

*Response to:
The New Brunswick Energy
Regulatory Framework Options
for Improvement
June 15, 2010*

*Submitted
July 23, 2010
By*

New Brunswick
Municipal Electric Utility Association
NBMEUA
ENERGIE EDMUNDSTON PERTH-ANDOVER ELECTRIC LIGHT COMMISSION SAINT JOHN ENERGY

Table of Contents

1	EXECUTIVE SUMMARY.....	2
2	INTRODUCTION.....	3
2.1	WHO WE ARE	3
2.2	HOW WE ARE AFFECTED BY THE REGULATION OF DISCO	4
2.3	HOW THE INTERESTS OF ELECTRICITY CONSUMERS ARE NOW PROTECTED IN OUR COMMUNITIES ...	4
3	SPECIFIC PROPOSALS OF THE OPTIONS REPORT.....	6
3.1	OVERVIEW	6
3.2	PROPOSAL TO ELIMINATE PROVISION ALLOWING DISCO TO IMPLEMENT RATE INCREASES OF 3% WITHOUT “SCRUTINY” BY THE EUB	6
3.3	PROPOSAL TO ELIMINATE PROVISION ALLOWING CABINET TO OVERRULE A DECISION OF THE EUB REGARDING DISTRIBUTION RATES	8
3.4	PROPOSAL FOR THE EUB TO REGULATE MUNICIPAL DISTRIBUTION UTILITIES	8
3.5	PROPOSAL REGARDING EFFICIENCY AND CONSERVATION MEASURES	10
3.6	PROPOSAL REGARDING EUB APPROVAL OF CAPITAL SPENDING PLANS	11
3.7	PROPOSALS REGARDING OBJECTIVES, GOALS AND PLANS OF THE EUB.....	11
3.8	PROPOSALS REGARDING THE PUBLIC ADVOCATE	11
3.9	PROPOSALS REGARDING ROLE OF THE EUB IN DEALING WITH CONSUMER COMPLAINTS.....	11

APPENDIX A – MUNICIPAL UTILITY REGULATION IN NORTH AMERICA

1 EXECUTIVE SUMMARY

The Municipal Electric Utilities Association of New Brunswick (“MEUA”) represents the three municipal electric utilities in New Brunswick which are Edmundston Energy, Perth-Andover Electric Light Commission and Saint John Energy. We appreciate the opportunity to respond to the Government’s Regulatory Options Framework Paper.

The MEUA commends the initiative of Government to review the scope, approach and standards of utility regulation in New Brunswick. The existence of an independent regulator with authority to review the on-going operations of the sector and approve Disco’s rates is a key element of successful public policy in the energy sector.

The MEUA and the individual members all strongly support the objectives of fair rates and protection of the environment through conservation and demand management. We also believe that these objectives can and should be achieved by well-established practices that do not add unnecessarily to customers’ already high electricity bills. Our views on each of the proposals have been framed with these values in mind.

With respect to the proposal to eliminate the 3% level of permissible rate increases without EUB approval, we believe that a modern and regulator-driven approach to rate increases between full cost of service reviews, such as Performance Based Regulation (“PBR”) would control the costs of regulation, while providing for limitation of annual increases and triggering of a new review when necessary.

With regard to the proposal to regulate the MEUs, we believe that customers of MEUs are well served by the current mechanisms and that the benefits of independent regulation, if any, would not justify the additional cost. Approximately 80 - 85% of the costs of MEUs are wholesale costs, outside the control of the MEUs.

We welcome the opportunity to further discuss the suggestions made in this Response.

2 INTRODUCTION

2.1 *Who We Are*

The Municipal Electric Utilities Association of New Brunswick (“MEUA”) was formed in 2004 to represent the three Municipal Electricity Utilities (the “MEUs”) in the province under one common voice to bring forward the concerns of our customers and our utilities to the Government, and to share resources with respect to our participation in the electric industry restructuring that was proceeding at that time. The three municipal electric utilities in New Brunswick are Edmundston Energy, Perth-Andover Electric Light Commission and Saint John Energy.

Collectively we provide local electricity distribution service to approximately 42,000 customers in our municipalities. In addition, Edmundston Energy owns and operates two hydro-electric plants with existing total capacity of 4.4 MW, and an additional plant with 3.8 MW of capacity is under construction.

Saint John Energy purchases 100% of the power supply for its customers at Standard Offer of Service from NB Power Distribution and Customer Service (“Disco”), and pays a wholesale rate approved by the Energy and Utilities Board (“EUB”) as part of the same process in which rates are approved for Disco’s retail residential, general service and industrial customers. Edmundston Energy supplies some of its needs from its own generation plants, and purchases the majority (about 90%) from Disco at the same regulated wholesale rates that apply to Saint John Energy. Perth-Andover Electric Light Commission purchases its wholesale supply from WPS Canada another supplier. Perth-Andover Electric Light Commission must submit the details of its wholesale supply contract to the EUB for review.

For all three MEUs, the cost of wholesale (and in Edmundston Energy’s case, self-generated) power supply account for, on average approximately 85% of the total costs to serve customers. This means that the costs of local distribution and retail service (such as distribution wires, poles and transformