on: reliability, investor-owned utility operations; municipal taxes; rates for both distribution company customers and municipal customers; lost revenues for investor owned utilities; effect on energy efficiency programs; the impact on capital borrowing; and impact on low-income customers*."

This document briefly discusses issues of inequities or barriers mentioned in part (a), which are largely legal issues and are based on a review of the Massachusetts general laws, interviews and review of legal analyses. In addition, there is a significant focus on sections (b) and (c): to provide a financial overview of purchases or acquisition by a municipal utility of IOU assets and to review the various impacts listed by the Act. We discuss our understanding of the meaning and definition of each below.

Reliability: Reliability of an electric system can be examined at either or both the wholesale (that is, generation and transmission) or distribution level. Because there is no reason to believe that establishment of municipal utilities will directly affect wholesale reliability, this study examines the reliability of the distribution system only. Distribution is typically defined as that part of the electric system, consisting of transformers, lines, and other equipment, that delivers energy from local substations to individual households and businesses; it ordinarily operates at voltages less than 34.5 kV[4], although it may sometimes be higher. This definition is quite broad and the property that may be included in specific municipalization efforts will differ on a case by case basis.

IOU operations: Establishment of a municipal utility should be relatively neutral in terms of the impacts on IOU operations and reliability and cost impacts on customers but would likely increase in direct proportion to the degree of municipalization. As with reliability impacts, the actual impact on operations will vary depending on the particular circumstances of the municipalization effort.

[4] Some parts of distribution systems operate at higher voltages, such as 115 kV.

Municipal taxes: For purpose of this study, municipal taxes pertain mostly to real estate and personal property taxes, but could also include excise taxes in certain instances. Payments in lieu of taxes ("PILOTs") will also be discussed.

Rates: Rates refer to the price per billing unit—kilowatt-hour ("kWh") of energy, kilowatt-month of billing demand, and/or customer-month. This study simplifies the presentation of rates by reporting average $/kWh paid by customers. Rates are broken down, where possible, into various components, such as distribution, transmission, generation, and transition or stranded cost charges in order to better understand the factors underlying differences in rates among utility companies.

Lost IOU revenues: Lost revenues are simply the lost sales from customers that are switched to a municipal utility multiplied by the revenues per unit that would normally be received by the utility companies. Thus, non-bypassable and pass-through charges, such as basic service and system-benefit charges, would not be included.

Energy Efficiency Programs: Impacts on energy efficiency programs can be in terms of availability and quality of programs. In addition, oversight and consistency with state environmental and energy goals can also be examined.

Financing or Capital Borrowing: Capital borrowing refers to the financing necessary for a municipality to acquire assets from an IOU in terms of the amounts, prices, and availability. Depending on the relative magnitude (in dollars) of the assets to be acquired and the particular IOU, there may also be an IOU financing impact.

Low-Income Customers: Low-income customers were the only group specifically identified for study coverage. There are a few legislative requirements regarding low-income customers that apply to or have been applied by IOUs uniquely. We discuss the possible impacts of these differences below.

It is important to note that it is not the purpose of this study to make any conclusions regarding whether establishment of municipal-owned electric utilities should, or should not, be encouraged. Nor will this report draw any such conclusions. As noted above, current publicly available data do not permit a definitive answer to whether municipal ownership and operation would, as a general matter, be more or less advantageous to customers than IOU ownership and operation.

In addition, to determine whether one or the other would be preferable would require significant feasibility work and be assessed against a set of principles that may vary by community or municipality. Feasibility studies may be done on a preliminary basis (using averages and estimates of the costs and benefits of municipalization to a particular town or city) so as to determine whether a municipalization is likely to be (or not be) beneficial. Any proposed transaction, however, would ultimately require more detailed cost and engineering data and analyses to assess such matters as condition of the assets to be acquired, acquisition price, financing options and costs, as well as rate and other impacts on municipal customers.

B. Study Methodology

The approach of this study is first to catalog all publicly available data for each of the above impact categories for both existing municipal utilities and IOUs. The focus is on Massachusetts-specific quantitative data, but we supplement the discussion with data from other states and qualitative analyses where relevant. Second, we analyze and explain any observable differences between IOUs and existing municipal utilities for each of the impact categories. Weighted averages for IOUs and municipal utilities as groups are used and are illustrative. But comparisons between specific municipal utilities and IOUs should not be made from these data. Third, we provide insights into whether historical differences among utilities might be applicable to new municipalization efforts.

As discussed below, the correct comparison for any specific municipalization feasibility study is between the costs and services provided currently (whether by an IOU or a municipal utility) and the costs and services to be provided by a new municipal utility. A key theme of the analysis below is that existing municipal operations and costs are not necessarily indicative of what new municipal utilities will experience. Once again, illustrative examples are used to provide additional detail to the discussion.

II. Financial Issues Involved in Asset Purchase

This section provides an overview of financial issues, as required by the legislation discussed earlier. The discussion here addresses only the direct costs associated with the possible purchase of IOU assets. In addition to these direct costs, there are also costs of up-front feasibility work and other costs that might require financing. These are not included. Finally, this section provides a financial overview only and does not discuss in detail the various steps involved in executing or pursuing purchase of IOU assets.

Generally, the asset purchase process involves three basic steps: (a) identification of the assets to be acquired, (b) valuation of these assets, and (c) financing of these assets. In the case of acquisitions where the incumbent utility does not support municipalization, determining the purchase price and, in some cases, which assets are necessary, can become quite contentious. As the Stow-Hudson case (noted earlier) indicates, contested municipalization may involve extensive litigation before regulatory agencies and the courts. The specifics of each step in the asset purchase process, which will differ based on the circumstances of the particular purchase, can greatly impact the rates to be paid by consumers and thus the decision whether to municipalize. Certain factors or conditions can increase or reduce the costs to acquire assets in specific cases. Following a discussion of these factors, we provide an illustrative example that shows the important tradeoff between the price paid for the asset and the municipality's ability to finance the acquisition.

A. Identification

Existing statutes provide wide leeway to municipalities in what can be included in asset acquisition. Massachusetts General Laws ("M.G.L") Chapter 164, Section 34 states (emphasis added) that, "A town may, in accordance with this chapter, construct, purchase or lease, and maintain *within its limits*, one or more plants for the manufacture or distribution of gas or electricity…for municipal use or for the use of its inhabitants. Such plants may include suitable land, structures and machinery and other apparatus and appliances for…distributing gas or electricity for said purposes." It appears that this language basically allows inclusion of anything that is suitable for distributing and or generating (i.e., manufacturing) electricity as long as it is in the limits of the municipality.

Chapter 164, Section 47B provides that "any municipality acting by and through its municipal board" may "construct, purchase, operate, own, lease, rent, maintain, dispose of, share costs of, or otherwise have the right to the use, or portions thereof, of sub-transmission, transmission, distribution, and generation facilities and equipment" *outside of the limits* of the city or town. For example, municipal utilities may and do use and own (even if only a share) generation and transmission assets located outside of their boundaries. As an example, Concord owns a 115 kV transmission line—which given its carrying capacity could be considered a transmission rather than a distribution facility—that is located beyond the borders of the town and is used to connect its distribution system to the New England transmission system.

For purposes of this study, we assume that initial municipalization efforts would concentrate on acquisition of distribution-system assets located within the limits of the town or city. Transmission ownership and operation, it should be noted, would generally be subject to federal (Federal Energy Regulatory Commission), rather than state, regulation. It should be noted that existing transmission facilities are likely to serve multiple municipalities, thus involving common facilities and costs, and require more complicated operating procedures (though these could of course be contracted out). It does not seem likely that the acquisition of a share of such facilities would affect either overall transmission costs or existing reliability levels to customers; but it is likely that it would increase the complexity of the purchase. It should also be noted that federal open access rules would preclude a transmission owner from denying access to any legitimate user, including a new municipal utility. The acquisition of transmission assets, even if seen as beneficial by a proposed new municipal utility, would not usually be necessary.

Identification of the distribution system assets to be acquired in any specific instance would be done in the feasibility studies that are typically conducted by qualified firms with engineering/economic/financial expertise. The feasibility study would also identify any new assets (and the costs) that may be required to sever the new municipal utility's system from the remaining part of the incumbent utility. Stated generally, in addition to the identification of the various assets that would need to be acquired, the study would also assess the age and condition of existing assets, new investment requirements, historical operations, existing and potential rates, and so on. Inherent in the feasibility process would also be an assessment of the municipality's financing options and costs. Assets beyond those currently used to serve the needs of the new municipal utility may need to be constructed or purchased to sever the new municipal utility system and would also need to be identified.

If any proposed municipalization is to go forward under current Massachusetts law, Chapter 164, Section 43, the buyer and seller must agree on the assets to be included, as well as the purchase price. If the buyer and seller cannot come to such an agreement, the proposed new municipal utility may seek a determination from the Department of Public Utilities ("DPU") based on a "public interest" standard. Following the DPU determination, the seller may still disagree and reject the offer, in which case the buyer's only option (other than the courts) is to construct its own municipal electric distribution system, which is not a practical option for municipalities.

The acquisition of streetlights by municipalities, allowed by Chapter 164, section 34A, provides another illustration. Even in the case of streetlight purchases—where it would appear to be relatively clear which assets are to be included—there have been disputes between parties that have been referred to the DPU for resolution. The law defines the assets to be included as "all or any part of such lighting equipment." The DPU has further refined this definition to exclude any equipment whose purpose is to provide distribution (rather than lighting) service and to include any equipment whose principal use is to provide street lighting service. Obviously, the identification and pricing of the entire range of distribution system assets would entail a greater level of complexity.

B. Valuation

As the foregoing discussion – and historical precedent—illustrates, the determination of a price of the assets may be contentious. Chapter 164, Section 43 provides some guidance concerning the methodology for arriving at asset prices, whether or not agreed between the parties:

... having in view the cost of the property less a reasonable allowance for depreciation and obsolescence, and any other element which may enter into a determination of a fair value of the property so purchased, but such value shall be estimated without enhancement on account of future earning capacity or good will, or of exclusive privileges derived from rights in the public ways."

The statutory language is broad, first indicating that cost of property less depreciation is one option but also granting flexibility to the DPU in calculating a fair market value (as long as this fair market value does not include any allowances for future income or earning potential.) Further guidance regarding the issue of future earning capacity is found in a 1997 Massachusetts Supreme Judicial Court ("SJC") opinion in the Stow-Hudson case in which Stow was seeking to acquire the local assets of the Hudson Light Department. In that case, which began in November of 1994, the town of Stow was attempting the acquisition of assets owned by an incumbent utility that was a municipal utility (rather than an IOU). The lack of agreement on assets to be acquired and their price eventually led to a determination by the DPU; it is the only such case, post-1940, under current law. Both Stow and Hudson appealed the DPU decision to the SJC.
At a high level, there are three major types of valuation methods: (a) asset-based valuation, which value businesses based on their saleable assets, (b) earnings-based valuation, which can be based on either historical earnings or future earnings and involve inclusion of goodwill on top of the value of the assets, and (c) market-based valuation, which examines sales of comparable

assets or businesses. In addition to these groupings, there can be hybrid techniques that combine facets of two or more valuation methods (often a combination of earnings-based and asset-based approaches).

For purposes of valuing distribution system assets, asset-based valuation methods (with some elements from earnings-based methods) are most relevant; the difficulty in finding comparable sales for utility service territories (or parts thereof) renders unreliable the use of comparable sales methods. The asset-based valuation method typically used for setting a utility's rates is original cost less depreciation ("OCLD"), also referred to as "net book." That is, it is the value of the assets (so-called rate base) on which the IOU's equity investors are entitled to earn a return and is the value of the assets in the most recent balance sheet. In Massachusetts today, given the age of the underlying assets, it is expected that net book will generally be lower than earnings based methodologies.

Another major asset-based valuation method utilizes replacement (or reproduction) cost new less depreciation ("RCNLD") instead of original cost. Use of RCNLD will result in higher valuations than use of the net book method. Though not used for ratemaking purposes in Massachusetts, RCNLD has been used in other states as a valid way to measure fair market value of utility assets.

The language in Section 43 of Chapter 164 of the Mass General Laws appears to be broad with respect to determining fair value of utility assets and grants the DPU a significant degree of flexibility in making such a determination. The Stow-Hudson case provides an interesting illustration of how estimates of value can differ depending on which asset-based valuation method is used and the underlying assumptions. Due to the inability of the towns of Stow and Hudson to agree on the purchase price for Hudson's assets, Stow petitioned the DPU for a determination of purchase price. Both Stow and Hudson utilized an asset-based valuation method to determine the purchase price of the assets. Not surprisingly, Stow argued that original cost minus depreciation ("net book") should be used to determine the purchase price. Hudson, on the other hand, argued that RCNLD was appropriate but also provided its own version of net book, which was based on a reproduction cost deflated to the time of original purchase.

The differences between the two parties' estimates were large. Stow argued for a value of $254,613 based on a more traditional calculation of net book. Hudson's estimates ranged from $2.1 million to almost $4.9 million. The lower number was based on Hudson's estimate of net book which was based on reproduction cost new less depreciation but scaled back for inflation to the original purchase date of the assets; the higher number was based on current reproduction cost less depreciation. The DPU did not fully agree with either party but settled on a value of a little over $2.5 million, which is closer to Hudson's lower estimate; the DPU arrived at this valuation by utilizing 50% original cost less depreciation plus 50% reproduction cost new less depreciation, adjusted based on the physical condition of the assets. The $2.5 million valuation was about ten times (10x) net book value, which likely would have resulted in a significant increase in distribution rates for Stow electric customers had the transaction gone forward at that price.

Earnings-based approaches attempt to value the assets based on the earnings that would be foregone to the incumbent utility. Some states, such as Connecticut, require that fair market value consider the earning capacity of the assets based on the incumbent utility's actual earnings at the time of proposed acquisition. These approaches implicitly consider the possibility that assets may provide earnings beyond their useful life. Thus, the values produced by these approaches would generally be higher than net book by, at least conceptually, the estimated value of these "excess earnings". The results may or may not exceed replacement cost methods depending on the particular assumptions used in the analysis.

Merger and acquisition ("M&A") activity can provide some insights into the range of possible premiums above net book value that may be involved in purchases of utility assets. An acquisition premium is prevalent in M&A cases and can be defined as the amount or price paid in excess of net book value but usually involves premiums over market rather than book value (and requires the existence of synergies or cost reductions to justify premiums); it is consideration for the possibility that the shareholders will earn equity returns in excess of the return on rate base valued at net book. Though the decision of whether to allow recovery of the acquisition premium from ratepayers varies from state to state, it is clear that premiums are paid despite the use of net book for ratemaking purposes. From the perspective of the municipality seeking to acquire assets, it is almost certain that incumbent utilities will seek some form of acquisition premium and, if paid, these premiums will be included in the rates of the new municipal utility. For uncontested acquisitions, data (from 1995-1999) related to utility mergers and acquisitions show that assets have been acquired between 121 and 134% of net book value; contested acquisitions have resulted in even higher acquisition premiums, with examples from California and Oregon showing prices over 200% of net book value and some studies estimating prices over 300% of net book value. [5] The above premiums over book value (for M&A activity) are mostly based on data involving acquisition of IOU assets or plant by another IOU. In the Stow-Hudson case, the premium over net book ranged from 0 %(as calculated by Stow) to 2000% (as calculated by Hudson). As noted above, the DPU eventually settled on 10x net book value, or 1000%. It is important to note that this premium over net book is specific to the Stow-Hudson case.

A recent decision (dated December 16, 2009) by the Appellate Tax Board ("the Board") of the Commonwealth cited the Stow-Hudson case and the Massachusetts Supreme Judicial Court's decision supporting the methodology used by the Board in determining fair market value. In that appeal, Boston Gas (now owned by National Grid) appealed the 2004 assessment of its property by the City of Boston following the denial by the City of an abatement application. National Grid essentially argued that property should be assessed at net book value, which is generally the current practice throughout the Commonwealth for distribution assets. The City of Boston, on the other hand, utilized the RCNLD method described above. The Board ultimately decided on a value that weighted equally book value and the replacement cost new value, which resulted in a valuation at approximately 156% of net book value.

[5] "The Economics of Electric System Municipalization", Bay Area Economic Forum, October 2001. The most recent large utility acquisition in the US, the sale of PacifiCorp to MidAmerican, was at considerably less than net book value. More recent data are available at a cost but acquisition premiums do not appear to have fallen since that time.

An additional potential valuation issue was raised by this case. In its appeal, NGRID's expert witness made a distinction between the enterprise value of a company and the value of its rate-regulated utility assets which are included in its rate base, stating they may be quite different. NGRID's expert gave examples of sources of economic value associated with an enterprise, as distinct from its rate-regulated utility property, which include various intangibles such as intellectual property, brand name, management acumen, customer base, workforce attributes, relationships with suppliers, use of inventory, ability to raise and manage cash, specialization in operations of a particular type of asset, and economies of scale. The Board found credible the expert's distinction between the enterprise value of an entity and the value of its rate-regulated utility property but it found unsubstantiated only NGRID's insistence that any amount paid for a utility above the net book value of its rate-regulated utility property was associated wholly with the utility's enterprise value as distinct from the value of its rate-regulated property. It should be noted, therefore, that this view of value extends beyond the specific value of the stand-alone assets that are to be acquired, but may also be affected by the impact that removing those assets from an IOUs operations might have on the IOU's remaining assets or enterprise value. For example, if the level of municipalization that occurs negatively impacts the IOU's ability to raise and manage cash, its economies of scale or its remaining customer base, how would that diminished value be measured and reflected, if at all, in the value of those assets being sold.

C. Financing

In addition to a determination of the assets to be acquired and the purchase price is the need to examine the options and costs of financing the acquisition. Though purchase price is critical, it is the combination of purchase price and a financing rate that determines the dollar amount (or the financing portion) that will be included in rates and charged to customers. One of the perceived cost advantages of municipal utilities over IOUs is the ability to use all-debt financing versus the debt-equity financing done by the IOUs. Equity is more risky than debt, since shareholders only receive dividends after debt owners have been paid. Consequently, expected rates of return on equity are higher than the cost of debt in any particular transaction. Municipalities can issue general obligation ("GO") bonds to fund various investments within the town, such as for school or wastewater treatment facility construction. GO bonds rely on the power of a municipality to tax its citizens as the credit backstop to the bonds; revenue bonds, on the other hand, generally rely on project or enterprise revenues (that is, non-tax dollars) to secure the financing. Municipalities in Massachusetts do not have the ability to issue revenue bonds, which is granted statutorily to certain entities, unless they successfully petition the legislature to do so. Various authorities in Massachusetts issue revenue bonds, such as the Massachusetts Water Resources Authority ("MWRA"), which backs its bonds with its ability to collect water and sewer fees from its customers. Because revenue bonds rely on non-tax collections – and are generally perceived as being more risky -- they almost always command higher rates than GO bonds. Some municipal entities in Massachusetts, such as the Braintree Electric Light Department, have successfully petitioned the legislature for the ability to issue revenue bonds.

Another perceived cost advantage for municipal utilities is their ability to utilize (federally) tax-free debt, which carry lower rates than taxable GO bonds. Existing municipal utilities do use tax-free GO bonds to fund expansion or improvement of their existing distribution systems or to acquire generation assets. However, these bonds cannot be used for acquisition of private utility

systems or assets. The Omnibus Budget Reconciliation Act of 1987 included provisions that "declare taxable as a "private activity bond" any bond issue if the lesser of 5% or $5,000,000 of the bond proceeds is used to acquire any interest in "output facilities" previously used or held available for use by a nongovernmental entity."[6] Generation and transmission facilities are included as output facilities and, since IOUs are considered "nongovernmental" entities, this provision applies to IOU assets.

The 1987 tax law does allow a number of exceptions to its general rule. From the perspective of a municipality seeking to acquire IOU assets, the law does allow the municipality to issue tax-exempt "private activity bonds" or "PABs", as long as a number of tests are met. These PABs essentially have the same tax advantages as tax-exempt GO bonds. The American Public Power Association ("APPA") memo (footnote below) describes an 11-part test that must be passed for a municipality to issue tax-exempt private activity bonds; the most significant test is the allocation of the "unified state volume cap." Because of the foregoing cap, there is competition for these funds and the allocation of these funds for specific purposes will depend on the particular state and its current overall policy goals. With regard to state policy and the possible utilization of PABs for a municipalization, it should be noted that PABs can also be used for a number of other purposes, including exempt mass commuting, water, and other public infrastructure facilities; mortgages; student loans; redevelopment projects; and enterprise zone facilities, among others.

In Massachusetts, the Executive Office for Administration and Finance ("ANF") is responsible for managing the state volume cap on private activity bonds. Federal law limits the amount of tax-exempt bonds that charitable organizations and public entities can issue in each year. The table below shows the annual allocations of this volume cap for the 2002-2007 time period.

Exhibit 5 – Allocation of Massachusetts Volume Cap for Private Activity Bonds 2002-2007

Organization	2002	2003	2004	2005	2006	2007
MEFA	134,612,519	135,000,000	135,000,000	160,000,000	190,000,000	154,010,429
MDFA	143,677,202	168,809,402	166,291,052	180,000,000	262,321,320	200,000,000
MHFA	202,799,025	200,494,025	230,004,477	180,004,477	200,000,000	175,000,000
Public Housing						22,161,405
Volume Cap	453,844,747	526,810,077	553,295,529	535,106,718	652,321,320	551,171,834

Source: Commonwealth of Massachusetts, Executive Office of Administration and Finance

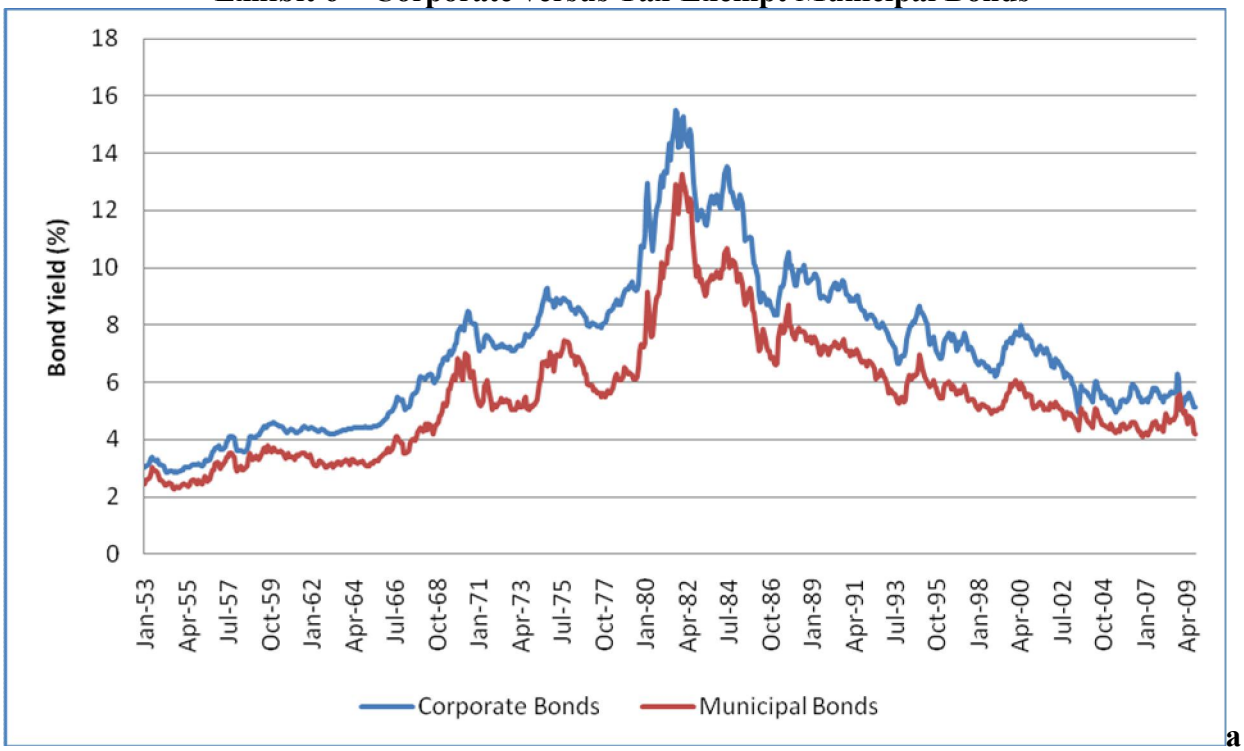
Historically, ANF has allocated most of the volume cap to three agencies—the Massachusetts Education Financing Authority ("MEFA"), the Massachusetts Housing Finance Agency ("MHFA), and the Massachusetts Development Financing Agency ("MDFA"). As in prior years, the 2007 allocation featured allocations to affordable housing, economic development

[6] "New Federal Tax Law And its Effects on Public Power Utilities' Ability to Acquire Existing Non-Governmental Output Facilities," Goldman Sachs, 1988, http://www.appanet.org/files/PDFs/z_fedtax.pdf

projects, and low-cost student loans. This allocation is done on a year-to-year basis and public entities can petition ANF through the allocation process for a share of the cap. However, given the historical allocation to the three agencies in Exhibit 5, it appears likely that a municipality seeking to acquire IOU assets would have to petition the MDFA, whose mission is broadly to increase economic development in the state and thus is not specifically focused on education and student loan financing or public housing. However, even assuming that the allocation to MDFA would be available, municipalities would compete with other projects in the MDFA pipeline. In 2007, the MDFA project pipeline had projects totaling over $450 million, which is greater than the final allocation of $200 million. Whether the MDFA would find room in future allocations for municipal-utility financing cannot be predicted.

With the possibility that municipalities will not be able to issue tax-free PABs or GO bonds to acquire assets from an IOU, it is important that municipalization feasibility studies consider the possibility that taxable bond financing will be required. Taxable bonds will generally result in higher customer rates than would tax-exempt financing. Exhibit 6 shows historical bond yields for seasoned[7] corporate Aaa-rated (Moody's) bonds and 20-year municipal general obligation (mixed credit ratings) bonds since the start date from which data for both series were collected.

Exhibit 6 – Corporate versus Tax-Exempt Municipal Bonds



a

Source: Federal Reserve Board

The difference in the two yield curves mostly represents the difference in the taxability of the interest payments to bond purchasers.[8] Though there are slight differences in the databases—the

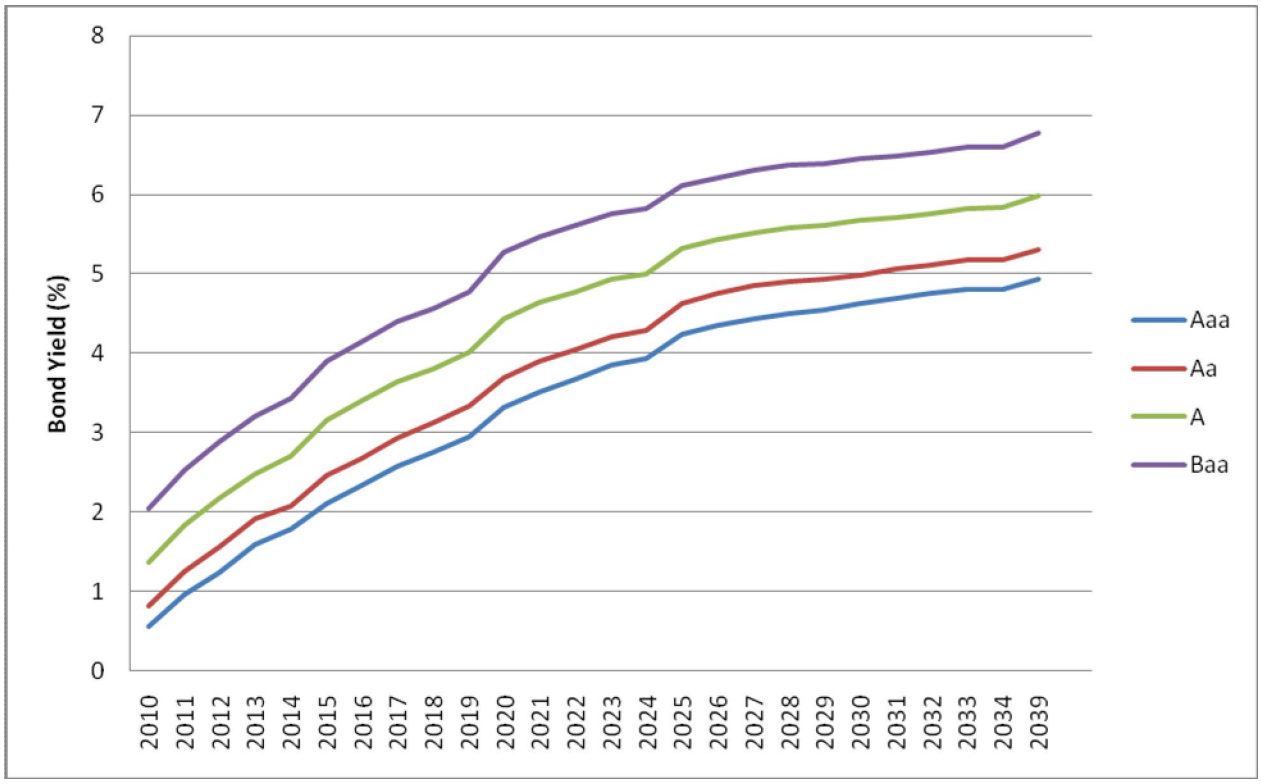
[7] Seasoned corporate bonds have yields at close to 30 years as possible but in no case less than 20 years. As such, they offer a good proxy for a corporate long-term bond.

[8] The rate difference between taxable and non-taxable bonds will depend on specific market conditions and not simply on the tax rate for the potential bond purchaser. According to an American Water Works Association study, data for the 4th quarter of 2008 shows that PABs had higher yields than taxable bonds.

corporate yield data includes long-term and higher-rated issues than the municipal bond data—these differences should not alter the relationship enough to alter the basic conclusions that may be drawn. The data show that this differential yield has varied over time; but if one takes an average over this period, the result is approximately 1.6%. Based on these data and a review of other studies[9], in this study we use a rough estimate of a 1.25% premium; that is, tax-exempt PABs or GO bonds compared to taxable government bonds are less costly by this amount. Of course, past market performance is no guarantee of future market conditions; and feasibility studies will of course have to consider the particular market conditions at the time, as well as the anticipated time for issuance of bonds (given the lag between study phase and ultimate purchase of the utility assets) and other pertinent matters.

Exhibit 7 shows current yield curves for tax-exempt municipal bonds. Data are shown for various levels of debt rating.

Exhibit 7 – Municipal Yields by Bond Rating



Source: Wall Street Journal (Delphis Hanover)

The curves show the usual positive relationship between yields and time, but there have been instances in the past where long-term rates have been lower than short-term rates. Although such inversions can happen from time to time, we think it unlikely that it will be persistent. Whether

[9] See "Study on Private Activity Bonds and Water Utilities," American Water Works Association, June 2009.

or not long term yields will exceed the historical differential for any length of time is uncertain. This report does not take a view on this question.

The important points from the data for the current study are the yields for longer term (20 and 30-year bonds) and the relationship among the different credit ratings. The data are shown in Exhibit 8.

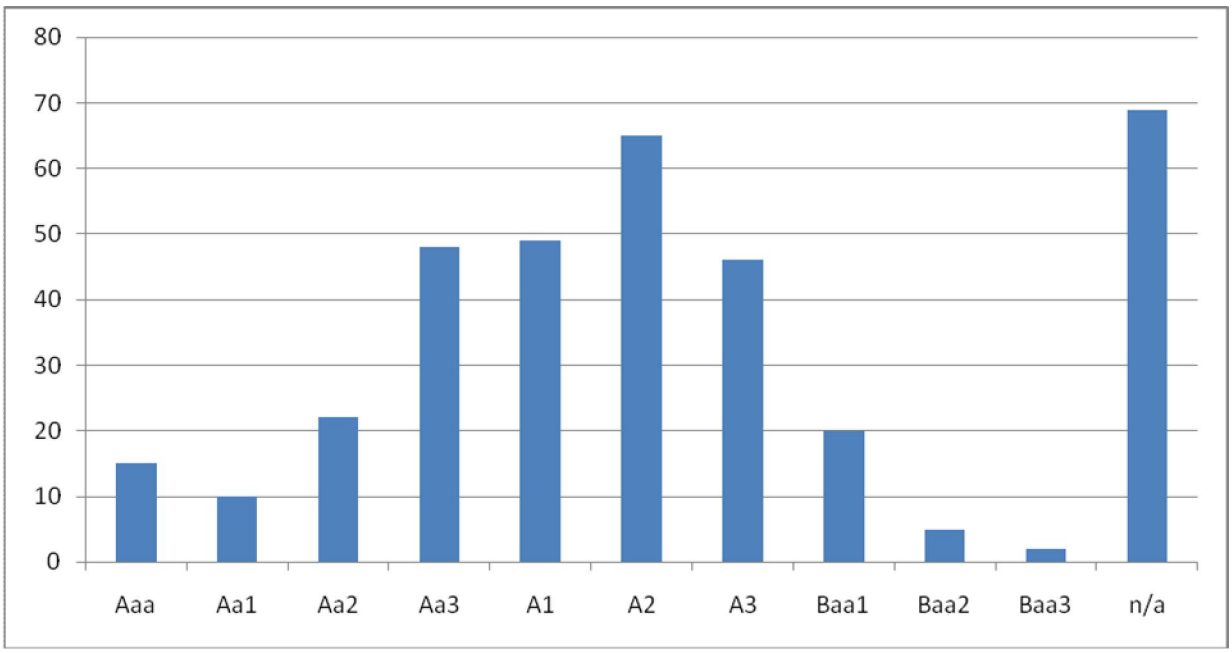
Exhibit 8 – Municipal Yields for Long-Term Bond Maturities, By Credit Rating

Maturity	Aaa	Aa	A	Baa
2029 (20-year)	4.54	4.93	5.61	6.39
2039 (30-year)	4.93	5.3	5.99	6.77

Source: Wall Street Journal (Delphis Hanover)

Ultimately, the rate that a municipality will pay will depend on the specifics and size of the bond offering, the specific financial condition of the city and town (and its rating, if it has one), and the market conditions at the time of offering. The rates shown above are average and obviously should not be interpreted as a rate that a particular town would pay for a bond offering related to an acquisition of utility assets. Actual rates may be lower or higher than the rates shown above. Exhibit 9 below shows current ratings for Massachusetts cities and towns.

Exhibit 9 –Number of Massachusetts Cities and Towns by Bond Credit Rating August 2009



Source: Massachusetts Department of Revenue

The exhibit shows that nearly 90% of rated municipalities are between Aa3 and A3 (Moody's) rated.[10] In general, Massachusetts municipalities have excellent credit ratings—no municipality is below investment-grade. The weighted average of the credit ratings above for 20 and 30-year bond rates are 5.43 and 5.81%, respectively[11]. Addition of the 1.25% premium for taxable bonds calculated previously results in illustrative financing costs of approximately 6.75 and 7.0% for 20-year and 30-year bonds, respectively.

D. Illustrative Example of the Purchase

The cost of acquiring the distribution assets is one of the major considerations in the decision and evaluation of municipalization of utility assets. For municipal utilities, there is no equity financing and all debt financing costs will be fully reflected in customer rates. Depending on the acquisition cost and the interest rate, financing costs can be the most expensive component of a customer's distribution rate.

The exhibit below is designed to illustrate only the tradeoff between financing costs and acquisition price. The data utilized represent a statewide Massachusetts IOU, consisting of weighted average data from National Grid and NStar and from Massachusetts municipal electric utilities. In addition to the various assumed interest rates and a financing period (20 years in each case), there are some restrictive assumptions that are discussed more fully following the exhibit: for example, that generation costs are the same before and after the municipalization. In addition, due to data limitations, the example does not include any possible severance costs (such as installation of meters or new distribution facilities) that would be necessary to isolate the new municipal utility's distribution system from the incumbent's distribution system.

Each row indicates a particular expense that a ratepayer would pay but which would not necessarily be separately identified on a customer bill. Normally, under unbundled rates that are found in all the IOUs but not in all current municipal utilities, customers pay a distribution-related charge (that includes operations and maintenance of the distribution system, depreciation, taxes, and a return on the rate bases or the net book value of the assets), a transmission-related charge, a transition charge that is used to pay for stranded costs, and a generation service charge that is attributed to power generation costs. There are also other charges including public benefit charges (such as energy efficiency and green-energy related costs) and a number of adjustments to account for cost elements that are not included in any of the previously mentioned charges. We discuss each of these components in greater detail in a future section of the report and use this framework to analyze differences between IOUs and existing municipal utilities. We will also discuss which of these cost components would be relevant for a new municipal utility, and if and how a new municipal utility would seek to recover these different costs.

[10] Almost 70 of the 351 cities and towns in Massachusetts do not have a current bond rating. Those 70 municipalities span a wide range of size, affluence and financial strength.
[11] These values were calculated using data for rated debt; unrated debt may have higher defaults and thus may increase these values.

Exhibit 10 – Illustration of Acquisition Cost/Financing Tradeoff ($/kWh)

	IOU	New Muni Scen A	New Muni Scen B	New Muni Scen C
Distribution O&M	0.0152	0.0194	0.0194	0.0194
Transmission	0.0087	0.0087	0.0087	0.0087
Transition	0.0080	0.0080	0.0080	0.0080
Generation	0.1164	0.1164	0.1164	0.1164
Depreciation	0.0057	0.0057	0.0086	0.0114
Federal Income and Other Taxes	0.0028	-	-	-
State Taxes	0.0007	-	-	-
Municipal Taxes/PILOTs	0.0023	0.0023	0.0023	0.0023
Cost of Capital	0.0065	0.0054	0.0082	0.0109
Total Rate	0.1661	0.1658	0.1714	0.1770
Municipal Utility Return	0.0000	0.0048	0.0071	0.0095
Total Rate with Municipal Utility Return	0.1661	0.1706	0.1785	0.1865
Acquisition Cost	Net Book	Net Book	150% Net Book	200% Net Book
Cost of Capital Rate	8%	6.75%	6.75%	6.75%

Source: National Grid, NStar, La Capra Associates

For purposes of this illustration, a number of components are broken out from the distribution charge. The most notable of these components for the current discussion are the depreciation and financing costs. The IOU column is a simple accounting of the average 2008 system average rate for National Grid and NStar. Though the total rate is the actual average rate paid by customers, the individual components have been calculated in some instances using FERC Form 1 data. For example, depreciation expense is calculated based on actual depreciation expense for 2007 and 2008 as reported in FERC Form 1.

The next three columns represent three scenarios for a new municipal utility. For all three municipal utility scenarios we make the following assumptions: (a) since municipal utilities are currently not required to provide energy efficiency programs or collect renewable fund charges, we assume that these charges will not be incurred by the new municipal utility and we did not include these charges in the IOU column in order to get more comparable comparisons, (b) the only taxes to be paid are municipal taxes in the form of PILOTs, as currently done by a majority of municipal utilities, at the level of the municipal taxes paid by the IOU, (c) transition, transmission, and generation charges are assumed to be equal as these costs will generally not be different for a new municipal utility either because costs will be similar for a new municipal utility or severance costs may be involved, and (d) distribution O&M costs are assumed to be

higher for municipal utilities per the relationship identified in the FERC Form 1s and described in Exhibit 18 of this report.

Also shown are the rates with and without net income for the municipal utility scenarios. Massachusetts law permits municipal utilities to earn up to 8%[12] of the cost of plant as a net income.[13] New municipal utilities could elect to forgo earnings return, essentially assuming that any would be returned to ratepayers. However, it is important to note that positive net income provides municipal utilities flexibility to implement certain financial and other strategies. For example, net income can be used to pay down debt principal or to fund capital improvements or additions. A number of existing municipal utilities operate with no debt. Another example of how net income can be used is to fund a rate stabilization account, which is a cash fund that is used during times of high price volatility in energy markets in order to mitigate year-to-year changes in rates.

We will relax the majority of these assumptions (individually) to analyze and discuss rate components in isolation and in greater detail later in the report. The remaining components — depreciation expense and financing costs—are most important for the current discussion. For purposes of this illustration we assume that depreciation methods will be the same between the IOU and the new municipal utilities thus depreciation expense will change with the price paid for the assets. Thus, increases in the purchase price will not only increase financing costs but will also increase depreciation expenses.

For municipal scenario A, we assume that the new municipal utility would purchase utility assets at net book and would secure financing at the rate of 6.75% (for a 20-year bond). The illustration shows that under these purchase/financing conditions, the new municipal rate will be slightly higher than the existing IOU rate assuming a positive net income for the new municipal utility. Scenario B increases the purchase price to 150% of net book, which is slightly higher than has been seen for voluntary acquisitions of incumbent utility assets. Under this case, financing costs (interest rates) would need to be somewhat lower (closer to 4.5%), so that the rates of the new municipal utility will be not greater than the existing IOU rates under zero net income assumptions. Finally, Scenario C increases the acquisition price to 200% of net book[14], in which case the maximum financing rate would need to be closer to 2.5% if the new municipal's overall electricity rate were not to exceed the IOU's, again assuming there would be no net income collected through rates.

The analyses in Exhibit 10 assumed a purchase price as high as 2 times (2x) net book. Recall, however, that the DPU's decision in the Stow-Hudson case resulted in a valuation of 10x net book for that specific purchase. The higher the purchase price, the more difficult it will be for the new municipal utility's rates to match the existing IOU's rates. The intent of this analysis is to provide an illustrative comparison of a hypothetical new municipal utility's distribution rate to the average IOU distribution rates under a likely financing scenario.

[12] A review of 2007-2008 data for municipal utilities show that on average, municipal utilities earned 3.25% of original cost of plant.
[13] Original cost of the plant is not depreciated and different from net book which is original cost minus deprecation. As a result, the same percentage return on original cost will result in a higher net income threshold than a return on equity based on net book.
[14] 200% of net book is the historical utility average (and close to current values for NStar and Northeast Utilities but higher than the value for Unitil) for price to book ("P/B") ratio. P/B ratios are usually measured using the difference between assets and liabilities rather than simply net book.

This illustration also shows that the financing rate that a municipality will secure will influence the maximum amount that can be paid for the asset (assuming that the new municipal utility will seek to have rates at or lower than existing IOU rates). It should be evident that high interest rates will affect the affordability of the assets. In this sense, this situation is no different than, say, in the real estate market, where the borrower's ability to afford a mortgage depends on both financing costs and the amount financed.

The above illustration cannot be used to conclude that municipalization efforts will or will not result in lower rates for departing customers. Such a conclusion will depend solely on the particular circumstances of the assets being acquired and particular value of those assets, even if acquired at net book. In addition, different municipalities have different credit ratings and ability to take on debt; so financing costs will also differ. In some situations, the ultimate customer rates may be unacceptable, even if the assets are purchased at their net book value.

III. Potential Barriers to Municipalization

A. Financing

As noted earlier, the Omnibus Budget Reconciliation Act of 1987 effectively precludes a municipality from utilizing tax-exempt financing to acquire the assets of an IOU. Utilizing taxable bonds to finance an acquisition will bring the municipality's cost of capital significantly closer to that of the IOU. In addition, a new municipality will need to finance start-up costs in addition to the asset purchase, and may also incur additional capital costs to reconfigure either its distribution system and/or portions of the distribution system of the IOU. These factors will significantly influence the price a municipality can pay for the distribution assets and still show a distribution cost benefit. Finally, many already financially-strapped municipalities may have difficulty incurring significant additional debt without it impacting either their credit rating or their ability to fund future critical capital needs.

B. Willing Seller

M.G.L. Chapter 164, Section 43 describes the process by which a new municipal light plant can be formed. As noted, incumbent utilities (whether an IOU or an existing municipal light plant) essentially have to agree on both the assets to be included and the price to be paid in order for the municipality to acquire the relevant assets of the incumbent electric distribution company. In the event that agreement is not achieved, the municipality has the option of petitioning the DPU to resolve issues related to either the assets to be included in the purchase or the price of those assets. In addition, the DPU may also rule on other related issues and costs associated with the transaction, e.g., the determination and disposition of stranded costs. Once the DPU renders its decision, however, there is no requirement that the incumbent utility accept the DPU's decision or it tender those assets for sale to the municipality. The existing legislation appears to place the DPU in the role of an independent arbitrator but its decision is not binding on either party. In

order for a transaction to occur, both buyer and seller must agree on the terms and conditions of the sale, based either on the DPU's ruling or on other mutually agreeable terms and conditions. If no agreement is reached, the only option this section of the law offers the municipality is to construct a new and completely separate electric distribution system. This option, however, is not a practical one. Financing a brand new electric distribution system, even under attractive financing terms, will very likely result in distribution rates significantly higher than the incumbent utility's distribution rates. In addition, there will likely be numerous physical limitations to constructing a redundant distribution system. Unless the municipality can offer significant and secure long-term cost savings to offset the higher financing costs, assuming physical limitations can be overcome, there is little likelihood that a new electric distribution system in competition with the existing IOU system would be developed.

Proponents of public power contend that the inability to force an IOU to sell assets represents a significant barrier to municipalization of electric distribution service. They argue that if an IOU is simply unwilling to sell its assets to a municipality, it can thwart a transaction, regardless of the price it is offered for those assets. Furthermore, the lack of any ability to require a sale at any price represents a significant deterrent for a municipality to commit substantial resources necessary to determine whether creating a municipal electric utility would be in its interests.

From the IOUs perspective, however, this process is entirely consistent with the process it uses whenever it is presented with an opportunity to sell all or some of its assets to any party, regardless of whether it is to a municipality, public corporation or private investors. Any offer of a purchase of assets is evaluated by management and if management determines the transaction offers shareholders superior value and is consistent with the public interest (the legal standard for DPU approval), then it has a fiduciary responsibility to its shareholders to proceed with the transaction or to recommend shareholder approval of the transaction if such approval is required.[15] If management determines that the transaction offers inferior value to shareholders or is inconsistent with the public interest, then it is under no obligation to proceed with the transaction. No transaction is consummated unless both buyer and seller agree to terms and conditions arrived at through negotiations. From this perspective, the existing legislation is consistent with the process normally used by a public corporation to meet its fiduciary responsibilities to its shareholders.

C. Service Territories

Section 1B. (a) of Chapter 164 describes service territories for distribution companies. This section was added by the Electric Restructuring Act of 1997 and reads as follows:

"The department shall define service territories for each distribution company by March 1, 1998, based on the service territories actually served on July 1, 1997, and following to the extent possible municipal boundaries. After March 1, 1998, until terminated by effect of law or otherwise, the distribution company shall have the exclusive obligation to provide distribution

[15] A body of literature exists on the behavior of utility management and the practical effectiveness of their fiduciary duties to shareholders. This report does not take a position on those issues.

service to all retail customers within its service territory, and no other person shall provide distribution service within such service territory without the written consent of such distribution company which shall be filed with the department and the clerk of the municipality so affected."

This provision of M.G.L. of Chapter 164 grants exclusive, perpetual franchise rights to the incumbent utility based on its service territory as it existed on July 1, 1997. As such, it appears to eliminate the single, albeit impractical, option available to municipalities under Section 43 of Chapter 164. It should be noted that this provision is not specifically intended to prevent the creation of municipal utilities but applies to any potential entity desiring to serve customers located in the service territory of the incumbent utility.

D. Shareholder Approval

Chapter 164, Section 96 of the Commonwealth's general laws addresses the sale of utility property, merger and consolidation of companies and reads as follows:

"Companies subject to this chapter may, notwithstanding any other provisions of this chapter or of any general or special law, consolidate or merge with one another, or may sell and convey their properties to another of such companies or to a wholesale generation company and such other company may purchase such properties, provided that such purchase, sale, consolidation or merger, and the terms thereof, have been approved, at meetings called therefor, by vote of the holders of at least two thirds of each class of stock outstanding and entitled to vote on the question of each of the contracting companies, and that the department, after notice and a public hearing, has determined that such purchase and sale or consolidation or merger, and the terms thereof, are consistent with the public interest; provided, however, that the purchase or sale of properties by, or the consolidation or merger of, wholesale generation companies shall not require departmental approval."

The section requires, in part, that for a utility company to sell or convey their properties to another such company, it must acquire the consent of at least two-thirds of the holders of each class of stock outstanding and entitled to vote on the question of each of the contracting companies. The language in this section is quite broad and does not specifically require that all the property be the subject of a sale. It appears to defer to the legal or regulatory requirements of the seller in determining when it would require approval of two-thirds of its shareholders. Obviously, it is unlikely that a sale of a truck or even a building would require such approval by its shareholders. The sales of streetlights to municipalities have not required such approval. It is not clear whether the sale of a geographic segment of its distribution assets may require such approval. Further legal analysis is necessary to determine the applicability of this section to municipalization.

IV. Comments received from Commission

In addition to establishing the broad outline and requirements of the DOER study, the Act also established a commission to advise DOER and its commissioner on the study. The commission includes representatives from a number of organizations and its membership is specified in the Act:

"The commission shall be comprised of the commissioner or a designee who shall serve as chair, and 11 other members as follows: 4 of whom shall be appointed by the executive director of the Massachusetts Municipal Association, 3 of whom shall be from municipalities that are interested in establishing a municipal electric utility; 1 of whom shall be appointed by the attorney general; 1 of whom shall be appointed by the commissioner of the department of public utilities and who shall be from the department of public utilities; 1 of whom shall be a municipal finance expert recommended by the Massachusetts Taxpayers Foundation; 1 of whom shall be a representative of the Utility Workers of America; and 2 of whom shall be representatives to be appointed on an a voluntary basis by the commissioner, 1 of whom shall be an executive from an investor-owned utility and the other of whom shall be an executive of an existing municipal electric utility."

Besides receiving input from the collective group, we conducted a number of one-on-one interviews with several of the commission members to provide input to the study scope and methodology and to seek their views on the impact categories. We also invited the members to provide any publicly available data that could inform each of the impact categories and to explain their reasoning for any positions, whether for or against municipalization. The issues/questions list that was used as a template for the various discussions is found in Appendix A.

The diversity of perspectives contributed to diversity in the opinions and views expressed by the commission and served as valuable input to guide the study. There was support for the scope of the study in terms of conducting analyses and examining data rather than providing recommendations for or against municipalization, but there were also views that barriers to municipalization should be identified wherever possible.

As we discuss below, challenges with data availability remain for answering some of the questions posed by commission members. We provide a summary of the various discussions below. The interviews were not meant to be formal or to constitute a "scientific" survey, and not all commission members reacted to all the impact categories and questions. Thus, the summary below should not be interpreted as a synopsis of the commission's view as a whole or as expressed by a majority of the members. Rather, it is essentially a synopsis of the various insights received from commission members.

Beginning with reasons for municipalization, there was some sense that municipal utilities can offer less expensive service. Common reasons that were given for the expectation of lower costs were that most existing municipal utilities charge less than IOUs, lower cost financing, lower salaries and fewer layers of executives and other management. There was also a sense that reliability of municipal utilities was better but one commenter opined that reliability will be

location-specific rather than specific to an IOU or municipal utility and that it depends on a number of variables, such as age and type of system.

Municipal utilities are seen by some as more attentive to local concerns and that, overall, customers have better input and control over decisions made by municipal utilities. Municipal utilities, it was suggested, could and would have greater incentive to respond to outages quicker since management lives in the municipality. However, there was agreement that data were lacking to compare the reliability of municipal utility systems to IOUs. There was also mention that shutoffs were less likely in municipal utilities and that municipal utilities would be more likely to work with customers. Overall, the emphasis on greater local control and input as a municipal utility benefit was a common theme.

Reasons against municipalization, *per se*, were not given, but some felt that the benefits of municipalization are either not evident or exaggerated. Commenters mentioned that IOU rates currently include a number of charges, such as federal and state taxes, system-benefit charges and other charges mandated by regulation or legislation, that are not included in municipal utility rates. In addition, there was mention that comparison should be between IOUs and new municipal utilities rather than the IOU and existing municipal utilities. The possibility of stranded costs to remaining customers was mentioned by a few commenters. There was the feeling among these commenters, as well as by supporters of municipalization, that remaining customers should not be impacted in any negative way by formation of a new municipal utility.

Some commenters were not as confident that a new municipal utility would be able to provide the same level of programs currently offered by IOUs and also comply with many of the new clean-energy mandates that are found in the GCA and that apply exclusively to IOUs. On the other hand, one commenter indicated that local control may empower a new municipal utility to make better choices concerning clean energy than currently made by IOUs.

There was also concern among some commenters that oversight and regulation by state entities over the new municipal utility would by definition be less than currently held over the IOUs. On the other hand, a few commenters mentioned that local control provides good oversight and the threat of municipalization may provide additional incentive for IOUs to listen to ratepayers' concerns.

There were also some comments made that the actual benefits of municipal utilities will differ on a case to case basis and municipal utilities in certain instances may be better. Also expressed was that the more important issue is to give municipalities the ability to decide for themselves whether to municipalize. More than one person commented that the current law is a clear barrier that should be removed or altered to allow the possibility of municipalization and the study of its potential impacts.

In terms of taxes, the tax-free status of municipal utilities was well-known but some commenters stated that at least for municipal taxes, a new municipal utility could elect to pay the same amount of taxes in the form of payments to the town as the IOU was paying. Similar comments were received regarding low-income and energy efficiency programs. Though not required, a new municipal utility could elect to provide these programs at levels comparable to those offered

by the IOU. Some commenters expressed concern that financing a purchase of utility assets can result in serious financial issues for some municipalities if all does not go according to plan. In addition, there was also concern expressed that many already financially-strapped municipalities could ill-afford incurring significant additional debt to municipalize electric service and that this debt could impact the cost of financing other critical municipal services.

As noted above, Commission members who were generally supportive of municipalization felt that remaining customers should not be impacted by municipalization. There was the sense that a sale of utility assets could be conducted whereby rates for the IOU customers would remain the same no matter the sale price. For example, if sales were made at higher than net book, then the excess could be returned to ratepayers in the form of refunds. Moreover, since the O&M costs related to the departing customers could be avoided to a great extent, remaining customers would not be responsible for any costs that were used to serve the departing customers. On the other hand, there were some concerns about remaining ratepayers receiving fair value if a new municipal utility were able to purchase assets at below market value. Another commenter equated use of net book to a condemnation proceeding, which would have negative impacts on the IOUs.

In terms of IOU operations, some commenters observed that there are a significant number of common facilities that may not be divisible and assignable to a new municipal utility. There was a sense that there are both significant cost and engineering issues that need to be worked out before making conclusions regarding the impacts of municipalization.

V. Potential Impacts of Municipalization

In this section, we examine the publicly available data from existing municipal utilities and IOUs in Massachusetts to frame the discussion concerning potential impacts of municipalization. Historical data are useful to identify and explain any differences or similarities between the two types of utilities but do not provide conclusive evidence concerning new municipal utilities. As discussed below, existing municipal utilities may have distinct advantages over municipal utilities that would be formed today. We do provide an exposition of important issues related to formation of new municipal utilities and for consideration when examining options for future legislation and regulation concerning municipalization efforts. We conclude each section with a brief discussion of impacts not only to the customers of the new municipal utility ("the departing customers") but also to the customers remaining on the IOU or incumbent utility system ("the remaining customers").

A. Rates

At the most basic level, existing data allow a comparison of rates paid by customers of municipal utilities and IOUs. We examined and drew upon a variety of data sources—municipal utility annual reports, IOU annual reports to the FERC, Department of Energy's Energy Information Administration ("EIA") data, and data submitted to DOER from the IOUs for purposes of this study—to make this comparison. These data sources are not always consistent but used together (and judiciously) they provide a good overview of the electric rates Massachusetts customers

currently pay. Exhibit 11 is based on data provided to DOER by the IOUs and the municipal annual reports to the DPU and shows system average rates for municipal utilities as a whole and the IOUs as whole for the 2004-2008 time period[16]. Data by specific municipal utility and IOU are found in Appendix B. The IOU data are for basic/default service customers who have not elected to migrate to a competitive supplier. Rates for customers that have migrated to competitive service are slightly lower than the IOU rates shown below, but are not comparable with municipal utility rates, since no municipal utility currently allows competition in its service territory.

Exhibit 11 – System Average Rates for IOUs and Municipal Utilities (cents/kWh) 2004-2008

	2004	2005	2006	2007	2008
IOU SAR	11.20	12.70	16.61	16.25	16.90
Muni SAR	9.59	10.41	11.70	11.73	13.34

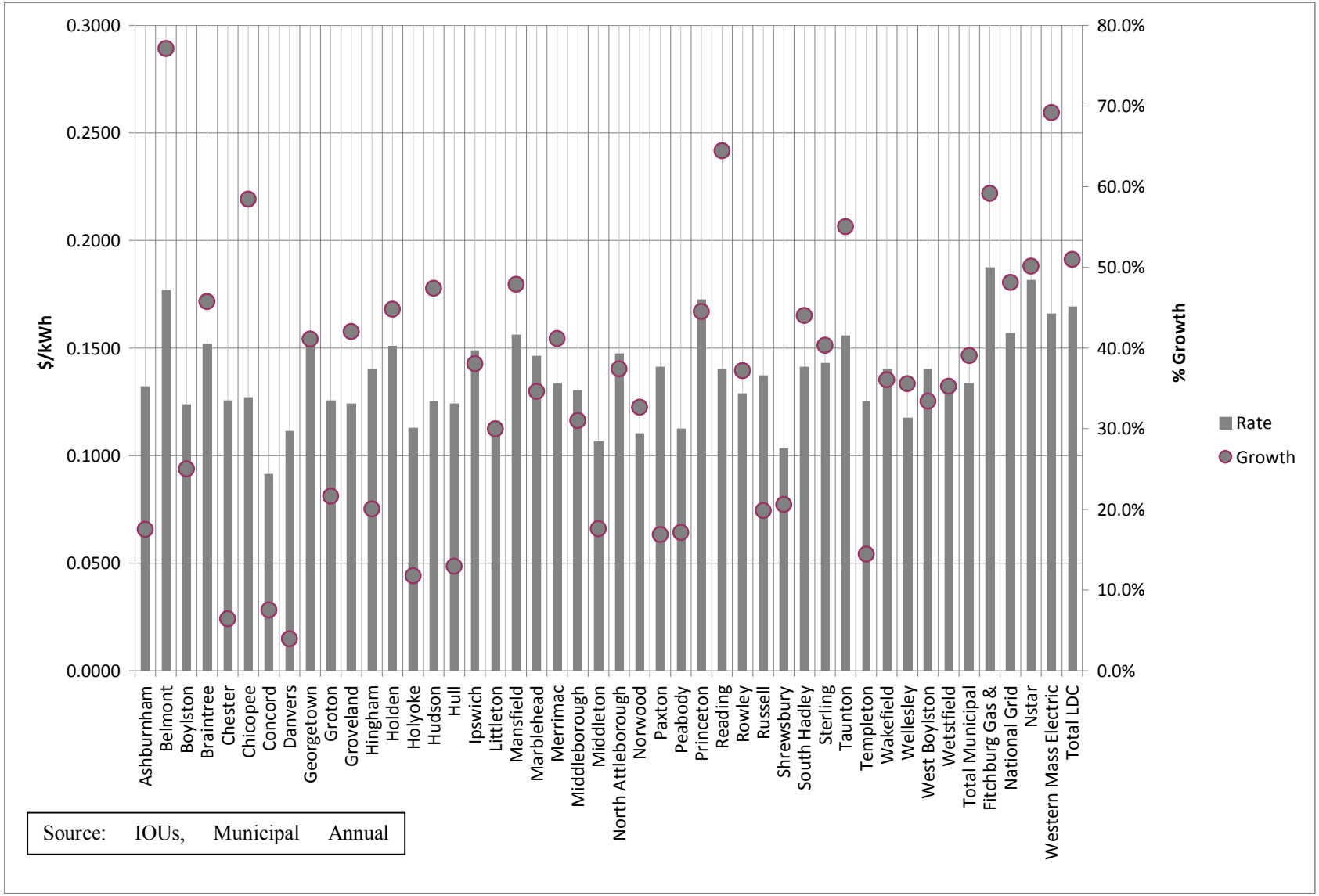
Source: Massachusetts IOUs, Municipal Annual Reports, La Capra Associates

The data show that average rates for both Massachusetts municipal utilities and IOUs have been increasing over the 2004-2008 time period. This increase is mostly due to increases in generation costs, which in turn have been mostly caused by increases in the price of natural gas since 2004. In New England, hourly wholesale electricity prices are set by the operating costs of the most expensive unit needed to meet demand in that hour, and for most hours during the year these "marginal" units have been fueled by natural gas. Thus, as natural gas prices have increased, so too have rates ultimately paid by Massachusetts consumers. Overall, municipal utility rates have been substantially lower than IOU rates on average during this period. The gap between the two was greatest in 2006 and 2007 and somewhat narrower in 2008. Nonetheless, the 2008 differential was still greater than that in 2004, the beginning of this period.

Exhibit 12 below shows individual SARs for all utilities in Massachusetts for 2008 including the growth in each utility's average rate since 2004. Collectively, the growth in overall rates has been higher for the IOUs than for existing municipal utilities, and only 2 municipal utilities feature higher rates than the IOU average in 2008. Belmont had the highest growth in rates in the 2004-2008 time period at over 77% with Reading second among municipal utilities at over 64%. Most of these municipal utilities had relatively low rates through 2007 but had large increases in 2008, almost entirely due to wholesale market conditions and power supply costs. These increases were likely related to issues of market timing and expiring power contracts in the management of their power portfolios.

[16] The 2004-2008 time period is the latest 5-year period for which data are available. Data exist prior to this time period but only this time period was examined due to study time constraints and the likelihood that findings would not significantly change if additional study years were included.

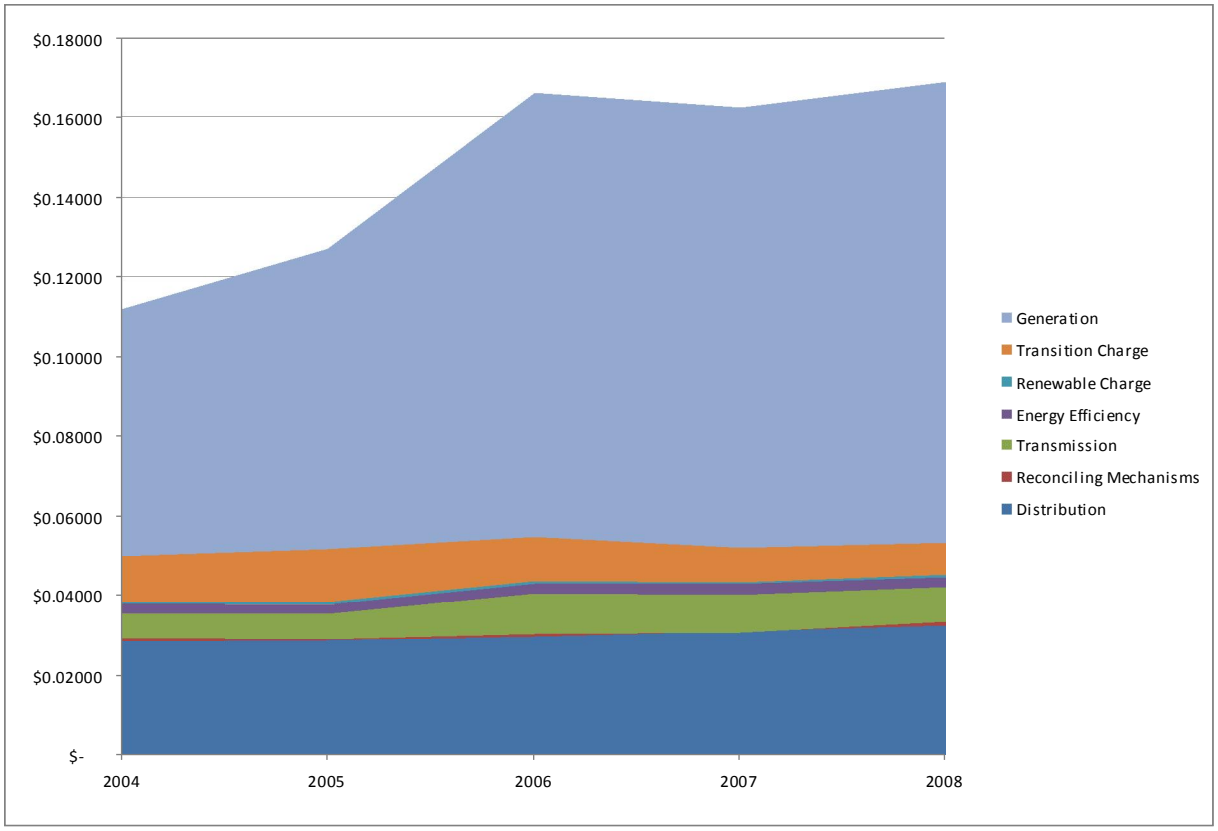
Exhibit 12 – 2008 System Average Rates and Growth in Rates since 2004
Massachusetts Utilities



Source: IOUs, Municipal Annual

In order to better understand the drivers of these different rate levels, a more detailed examination of the different components of the overall rates that customers pay is required. The exhibit below shows 2004-2008 data for the IOUs in terms of the bill components that customers pay. Most municipal utility customers do not have unbundled rates and thus do not see this level of detail.

Exhibit 13 – IOU System Average Rates by Bill Component ($/kWh), 2004-2008



Source: IOUs

The exhibit shows that most of the growth in rates in this time period can be attributable to generation and transmission related charges. Generation charges, also known as basic service (for IOU customers), are paid to wholesale suppliers of energy and/or generating companies and are a complete "pass-through"—that is, IOUs simply bill to customers only the actual costs incurred for purchasing power supply. These prices are market-driven and are largely beyond the control of the IOU. Similarly, transmission related charges are mostly set by FERC and cover delivery of power from the generating resources or the wholesale power grid to the company's delivery system. These costs can be considered somewhat of a pass-through but IOUs may also be the transmission owners and, unlike generation resources, have an equity interest in these resources.

In later sections, cost categories related to these rate components are examined using data reported to the FERC by the IOUs and reported to the DPU by the municipal utilities (except for

the generation component[17]). The IOU data shown above are based on revenues collected through approved rates. The data reported to the FERC and DPU, on the other hand, describe expenses as incurred and recorded on the income statement and thus may differ due to regulatory or ratemaking lag—utilities may defer rate increases through use of existing cash funds or until the next rate-setting case, for example—as actual expenses differ from the expenses used to determine rates during a rate proceeding. Municipal utility data use similar cost categories as those found in the FERC reports. As a result, it is preferable to compare similar cost categories among municipal and investor-owned utilities rather than using rate categories found on customer bills of the various utilities.

a. Generation

As shown in Exhibit 13, generation costs are the largest part of a customer's bill, representing 68% for IOUs in 2008. These percentages have grown since 2004. The same conclusions can be drawn for municipal utility customer's generation costs as well. The table below shows power supply and other costs for the 2004-2008 time period for both municipal utilities and IOU utilities.

Exhibit 14 – Generation Expense and Total Bills for Massachusetts Utilities, Cents/kWh, 2004-2008

	2004	2005	2006	2007	2008
IOU Power	6.20	7.53	11.12	11.02	11.55
IOU Total	11.20	12.70	16.61	16.25	16.90
Power as % of Total	55%	59%	67%	68%	68%
Muni Power	6.31	7.49	8.38	8.40	9.88
Muni Total	9.59	10.41	11.70	11.73	13.34
Power as % of Total	66%	72%	72%	72%	74%

Source: MA IOUs, Municipal Annual Reports, Author

The portion of total bills due to power supply costs has increased for both utility groups with a recent levelling off but remains higher for municipal utilities. Nonetheless, the generation costs themselves are lower for municipal utilities than for IOUs: 9.88 cents versus 11.55 cents in 2008. Municipal utilities have greater control over their power supply costs due to their ability to more actively manage their portfolio of generation resources. While this strategy does not guarantee lower prices, it does enable utilities to diversify risk. Municipal utilities can and do include medium and longer-term contracts in their supply portfolio and they can also elect when to make purchases (and sales) and do not have to adhere to any particular schedule or to procure any set amount of power. A critical difference between municipal utilities and IOUs that enable municipal utilities to make longer-term power supply commitments is the absence of any migration risk, since an existing municipal utility is not required to offer retail choice to its

[17] Due to retail restructuring and customer migration, competitive generation costs (or revenues) are not reported by IOUs in the FERC data. As a result, we use data provided by the IOUs.

customers. Finally, municipal utilities can and do own generation resources and employ them not only to serve their generation needs but also to generate revenues for the utility. For example, Braintree Electric Light Department invested in a peaking generator and is taking advantage of revenues from the ISO-NE forward reserves market which provides it with a hedge against increasing power supply costs. Six other Massachusetts municipal utilities and one New Hampshire cooperative electric utility have executed 20-year unit contracts for power from that power plant.

IOUs, on the other hand, are limited to current procurement rules and regulations based on the 1997 Restructuring Act. For example, IOUs cannot diverge from procurement rules to lock in prices during a market downturn or to delay procurement of contracts during an increase in prices unless they petition the DPU for a change in procurement rules and receive approval. In addition, IOUs are limited to procuring power at terms no greater than one year and procuring a set percentage of their customers' load at a time. These rules were developed in order to foster the development of competitive retail markets. This lesser flexibility can impact an IOU's options in making purchasing decisions. In addition, under retail choice, many customers with more attractive load and size characteristics have migrated to competitive suppliers leaving the IOU with the task of securing power supply for those customers with the least attractive load characteristics, which results in higher power supply costs for default service customers.

Exhibit 15 below compares the change in power costs over the 2004-2008 time period to the changes in total bills.

Exhibit 15 – Comparison of Change in IOU and Muni Power Expenses and Total Bills, Cents/kWh, 2004-2008

	2004	2005	2006	2007	2008
IOU Total	11.196	12.703	16.609	16.250	16.905
Muni Total	9.592	10.414	11.695	11.732	13.337
Difference	1.605	2.290	4.914	4.518	3.567
IOU Power	6.198	7.534	11.124	11.017	11.551
Muni Power	6.306	7.486	8.377	8.405	9.883
Difference	-0.107	0.048	2.747	2.612	1.669
Year to year change in Total Costs		0.685	2.624	-0.396	-0.950
Year to year change Power		0.155	2.699	-0.135	-0.943

Source: MA IOUs, Municipal Annual Reports, La Capra Associates

The data show that beginning in 2004, the difference between the average municipal rate paid and the average IOU rate paid was approximately 1.6 cents per kWh. There can be a number of

reasons for this difference, as discussed below.[18] After 2004 the difference between the two groups of rates has widened, albeit more significantly in 2006. Exhibit 16 below shows the standard offer/default service rates that apply to IOU customers that did not elect to migrate to competitive retail supply. The increases shown in power costs in Exhibit 15 are reflected in the changes in the price of generation service as provided by IOU default or standard offer service.

Exhibit 16 – Blended Standard Offer/Default Service Rates by Customer Group and IOU, 2005-2006

IOU	Customer Group	2005	2006
BECO	Res	7.59	12.05
MECO	Res	7.29	10.36
CAMB	Res	7.11	11.36
COMEL	Res	7.15	10.83
WMECO	Res	7.19	10.74
FG&E	Res	7.88	11.59
BECO	Com	7.51	11.93
MECO	com	7.63	10.28
CAMB	com	7.06	11.22
COMEL	com	7.16	10.74
WMECO	com	7.25	10.77
FG&E	com	7.98	11.76
BECO	Ind	8.23	12.22
MECO	Ind	8.59	11.53
CAMB	Ind	8.00	11.59
COMEL	Ind	7.72	11.53
WMECO	Ind	7.93	11.46
FG&E	Ind	8.66	11.78

Source: IOUs, La Capra Associates

The last two rows in Exhibit 15 compare the year-to-year changes starting in 2005. Most of the changes since 2004 in the difference between municipal and IOU rates (up or down) can be attributed to changes in power costs. The non-power costs, as estimated in this study, have stayed fairly constant at around 6¢/kW for the IOUs and a little over 3¢/kWh for the municipal utilities.

In general, a managed portfolio approach can provide benefits during periods of high volatility. The continual risk of additional migration (though diminished by past migration), however, likely reduces the options available to IOUs and contributes to further increases in the risk

[18] The study did not examine data prior to 2004 in the same level of detail, but a similar size difference occurs in period prior to 2004 and after 2000, which marked the end of rate discounts (of 10 and, eventually 15% off of early-1998 rates) offered by the IOUs. These legislatively mandated rate discounts were only temporary and were ultimately collected from IOU customers.

premium charged by the default service providers. The price premium associated with migration risk is one disadvantage to contracting for longer term supplies. Generally, the longer the term of the contract, the greater is the perceived volume risk and the greater the risk premium. It should be noted that since 2004, customer migration to competitive service has significantly increased. Since 2004, competitive service sales have more than doubled to over 2.2 million MWh and the number of customers has increased more than fourfold to almost 400,000 customers. While this migration does not account for all the differences in power supply costs between IOUs and municipal utilities, it is likely a significant contributing factor.

A new municipal utility can contract for procurement expertise to help them manage a supply portfolio, thus despite not having direct experience with buying wholesale power, a new municipal utility may be able to quickly acquire the necessary expertise. If a new municipal utility does not offer retail choice, there would be no risk premium associated with migration risk in its power cost. Impacts on remaining IOU customers will generally be a function of the type and quantity of customers that depart. For example, if departing customers of an IOU on average have better load factors than the remaining customers, the cost to serve remaining IOU customers will likely be higher while the average cost of securing power to serve the departing customers will likely be lower.

Another factor that affects power costs is the amount of electricity losses in the transmission and distribution of power from generation to ultimate consumers. Since both IOUs and municipal utilities both share the same bulk transmission system, transmission losses will not differ for customers in similar locations, be they municipal utility or IOU customers. Distribution system losses, however, can be influenced by a number of factors: physical characteristics of the system, types of customers (voltage at which served), investments in new/replacement equipment, and the quality of the O&M services. Exhibit 17 below shows losses as reported by Massachusetts utilities.

Exhibit 17 – Distribution System Losses

	2007	2008
Municipal Utilities	4.03%	3.50%
IOUs	5.24%	4.61%

Source: Municipal Annual Reports, FERC Form 1

The data show that electricity losses for municipal utilities are lower than for IOUs. As already noted, there may be any number of reasons for such a differential. For example, greater system density and a larger portion of a utility's load consisting of large customers (taking service at higher voltages) will lead to lower losses. There are no indications in the data that differences in management decision-making played any role. More importantly, distribution losses will probably not immediately change due to municipalization, and a particular new municipal utility may have losses at higher or lower levels than the IOU's system average, depending primarily on

the characteristics of its customer base and distribution system. There may be future investment decisions by a new municipal utility that affect system losses.

b. Distribution

The second largest component of rates is related to the delivery of power by the utility. Included in this rate component are distribution operations and maintenance ("O&M") expenses, depreciation expenses, and financing costs. Utilities (both IOUs and municipal utilities) use the FERC uniform system of accounts to report expenses. The following major categories are used in the system of accounts to report distribution O&M expenses: power production expenses, transmission expenses, regional market expenses, distribution expenses, customer accounts expenses, customer service and informational expenses, sales expenses, and administrative and general expenses. The exhibit below shows this breakdown as well as other distribution-related costs and net income figures. Values were derived for municipal utilities and IOUs as a whole and are presented in cents/kWh.

Exhibit 18 – Distribution-Related Costs and Net Income, Municipal Utilities and IOUs, 2007-2008 (cents/kWh)

	Muni 2007	Muni 2008	IOU 2007	IOU 2008	Muni 2007-2008 Average	IOU 2007-2008 Average
Distribution	0.619	0.680	0.531	0.616	0.649	0.574
Customer Accounts & Sales	0.256	0.310	0.279	0.324	0.283	0.302
Customer Service (includes EE)	0.000	0.000	0.258	0.289	0.000	0.274
Sales	0.027	0.033	0.005	0.005	0.030	0.005
Administrative & General	0.939	1.008	0.589	0.651	0.973	0.620
Subtotal	**1.841**	**2.032**	**1.663**	**1.886**	**1.936**	**1.774**
Depreciation	0.589	0.612	0.531	0.603	0.600	0.567
Taxes	0.000	0.000	0.700	0.564	0.000	0.632
Financing Costs	0.070	0.075	0.288	0.278	0.072	0.283
Net Operating Income	0.457	0.249	0.898	0.928	0.353	0.913
Total	2.957	2.968	4.079	4.260	2.963	4.170

Source: Municipal annual reports, FERC Form 1

The data in the table above refer to expenses rather than rates. Examining the subtotals shows that if one only looks at O&M expenses, the IOU average was lower during the 2007-2008 period. The difference is largely due to lower O&M and A&G costs on a per kWh basis. Note that customer service costs for IOUs are almost entirely due to costs related to energy efficiency programs. However, once depreciation, taxes, and financing costs, as well as net income are included, municipal utilities fare better than the IOUs. Municipal utilities do not pay taxes and

have lower financing costs. In addition, net income is lower for the municipal utilities as a whole.

It is important to note that the net income figures shown are a result of subtracting actual costs from actual revenues collected from all rate components, including some revenues from stranded cost and other charges[19]. Most of these charges are not directly related to the operation and maintenance of the distribution system but are used to collect costs that have been incurred to provide some service to customers. For example, transition charges are assessed in order to compensate shareholders for their investments in assets that were purchased to serve customers but then were sold off as a result of restructuring at values less than the amount of shareholder investment. Other charges are due to public benefit programs or related to provision of generation services. We discuss these charges in a later section.

In terms of implications for new municipal utilities, it appears from the limited 2-year data population that, on average, existing municipal utilities have higher distribution and administrative O&M costs than IOUs, offset by lower distribution capital costs (depreciation, financing and taxes). Total distribution and administrative costs are lower for municipal utilities. There may be individual utilities, however, that can achieve higher efficiencies. Whether a new municipal utility would incur a lower or higher expense than the IOU to provide distribution service cannot be determined without a case-specific study. The specific details (e.g., physical condition and level of maintenance performed) associated with the facilities to be acquired would need to be assessed.

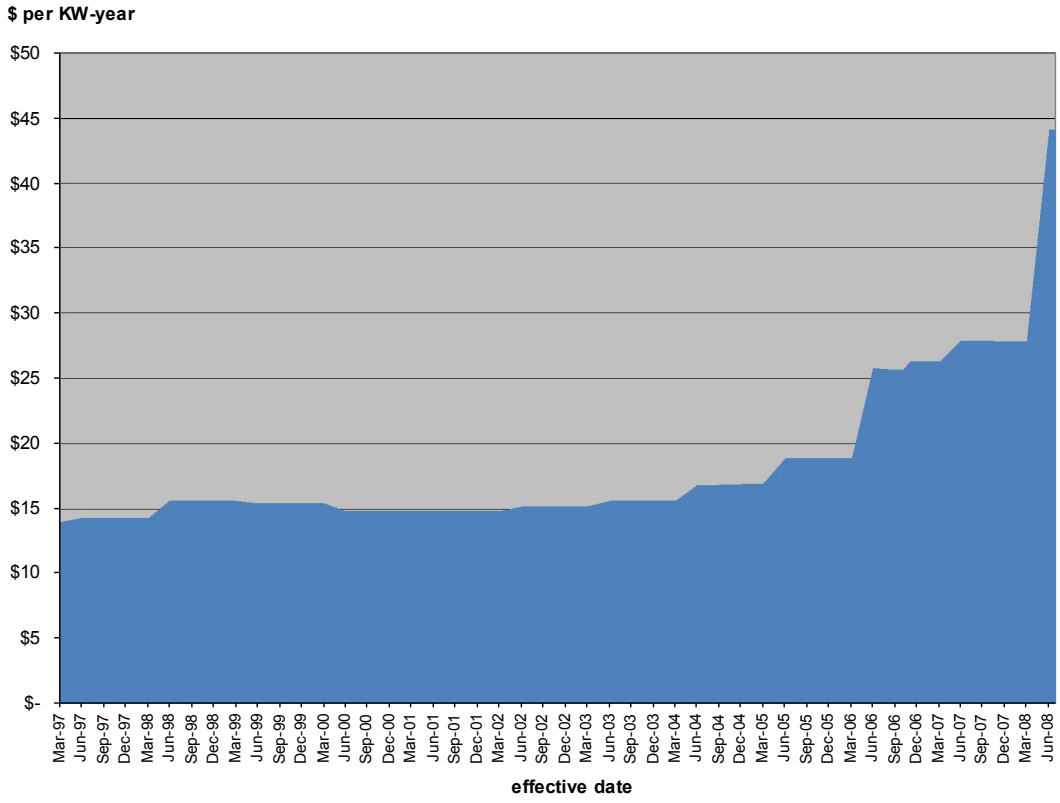
c. Transmission

Transmission charges are collected to cover the costs to deliver power from the generator to the local distribution system. Though they remain a relatively small component of the overall bill, transmission costs have been steadily increasing and increasing at a faster rate than distribution charges. There are usually two components to the transmission system—regional network service ("RNS) and local network service ("LNS"). RNS service allows load—as represented by a load serving entity ("LSE"), such as an IOU or municipal utility—to access the pool transmission facilities ("PTF"), which are common facilities that are open to any LSE and whose costs are socialized. As a result, all LSEs pay the same rate for RNS (on the basis of peak load coincident with the ISO peak load) regardless of their location. In addition, as more transmission projects get built in New England that qualify for so-called "socialization" of costs (usually because they are determined to improve system wide reliability[20]), the greater the RNS payments to all ratepayers, regardless of whether they are in a municipal or IOU service territory. Exhibit 19 shows the increase in RNS rates since 1997.

[19] Revenues from generation and transmission expenses also influence the net income figure, but these are assumed to be passed on to customers at cost and do not earn returns or income to the distribution company.

[20] Determination of whether proposed transmission facilities qualify for cost socialization involves a NEPOOL stakeholder process and study by ISO-NE and other parties. In addition to improvements in reliability at the ISO-NE system level, there are other reasons for cost socialization, as espoused by different parties, such as access to renewable resources and reductions in energy production costs.

Exhibit 19 – ISO-NE RNS Rates by Effective Date



Source: ISO-NE

Payments for LNS rates, on the other hand, will depend on the interconnection point, though these rates are generally the same for customers in a certain class for each IOU. In sum, the rates paid for transmission service are dependent upon the interconnect point of the particular utility, not whether the user is a customer of a municipal utility or an IOU.

The exhibit below compares transmission costs per kWh for municipal utilities and the IOUs

Exhibit 20 – Transmission Costs (cents per kWh), 2007 and 2008

	Average	Maximum	Minimum
Municipal 2007	.526	2.434	0
IOU 2007	.669	.859	.438
Municipal 2008	.771	3.199	0
IOU 2008	.986	1.233	.455

Source: Municipal Annual Reports, FERC Form 1

The data appear to show that on average, transmission costs on a kWh-basis for municipal utilities are lower than transmission costs for IOUs. However, there is great disparity among the transmission costs reported by the municipal utilities, ranging from 0.0 to 3.199 cents per kWh. As for the data that indicate no transmission costs are incurred, it is obviously not reasonable to expect that transmission costs are not incurred to provide service. It is likely that these costs may be included in other expenses, such as power production expenses. It is important to acknowledge this limitation of the database since it may explain some of the difference between the transmission costs for existing municipal utilities and IOUs. It is expected that transmission costs (both in terms of RNS and LNS rates) would be the same for the same service for both IOU and municipal utility customers.

The data show that there are some municipal utilities that have higher (and lower) costs than some or all of the IOUs. One possible explanation for high transmission costs for a municipal utility is continued use of an IOU's local transmission system to interconnect to the higher voltage PTF facilities. For these municipal utilities, customers would be paying not only the RNS rate but also the transmission rate as charged by an IOU. On the other hand, some municipal utilities have lower transmission costs than those paid by an IOU's customers. These municipal utilities may have facilities that allow direct interconnection to PTF facilities, thereby bypassing the payment of LNS charges.

In terms of implications for a new municipal utility, it is likely that transmission charges paid by the customers of the new municipal utility will not change, though there may be minor changes to costs if customer composition of the new municipal utility (in terms of peak load as a % of system coincident peak) is different. A new municipal utility will still be dependent on the IOU's facilities to connect to PTF (and thus will pay LNS rates), unless investments are made to connect the new municipal utility's distribution system directly to the PTF facilities.

The impact on remaining customers will depend on whether the new municipal utility continues to pay the IOU's LNS rates. If the new municipal utility continues to pay LNS rates, then rates for remaining IOU customers will not change. On the other hand, if the new municipal utility elects to construct its own facilities to access the PTF system, then remaining customers (which would be a smaller customer base) would be responsible for the level of transmission infrastructure and costs that existed prior to municipalization.

d. Stranded Cost

Stranded costs are costs related to IOU investments in generation assets (either through direct ownership of the assets or through ownership of a contract for a generation's output) that were not fully recovered during the required divestiture under restructuring. Because these assets were purchased to serve utility customers and the expenditures approved by the DPU, IOU ratepayers are responsible for a portion of costs that were not transferred to a willing buyer. In Massachusetts, most of these costs are related to the fact that market costs were less than (net) book value, thus the collection of stranded costs essentially allowed the IOUs to recoup their generation investments at net book value. Exhibit 21 shows average transition charges paid by IOU customers over the last five years.

Exhibit 21 – Average Transition Charge ($/kWh), 2004-2008

	2004	2005	2006	2007	2008
FG&E	0.0093	0.0119	0.0216	0.0242	0.0243
NGRID	0.0064	0.0080	0.0062	0.0041	0.0027
NSTAR	0.0170	0.0198	0.0173	0.0134	0.0134
WMECO	0.0082	0.0049	0.0049	0.0086	0.0081

Source: IOUs

The data lead to mixed conclusions. For some IOUs, the transition charge is quite low indicating few remaining stranded costs as assets have been sold and contracts have expired. Other IOUs, however, still have a significant amount of stranded assets, and as a result, relatively high stranded cost charges.

Customers of existing municipal utilities do not pay stranded costs. As discussed above, municipal utilities continue to manage their supply portfolio, including investments in generation assets, and were not subject to the requirement to divest generation assets and open up their customer base to competitive suppliers.

In terms of impacts on a new municipal utility, it is important to define clearly what is meant by stranded costs. The range of stranded costs described above constitutes the stranded costs currently being recovered by the IOUs. It is clear from FERC precedent that any new municipal utility would be responsible for paying its share of the IOU's remaining stranded costs, either through a monthly charge or through a lump-sum payment. For purposes of this report, we assume that departing customers will bear the same stranded cost charges they are currently paying to the incumbent utility.

Another form of stranded cost might be particular to the municipalization effort that is being studied. In a hypothetical municipalization, there may be stranded investments in distribution or transmission assets (that is, assets that a municipality may not be interested in acquiring) that were used to serve the new municipal utility and which cannot be mitigated. If any such assets (or portions thereof) are deemed to be stranded, the associated cost would presumably be the responsibility of the buyer.

The SJC in the Stow Hudson case discussed the issue of stranded cost.[21] The court's order refers to stranded costs as "prudently incurred fixed costs, recovery of which is jeopardized by the transition of the industry from cost-based regulation to competition." The court also goes on to cite the DPU's order in that case (94-176) case regarding the principles associated with recovery of stranded costs. Among those principles is that "no class of customers should benefit at the expense of another." In addition, the court stated that the DPU has the authority to award

[21] The court's order was released at the end of 1997, thus it was released following the academic and regulatory debate regarding the appropriateness of utilities to collect these costs.

stranded costs associated with a customer's departure when it is in the public interest. Taken together, the court's order can be read broadly to define stranded costs as any costs that are borne by the incumbent utility due to a customer's departure and which cannot be mitigated. In addition, the court concluded that it is the purchasing party's burden (Stow in the Stow-Hudson case) to prove that costs can be mitigated.

Determining which costs are stranded and would be the responsibility of the municipality seeking to create a utility will be part of the feasibility and negotiation process. It is not possible to specify at this time how much of the current stranded costs and other stranded costs (if any), as described above, would be applicable to a municipalization effort. In terms of impacts to the ratepayers remaining on the IOU system, there may be little or no cost impacts, depending on what is included in stranded costs and the costs borne by remaining ratepayers. For purposes of this report, we will continue to assume that departing customers will bear the same stranded cost charges they are currently paying to the incumbent utility.

e. Other Components

Customers of IOUs pay a number of other charges that may or may not be itemized in the bill or shown as a separate charge. One category of charges is public-benefit charges. These include charges related to promotion of energy efficiency programs and renewable energy investments, both of which are explicitly shown on the bill.

There are other public-benefit charges that are not itemized in the bill and are bundled with other parts of the bill, mostly in the distribution charge. One example is the residential assistance adjustment clause ("RAAC"). This charge is used to compensate the utility for lost revenues related to the low-income discount that is offered by the IOUs (as required by statute) and arrearage forgiveness programs, which provide low-income customers with affordable payment plans based on standards spelled out in the DPU's order (D.T.E 05-86). In addition, there are a number of renewable and energy efficiency costs related to the GCA that will be included in distribution rates and not explicitly shown on the bill

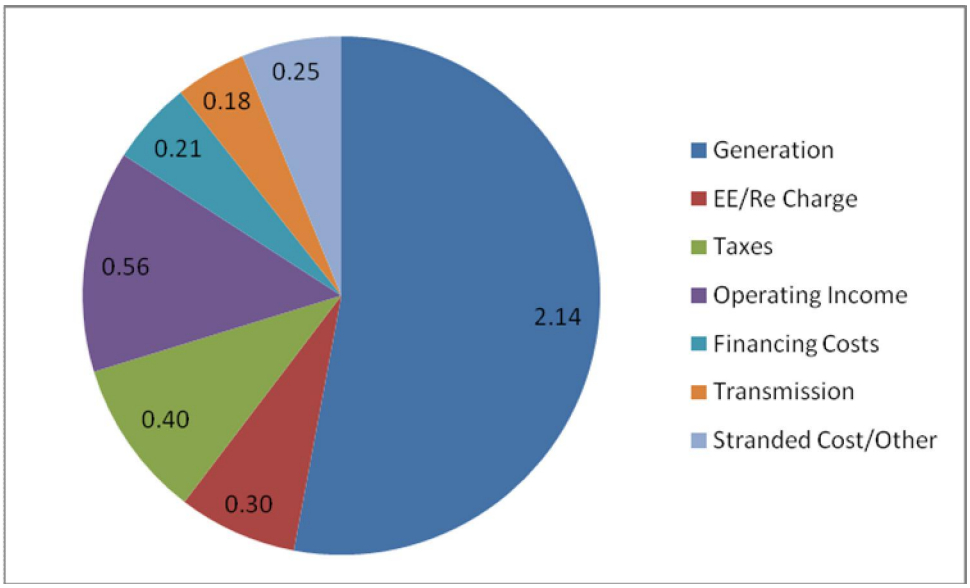
Another category includes a number of self-reconciling mechanisms, such as the pension and benefits other pensions ("PBOP") factor, which reconciles collections during the year with actual expenses related to retirement costs for IOU employees, the default service adjustment clause, which is used to recover or return any over or under recovery of default service costs to consumers, and capital and O&M reconciling mechanisms.

The key determination (in terms of both departing and remaining customers) is the extent to which the new municipal utility will be responsible for paying or will elect to pay these charges. For example, some new municipal utilities may seek to opt-in to the Massachusetts renewable trust or provide low-income discounts. All or a portion of other charges, such as PBOP and the default service adjustment clause, however, may remain with the IOU as these costs would be deemed as only relevant to the remaining ratepayers.

f. Summary of Differences in Rates

Using the above data and analyses, it is possible to provide a summary graph of the differences in rates between municipal utilities and IOUs. Starting with the data in Exhibit 15, which shows an average difference of approximately 4.0 cents per kWh between IOU rates and municipal rates, Exhibit 22 breaks down this value into the various rate components that were discussed above.

Exhibit 22 – Components of Rate Difference between IOUs and Municipal Utilities, 2007-2008 Average



Source: FERC Form 1, IOUs, Municipal Annual Reports, Author

B. Reliability

Reliability at the distribution system level can be measured using a variety of metrics. Three of them—SAIDI, SAIFI, and CAIDI—can provide an excellent picture of a system's reliability. SAIDI is "System Average Interruption Duration Index" and essentially is a measure of outage time—the average duration interruption for the system—and is calculated by summing up all of the customer minutes interrupted and dividing by the total number of customers in the system. SAIFI is "System Average Interruption Frequency Index" and is a measure of the number of outages—the average number of outages for the system—and is calculated by summing up all the customer outages and dividing it by the total number of customers in the system. CAIDI, the "Customer Average Interruption Duration Index", is a measure of the average outage time for interrupted customers, rather than all customers, and can be calculated by the quotient of SAIDI (the dividend) and SAIFI (the divisor). CAIDI is not normally investigated in isolation since reductions in CAIDI (an improvement in the time it takes to restore power during an

interruption) can occur if SAIFI and SAIDI both worsen and the change in SAIFI is proportionally worse than in SAIDI.

Data for regulated utilities are common since many states have reliability or service quality standards. Investor-owned utilities regularly monitor these statistics (and others) according to a regulator-approved plan and report them to the respective state utility commission. In Massachusetts, all IOUs collect and report SAIDI and SAIFI using the above definitions and are penalized if these reliability metrics are below reference levels (which differ for each utility and are based on historical performance and expectations for improvements). The exhibit below shows SAIDI, SAIFI, and calculated CAIDI statistics for the IOUs for the 2004-2008 time period.[22]

Exhibit 23 – SAIDI, SAIFI, and CAIDI statistics for Massachusetts IOUs

SAIDI	Fitchburg	National Grid	NStar	WMECO
2004	107.13	123.16	114.58	121.91
2005	121.72	180.64	180.04	115.56
2006	147.54	188.06	92.83	225.40
2007	103.68	138.49	82.61	122.58
2008		124.48		281.41
SAIFI	**Fitchburg**	**National Grid**	**NStar**	**WMECO**
2004	1.239	1.22	1.048	0.917
2005	1.711	1.486	1.281	1.041
2006	1.683	1.435	1.118	1.323
2007	1.554	1.159	1.027	1.044
2008		1.053		1.721
CAIDI	**Fitchburg**	**National Grid**	**NStar**	**WMECO**
2004	86.46	100.95	109.33	132.98
2005	71.14	121.56	140.55	111.05
2006	87.66	131.05	83.03	170.38
2007	66.72	119.49	80.44	117.37
2008		118.21		163.51

Source: IOUs

SAIDI is frequently given in minutes of interruption—for example, National Grid in 2008 reported that the average outage amount per customer for 2008 was slightly over two hours or 124.48 minutes. SAIFI is measured in number of outages—thus, for National Grid in 2008, each customer was interrupted a little over once a year (1.053). Dividing the two measures yields an average duration of interruption (CAIDI) of a little below two hours or 118.21 minutes.

Though simple, these statistics can be analyzed and used to benchmark utilities' reliability levels and track how well companies provide service over time. Unfortunately, these data are not easily available for municipal utilities, since they are not regulated by the DPU and are under no

[22] Data back to 1996 are available for some IOUs.

obligation to monitor or report these data. Though we did not conduct a survey of all 41 municipal utilities regarding reliability data, it appears that such data that are collected are not collected in a consistent manner, either among the municipal utilities themselves or between municipal utilities and the IOUs. The above definitions for SAIDI, SAIFI, and CAIDI are the most common but not all utility systems use precisely the same definitions. Some municipal systems in Massachusetts, for example, calculate SAIFI as simply outages (without specifying how many customers are affected by each outage). In addition, utilities differ on what events are categorized as outages—some include all disruptions while others exclude weather-related disruptions and still others exclude disruptions of less than a specified duration.

Some municipal utilities likely track their reliability for their own internal planning and operational purposes but do not make these data publicly available via a formal reporting mechanism, such as an annual filing to the DPU or inclusion in an annual report. As a result, a thorough review of the reliability performance of existing municipal utilities cannot be accurately assessed. Nonetheless, the limited data available is discussed.

Examined were some limited data from nine municipal utilities. Data from some municipal utilities include SAIFI and SAIDI (with varying definitions regarding which outages are included), while others also provide average system availability index ("ASAI"), which measures the percentage of time during the year that the average customer has power. For example, 2008 data for one municipal utility show SAIFI ranging from 0.55 to 0.72 outages and SAIDI of 30.70 minutes. Though for one year, these data compare favorably to the IOU data. Another municipal utility reports SAIFI as simply the number of outages but does appear to report CAIDI in a similar manner to the IOUs. Data for this municipal utility for the years 2002-2008 show CAIDI ranging from a low of 61.9 to a high of 86.6 minutes with an average of 73.6 minutes. These figures for CAIDI, given the caveats above, are also favorable compared to the IOU reliability data. Another municipal utility had 10-year averages including data from the 2008 ice storm of 1.107 for SAIFI and 76.22 for SAIDI.

Though the data reviewed for this study are a small sample of the 41 existing municipal utilities, almost all the data points tend to support the position that existing municipal utilities provide reliable service at comparable levels to the IOUs. Due to different definitions and measurements of reliability metrics and a limited sample size, however, no definitive conclusions can be made concerning past reliability of municipal utilities compared to IOUs. There is evidence that, at a minimum, municipal provision of electricity is not detrimental to system reliability levels. New municipal utilities may or may not be able to replicate the reliability success of the existing municipal utilities for which we have data, since they will not have the experience and history in operating and maintain a utility. Presumably, some of this experience can be obtained through the hiring of experienced personnel, but there is no straightforward way to predict the reliability of the average new municipal utility let alone any one specifically. However, given the available information, and reasonable inferences from it, there is no reason to expect that a new municipal utility would provide anything less than comparable service over the long term to its customers.

C. Local Control

While this report focuses primarily on the more quantifiable aspects of municipalization, there is one attribute of municipalization whose value is difficult to quantify; that is the attribute of local control. A new municipal utility, by definition, will allow for greater control and input by residents into utility investment policies and decisions, services and service levels. Unlike IOUs, a municipal utility is owned and controlled by the municipality through its local utility board, over which residents can exercise a much greater level of control. The presumption is that the electric municipal utility's "shareholders" share more common interests than those of the IOU and are likely to make different choices than those made by the IOU as well as be more responsive to local needs and issues. While the Massachusetts Department of Public Utilities, which regulates investor-owned utilities in the state, is the agency that can address these issues proponents of municipalization argue that the regulations and utility tariffs are far too complex for the average person to understand or navigate. In addition, proponents argue that the process for resolving issues or interpreting and changing policies and tariffs is often lengthy and expensive and most communities lack the expertise or resources to effectively participate in this process.

The value of local control to a particular community will likely be directly related to its experience with the electric utility serving it. Those communities that experience significant or ongoing service-related issues will place the highest value on local control of electric distribution. Some of these communities may be willing to pay higher rates in order to acquire control over the provision of electric distribution and power supply services, especially if they view this option as the only solution to chronic service issues. Some communities may not be so willing. Proponents of municipalization reason that this choice should be left up to individual communities. There are, however, public policy implications for the Commonwealth associated with greater local control of electric utility services. Creation of new municipal electric utilities under the same rules and regulations that apply to existing municipal electric utilities may dilute the effects of many of the Commonwealth's initiatives under the Electricity Restructuring Act, the renewable energy portfolio standards, and the Green Communities Act. It is certainly possible to create a set of rules and regulations for new municipal electric systems that would not have these dilutive effects. Any set of requirements or regulations applicable only to newly-created municipal utilities, however, would necessarily have to be identified and included as part of a municipality's analysis of the costs and benefits of municipalization.

D. Taxes

Municipal utilities are exempt from state and federal income and municipal property taxes. Most municipalities do provide payments in lieu of taxes ("PILOTs") to the town or towns they service. Exhibit 24 shows the latest available data (normalized for usage) for PILOTs paid to municipalities by the municipal utilities as well as municipal tax payments by the IOUs for 2008.

Exhibit 24 – PILOTs and Municipal Tax Payments by Utility Company (Cents/kWh)

		PILOTs (cents/kWh)			PILOTs (cents/kWh)
Ashburnham	2008	0.121	**North Attleboro**	2008	0.119
Belmont	2008	0.514	**Norwood**	2007	0.311
Boylston	2008	0.051	**Paxton**	2008	0.000
Braintree	2008	0.329	**Peabody**	2008	0.125
Chester	2008	0.754	**Princeton**	2007	0.000
Chicopee	2008	0.126	**Reading**	2008	0.461
Concord	2008	0.188	**Rowley**	2008	0.050
Danvers	2007	0.261	**Russell**	2007	0.438
Georgetown	2008	0.105	**Shrewsbury**	2008	0.063
Groton	2007	0.035	**South Hadley**	2008	0.114
Groveland	2008	0.084	**Sterling**	2008	0.035
Hingham	2007	0.351	**Taunton**	2008	0.418
Holden	2008	0.162	**Templeton**	2008	0.199
Holyoke	2008	0.224	**Wakefield**	2007	0.782
Hudson	2008	0.064	**Wellesley**	2008	0.412
Hull	2007	0.414	**West Boylston**	2008	0.038
Ipswich	2008	0.248	**Westfield**	2008	0.085
Littleton	2008	0.126	**Municipal Utilities**	**2008**	**0.231**
Mansfield	2008	0.211	**FG&E**	2008	0.186
Marblehead	2008	0.327	**NStar**	2008	0.338
Merrimac	2008	0.116	**Mass Electric**	2008	0.119
Middleborough	2007	0.146	**WMECO**	2008	0.294
Middleton	2007	0.090	**IOUs**	**2008**	**0.233**

Source: FERC Form 1s, Municipal Utility Annual Reports, Author

As shown in the table, almost all municipal utilities made PILOT payments but at varying levels. Provision of PILOTs is optional but is generally done on a consistent basis since municipal governments depend on these payments as a source of revenue to pay for municipal services. For the year shown above, only two municipal utilities made no payments to their municipalities (according to their DPU report), but they may have made these payments in prior years. Though the amounts of the PILOTs vary by municipal utility, taken as a whole the PILOTs are similar to what the current IOUs paid in 2008.

Municipalization will cause tax collections at the state and federal level to decrease. Local collections will depend on the decisions of the new municipal utility with respect to the level of PILOT payments. As shown above, municipal utilities, on average, make local tax payments comparable to IOUs. A new municipal utility may decide, depending on the economics of the acquisition and other costs, that making PILOTs equal to (or higher than) what the IOU paid in local taxes may be possible. However, PILOTs are optional, and, hence, there is a risk that a

municipality may see lower tax revenues due to municipalization. Remaining IOU customers should see little if any change in rates due to changes in an IOU's tax obligations.

E. Energy Efficiency Programs

Below is a brief description of the energy efficiency programs offered by the Commonwealth's investor-owned utilities and municipal aggregators (also known as "program administrators") and by municipal utilities. As required by existing statute, energy efficiency programs have been a significant part of electric utility offerings in the Commonwealth. Historically, these programs have been funded by a mandatory $.0025 per kWh charge. Upon passage of An Act Relative to Green Communities, Chapter 169 of the Acts of 2008 ("Green Communities Act" or "GCA") signed into law on July 2, 2008, energy efficiency was granted a significantly greater importance as one of the Commonwealth's energy resources. Program offerings of the investor-owned utilities and municipal aggregators for the years 2010-2011 encompass virtually every end-use of electricity and every customer segment where opportunities exist to achieve cost-effective savings (compared to the price of generation) for customers.

By contrast, energy efficiency offerings by the Commonwealth's existing municipal utilities are significantly less robust. The lack of any centralized process for development and administration of energy efficiency programs by municipal utilities results in a high degree of variability of their offerings beyond residential energy audits and appliance rebates. The relatively small scale of most municipal utilities would make it difficult for them to support the independent administration of the types of programs offered by the investor-owned utilities.

a. IOUs and Municipal Aggregators

Review of the 2008 Energy Efficiency Annual Reports of the electric utilities and municipal aggregators indicates approximately $113 million was spent on direct implementation of energy efficiency programs. The programs offered are quite extensive offering both financial incentives as well as technical assistance in evaluating and implementing cost-effective energy efficiency measures. These programs are similar for all Program Administrators and were offered to residential, commercial and industrial customers. Residential programs included energy efficient design and major renovation of homes, HVAC, retrofit of single and multi-family homes, lighting and appliances. There were also specific programs for low-income residential customers. Commercial and industrial programs targeted both large and small customers. For large commercial or industrial customers they included installation of energy efficient equipment in new design and replacement markets, upgrades to more efficient equipment, motors, lighting and HVAC systems. For small commercial or industrial customers, programs included the installation of energy efficient lighting, electric water heating, space conditioning, refrigeration and some custom measures.

Designed to promote enhanced energy efficiency throughout the Commonwealth, the GCA requires gas and electric distribution companies and municipal aggregators to develop energy efficiency plans that will provide for the acquisition of all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply. In support of the Act, the Department of Public Utilities issued an Order—Investigation by the Department of

Public Utilities on its own Motion into Updating its Energy Efficiency Guidelines Consistent with An Act Relative to Green Communities, D.P.U. 08-50-A and B. That order provided a comprehensive clarification of the criteria to be applied in demonstrating cost-effectiveness and the process by which three-year energy efficiency plans should be prepared and reviewed.

On October 29th the Commonwealth's utilities and municipal aggregators filed their three-year energy efficiency programs and budgets for the Department's approval. According to the filing, they have developed a core, consistent set of statewide programs and strategies that can be delivered to customers in an integrated fashion that ensures seamless service, regardless of whether the customer is served by a combined gas/electric utility, municipal aggregator, by different gas and electric utilities, or has facilities or projects in multiple service areas. Over the three-year period, the proposed budget for these programs is $1.6 billion with expected savings of 2,625,600 MWh over the three-year period, 30,884,096 lifetime MWHs savings and net economic benefits expected to exceed $3.7 Billion. As such, the budgets represent approximately a tripling of historical expenditures on energy efficiency program.

b. Municipal Electric Utilities

Of the 41 municipal utilities in the Commonwealth, most offer some measure of energy efficiency programs. The most common programs offered are free residential energy audits and residential appliance rebates. All municipal utilities offer free energy audits to residential customers[23], and 25 utilities offer appliance rebates. Appliance rebates are for Energy Star appliances and typically approximate $100 per appliance. Ten utilities offer other types of rebates which include additional rebates for light bulbs and insulation and four utilities offer rebates for solar or renewable energy installations. One utility offers a net metering program and another offers commercial customers a load response program. One utility offers interest-free loans to multi-family and commercial business owners. Twelve municipal utilities offer no energy efficiency programs.

Funding for these municipal energy efficiency programs is paid by the municipal utility's customers through charges on their electric bills. These programs are not subject to the oversight of the DOER or the DPU and thus it is difficult to evaluate their success in reducing consumption. Unlike the renewable programs offered to ratepayers and communities for cities and towns that currently pay the renewable energy charge or municipal utilities that elect to pay the charge[24], there is no similar opt-in option for energy efficiency.

In terms of implications for new municipal utilities and their customers, there is nothing precluding a new municipal utility from instituting energy efficiency programs. Of course, offering programs with the same breadth of measures and monitoring and verification that is currently found in the IOUs will be difficult for most new municipal utilities as stand-alone programs.

[23]Municipal utilities are still required by law (M.G.L. Chapter 25A, Section 11A) to collect an "energy conservation charge" that is used to fund a home audit program.

[24] As of late 2009, the following municipal utilities have opted into the renewable energy trust—Ashburnham, Holden, Holyoke, Ipswich, Russell, and Templeton.

F. Low-Income Customers

IOUs all have programs to assist low-income customers that (a) provide discounts on distribution rates and (b) provide arrearage management programs to help customers manage their payments. These programs resulted from both statute and DPU orders. Municipal utilities, by contrast, are not required to have these programs. Based on a review of such programs conducted for this study, only three municipal utilities—Concord, Belmont and North Attleboro—currently offer programs that for low-income customers.[25] Littleton and Middleborough offer discounts for elderly customers.

Though not many municipal utilities have low-income programs, what ultimately matters is the rate that low-income customers pay in the municipal utility service territories. If these rates are lower than the IOU rates with the discount, then one could argue that low-income customers are no worse off as a municipal utility customer. Exhibit 25 shows average monthly bills for a low-income customer in each IOU service territory compared to the municipal rate average for the year.

Exhibit 25 – Low-Income Monthly Average Bill, 2008
500 kWh customer

	Monthly Bill
NStar	$ 72.77
NGRID	$ 67.71
FG&E	$ 83.22
WMECO	$ 69.67
Avg. Muni	$ 66.70

Source: Municipal annual reports, IOU rate sheets, Author

The data show that for 2008, low-income customers that would pay the same rate as non-low income residential customers still had lower rates even without rate discounts than low-income customers with IOU discounted rates. This finding is largely a result of the higher generation costs that IOU customers pay through basic service, which is not impacted by rate discounts. Generation costs have fallen significantly in 2009, especially for IOUs, thus the actual difference between low-income customers in the different service territories will largely depend on how and at what price generation service is purchased.

A new municipal utility can offer low-income discounts on par with those offered by the IOUs. Such programs are funded by the non-low-income customers of the municipal utility. Whether such programs may be necessary in terms of keeping rates at or below the rates that low-income

[25] All utilities are required to offer farm discounts, which may impact some low-income customers, and most municipal utilities offer prompt pay discounts to all their customers.

customers paid when a customer of the IOU will depend on whether the new municipal utility will be able to provide rates that are comparable to or lower than the rates currently charged by the IOU. Whether rates can be lower will largely depend on the success of the new municipal utility in managing its supply portfolio in a manner that generates lower power costs than the basic service currently provided by existing IOUs.

G. IOU Revenues

The overall level of IOU revenues will of course decline if new municipal utilities are created. IOUs collect revenue based on the cost to operate and maintain the existing distribution system (as described above and including taxes), including the return of capital invested in the distribution system and other rate base elements (also known as depreciation), and a return on rate base that is paid to shareholders. The allowed return on rate base varies but is subject to significant legal constraints; broadly described, it is generally set at levels that are sufficient to attract and maintain capital at a reasonable cost (return on equity), given the IOU's particular risk profile. Utilities can (and do) earn more or less than this allowed rate of return in a particular year.

When a new municipal acquires an IOU's assets for its distribution system it essentially removes rate base (as an asset) from the IOU's balance sheet. The IOU will no longer be entitled to receive a return on that rate base or the associated depreciation expense; nor will it incur the O&M and stranded costs that would be transferred to the municipal utility. The impact on remaining customers will depend on the relationship between revenues lost and costs avoided. There may also be non-divisible costs that are common to both remaining and departing customers. In essence these costs would not be avoided and likely be the responsibility of remaining customers. The exhibit below shows an illustration of potential impacts on remaining customers of lower IOU revenues in cases where some level of costs cannot be avoided.

Exhibit 26 – Illustration of Bill Impacts

% Customers	% of Unavoidable Costs	Total $ impact	Monthly bill impact	% Dist. Bill	% Total Bill
3.00%	**10.00%**	$51,000	$0.05	0.31%	0.06%
5.00%	**10.00%**	$85,000	$0.09	0.53%	0.10%
10.00%	**10.00%**	$170,000	$0.19	1.11%	0.21%
20.00%	**10.00%**	$340,000	$0.43	2.50%	0.48%
3.00%	**20.00%**	$102,000	$0.11	0.62%	0.12%
5.00%	**20.00%**	$170,000	$0.18	1.05%	0.20%
10.00%	**20.00%**	$340,000	$0.38	2.22%	0.43%
20.00%	**20.00%**	$680,000	$0.85	5.00%	0.96%
3.00%	**30.00%**	$153,000	$0.16	0.93%	0.18%
5.00%	**30.00%**	$255,000	$0.27	1.58%	0.30%
10.00%	**30.00%**	$510,000	$0.57	3.33%	0.64%
20.00%	**30.00%**	$1,020,000	$1.28	7.50%	1.44%
3.00%	**40.00%**	$204,000	$0.21	1.24%	0.24%
5.00%	**40.00%**	$340,000	$0.36	2.11%	0.40%
10.00%	**40.00%**	$680,000	$0.76	4.44%	0.85%
20.00%	**40.00%**	$1,360,000	$1.70	10.00%	1.91%

Source: MA DOER, Author

The data are illustrative and assume the following: the IOU currently has 1 million residential customers and customers depart with an average monthly usage of 500 kWh, lost revenues are only from distribution and non-reconciling mechanisms (stranded costs are assumed to be transferred to departing customers), and all revenue data (distribution and total) are based on 2008 IOU averages. For example, assuming that 200,000 customers (or 20%) depart and that only 10% of the costs are unavoidable, the total bill impact will be 200,000 x 500 x 3.4 cents/kWh x 10% = $340,000. The monthly bill impact on the 800,000 remaining customers will be 340000/800000 or $0.43 per month. The illustration shows that bill impacts on remaining customers are small if the level of unavoidable costs remains low relative to the revenues associated with the customers migrating to a new municipal utility.

H. IOU Operations

The impact of municipalization on IOU operations can be on a number of dimensions—reliability, customer service, and labor/management issues, to name a few. Unfortunately, data limitations do not allow a detailed or quantitative discussion of these issues. Reliability issues were discussed in a prior section but actual impacts on the distribution system in terms of overall system configuration is an engineering problem that can only be addressed through a detailed feasibility study. Actual impacts on IOU operations would have to be examined on a case-to-case basis.

On a basic level, a new municipal utility would have to be able to configure its distribution system so that no harm from a reliability or customer service perspective would come to the remaining IOU customers. On the other hand, the IOU may have to reconfigure its operations if, for example, certain assets currently used to serve customers' needs or maintenance facilities, were to be acquired by the new municipal utility or if these assets could not be sustained at the levels prior to the municipalization due to the loss in revenues associated with the departing customers.

In terms of labor/management issues, revenue losses due to departing customers may result in shifts in employment from the IOU to the new municipal utility. Depending on the nature of the shift, such a reduction in the IOU workforce may have impacts on labor relations and how management and labor interact. In addition, even assuming that there is no net job loss in terms of the types of occupations or worker roles, whether or not the new municipal jobs will be comparable, with respect to pay, benefits and responsibilities, cannot be known at this time. Ultimately, revenue and customer losses at an IOU effectively reduce the size of the utility. Even assuming that costs related to the departing customers can be completely avoided—which is not likely due to the indivisibility of some assets, such as billing systems—by selling assets or transferring assets to the new municipal utility, a smaller utility will not likely be able to eliminate all its overhead and other fixed costs which will have to be collected over a smaller customer base which would put upward pressure on the IOUs rates. These economy-of-scale benefits for larger utility systems are suggested in the data provided in Exhibit 18. The precise impacts, however, will be a function of the extent of municipalization of the IOUs assets and the costs and revenues associated with serving the departing customers.

I. Capital Borrowing and Financing

Financing and capital borrowing issues have been discussed in some detail above. The key difference between IOUs and municipal utilities is the former group's use of equity financing, which results in higher borrowing costs for IOUs. Once a municipal utility has acquired assets from an IOU, it can increase investment in the system through use of tax-free general obligation bonds, which provide a further financing advantage over IOUs.

As already noted, municipalities in Massachusetts are generally highly rated by the rating agencies. However, there may be impacts on financing costs given the size of the bond offering necessary to acquire utility assets and its effect on the municipality's credit rating. GO bonds are backed by the taxing ability of the town, which is mostly in the form of property taxes. If a bond offering to acquire a municipal asset is large relative to the existing assessed property value of the town, then there may be negative impacts in terms of higher financing costs for all GO bonds that the municipality sells. However, the revenues from the municipal utility may be considered an additional revenue source for the town, thus offsetting to some degree this impact. Overall, the impacts of selling bonds to finance a new municipal utility on a municipality's financing costs will be very specific to the situation of the municipality seeking to acquire the IOU's assets and is beyond the scope of this study.

Depending on the size of the departing customer base, the sale price received for the utility assets, the use of the sale proceeds, there may be impacts on the ability of the IOU to acquire

financing at certain rates. Though the book value of the remaining assets would not change, the earnings capacity of the IOU would be lower and its debt coverage could be affected. Both of these factors could potentially impact its cost of capital but any impacts can only be reasonably assessed with knowledge of details that are specific to a transaction.

VI. Conclusions

The question of whether municipalization of electric power systems will lead to benefits for departing customers is one that requires a great amount of case-specific study and analyses. The work of this report was not to answer that question but to identify and discuss issues that need to be examined and questions that need to be raised if and when a municipality seeks to form its own utility. Where data was available, this report uses that data to provide illustrative examples of potential impacts.

There are a number of economic and technical barriers to formation of a new municipal utility. While existing municipal utilities provide lower rates to customers at reliability levels comparable to those provided by the IOUs, it is unclear that such benefits can be replicated by a new municipal utility. Exhibit 27 summarizes the analysis of the different impact categories that were listed in Section 107 of the GCA. The following are the primary factors that will most influence the ultimate costs and rates of a new municipal utility. Costs such as cost and amount of debt will be very specific to the municipality and the facilities that serve it. These factors are:

- Asset purchase price
- Start-up costs, i.e., costs associated with the development of the infrastructure necessary to operate an electric distribution system
- Costs to enable the municipality's distribution system to operate independently from the IOU's system
- Cost and amount of debt incurred
- Power supply procurement strategy

Existing municipalities that are customers of an IOU may be able to implement a supply procurement strategy different from that of the IOU without acquiring distribution assets. Under current Massachusetts law and regulations, current IOU customers are free to choose a competitive supplier for their generation service and/or form an aggregation. In Massachusetts, municipalities can be aggregators for its residents and businesses. The municipality can follow a supply acquisition strategy similar to what it would implement as a municipal utility.

Exhibit 27 – Summary of Important Issues and Impacts

	Prior to Municipalization		After Municipalization	
	Existing IOU	Existing Muni	IOU and Remaining Customers	New Muni and Departing Customers
Rates	On average, overall rates are higher than existing municipal utilities	On average, overall rates are lower than IOUs	Costs and rates may increase or decrease depending on whether premium over net book is returned to ratepayers in some form and the level of stranded costs that remain	Rates may or may not be lower than rates currently paid by departing customers, largely depending on the price paid for the incumbent utility's assets and the level of stranded and severance costs
--Generation	Scheduled, full-requirements procurement as required by DPU regulations	Flexibility to make any power purchase decisions; ability to use managed portfolio	Minor changes possible depending on departing customers characteristics	May be able to take advantage of managed portfolio approaches to reduce power supply costs; Preferable to remain closed to retail access
--Distribution	Generally higher distribution-related charges due to higher net income	No advantage in terms of distribution-related costs. Lower net income levels on average	Costs impacts will depend on whether distribution-related costs associated with departing customers can be divisible and transferred as part of the asset sale	Distribution-related costs should not be much different than IOU costs at least over the short-term
--Transmission	Slightly higher rates that include both regional and local transmission costs	Rates appear slightly lower which may be indicative of customer characteristics and possible avoidance of local transmission costs; differences in accounting may exist	Generally, no or minimal change depending on the characteristics of the departing customers	Transmission rates should not change compared to those paid under IOU rates at least over the short-term
--Stranded Costs	Collect stranded costs from ratepayers	Do not pay stranded costs	Rates may not be impacted if stranded costs can be transferred to new municipal utility	Rates will be the same as IOU on average if a slice of stranded costs is transferred
--Other Components	Collects various system- benefit	Few municipal utilities	Smaller system-benefit	Departing customers may

	Prior to Municipalization		After Municipalization	
	Existing IOU	Existing Muni	IOU and Remaining Customers	New Muni and Departing Customers
	charges and other non-bypassable charges	collect system-benefit charges	programs and possible higher rates, depending on the transferability of non-bypassable charges to the departing customers	be responsible for a small portion of non-bypassable charges; voluntary decision concerning whether to collect system-benefit charges
Reliability	Detailed and consistent Reliability statistics are available	Limited availability of reliability data but data show comparable reliability levels to IOUs	Minimal impact assuming that severance of new municipal utility does not negatively impact IOU distribution system	No reason to anticipate that reliability levels will be significantly different than under IOU
Taxes	Pays taxes	Does not pay taxes	Lower tax payments to all level of government	No tax payments, except of voluntary PILOTs
EE Programs	Required to provide EE programs	EE programs are not required. Generally only provide residential audits and appliance rebates	Smaller programs in terms of overall expenditures.	Will depend on decisions of new municipal utility
Low-Income Customers	Can use current low-income programs	Current rates are low enough that low-income discounts are not needed to cause rates to be lower than IOU rates	No or minimal rate impacts, depending on composition of departing customers	Rates may increase for low-income customers, depending on the ability of the new municipal to have lower rates than IOU's low-income rates
IOU Revenues	Collected from all customers	----	Collected from remaining customers; revenues will fall	----
IOU Operations	Operations based on current franchise and system/customer footprint	----	Smaller service territory and customer footprint; may have impacts on labor, management, and costs (if not divisible); Technical analyses need to understand	----

	Prior to Municipalization		After Municipalization	
	Existing IOU	Existing Muni	IOU and Remaining Customers	New Muni and Departing Customers
			impacts on distribution operations	
Capital Borrowing & Financing	Debt and equity financing as approved by the DPU	Debt financing	Impacts on IOU financing costs are unclear	Cannot issue tax-free bonds for acquisition of assets but do enjoy same tax advantages as existing municipal utilities for further investments; unclear concerning the impacts of size of offering on municipality's financing costs

Appendix A

Questions/Issues for Commission Member Interviews

Barriers

- Can a municipality form a muni under current law?
- Are there any legal barriers? Any regulatory barriers? Are there any other barriers to the formation of a muni?

Rates/Costs

- What explains the differences between IOU rates and municipal rates on a per kWh basis?
- How does one determine the price to be paid for utility assets? What are the different valuation approaches and which may result in higher or lower sales prices?
- Are there any concerns with IOU ratepayers receiving fair value? Should IOU ratepayers receive fair value?
- How much stranded and severance costs are involved with the IOU asset acquisition?
- What development costs (legal, consulting, municipal staff time) are involved in forming a municipal utility?
- What additional up-front costs outside of acquisition and development costs—working capital, purchase of equipment—are involved in municipalization?

Reliability

- Which reliability metrics should be examined?
- Are there any reliability data, similar to the data currently provided by the IOUs in their service quality filings, available for municipal utilities?
- How do line losses compare between IOUs and munis?
- How does customer satisfaction compare between IOU and munis?

Municipal Taxes

- Will there be any tax impacts on municipal collections following creation of new municipal utilities?
- Are any data available concerning current taxes paid by IOUs to cities and towns? To the state?
- Are there data regarding the current and historical financial assistance (PILOTs, transfers of surplus, services, and rate discounts, etc.) made by municipal utilities to municipalities?

Energy Efficiency

- Are there data concerning which Massachusetts municipal utilities offer energy efficiency programs and how much money is spent on and how much savings is generation from these programs?
- Have or will existing/new municipal utilities pursue energy efficiency programs at the (regulated) levels of the IOUs? What may be the impacts of municipalization on the ability of IOUs and the Commonwealth to meet the EE goals under the Green Communities Act and the greenhouse reduction goals under the Global Warming Solutions Act?

Low-Income Customers

- Are there data concerning which municipal utilities have low-income rates and the level of those rates compared to non-low-income residential rates?
- What will be the impacts on low-income customers from establishment of new municipal utilities?

Capital Borrowing

- Is the impact on "capital borrowing," as mentioned by Section 107 in the Green Communities Act, from the perspective of the municipal utility, the IOU, the municipality, the state, or some or all of these?
- Outside of individual municipal utility reports to the DPU and the IOU FERC Form 1s, are there any other data concerning financing costs to municipal utilities
- Can tax-free bonds be used for acquisition of IOU assets through municipalization?
- Absent the ability to issue tax-free bonds, are there differences in financing for municipal utilities vs. IOUs?

IOU Operations

- Will there be any impacts on IOU operations of establishment of municipal utilities?
- Are municipal utilities responsible for payments related to any negative impacts on IOU operations?

IOU Revenues

- Are municipal utilities responsible for make- whole payments to IOUs in terms of lost revenues?
- What are the impacts of decoupling efforts on possible future revenue losses to utilities due to establishment of municipal utilities? Could sale of assets due to formation of new utilities, and the commensurate loss of revenues, lead to an increase in the IOUs rates?

Appendix B

System Average Rates Data, 2004-2008

Municipal Utilities	2008	2007	2006	2005	2004
Town of Ashburnham	13.22	12.40	12.99	12.23	11.25
Town of Belmont	17.69	12.09	11.91	9.99	9.99
Town of Boylston	12.39	11.50	11.33	11.29	9.91
Town of Braintree Electric Light Dept.	15.16	14.40	13.78	11.11	10.40
Town of Chester	12.55	12.39	12.04	12.29	11.79
City of Chicopee	12.71	11.73	11.86	8.72	8.02
Town of Concord	9.13	8.94	10.03	9.03	8.49
Town of Danvers	11.14	11.14	13.00	12.90	10.72
Town of Georgetown	15.25	14.35	12.60	10.02	10.81
Town of Groton	12.55	12.55	12.46	10.31	10.32
Town of Groveland	12.42	12.09	10.91	9.43	8.74
City of Hingham	14.02	14.02	13.34	12.24	11.68
Town of Holden	15.08	12.77	12.77	12.45	10.42
City of Holyoke	11.30	10.79	10.55	10.14	10.11
Town of Hudson	12.53	11.03	10.46	9.69	8.50
Town of Hull	12.42	12.42	12.52	11.64	10.99
Town of Ipswich	14.90	12.92	14.60	11.56	10.79
Town of Littleton	11.62	11.79	10.33	8.62	8.94
Town of Mansfield	15.60	13.16	12.59	11.46	10.55
Town of Marblehead	14.66	12.83	14.08	12.92	10.89
Town of Merrimac	13.37	13.15	12.01	9.81	9.47
Town of Middleborough	13.05	13.05	12.77	10.33	9.96
Town of Middleton	10.68	10.68	10.21	9.21	9.08
Town of North Attleboro	14.75	12.21	12.07	10.80	10.73
City of Norwood	11.04	11.04	9.29	8.42	8.32
Town of Paxton	14.12	13.59	14.42	12.79	12.08
City of Peabody	11.24	9.99	12.34	11.03	9.60
Town of Princeton	17.23	17.23	15.44	14.08	11.92
Reading Town of	14.00	9.55	10.25	10.02	8.51
Town of Rowley	12.88	12.77	11.63	10.30	9.39
City of Russell	13.74	13.74	13.25	11.66	11.47
Town of Shrewsbury	10.33	9.56	9.62	8.82	8.57
Town of South Hadley	14.12	12.06	11.94	10.55	9.80
Town of Sterling	14.30	11.54	10.59	10.18	10.19
City of Taunton	15.59	13.21	13.22	11.21	10.06
Town of Templeton	12.51	11.94	12.18	11.55	10.93
Town of Wakefield	14.02	14.02	12.58	12.84	10.30
Town of Wellesley	11.76	10.67	9.27	8.83	8.67
Town of West Boylston	14.02	12.79	12.04	11.86	10.51
City of Westfield	13.51	12.69	11.73	10.16	9.99
Total Municipal	**13.34**	**11.73**	**11.70**	**10.41**	**9.59**

Investor-Owned Utilities	2008	2007	2006	2005	2004
Fitchburg Gas & Electric	18.75	18.41	18.34	13.38	11.73
National Grid	15.69	15.24	14.99	11.88	10.55
NStar	18.16	17.28	18.54	13.79	12.10
Western Mass Electric	16.58	16.09	15.08	11.14	9.80
Total IOU	**16.90**	**16.25**	**16.61**	**12.70**	**11.20**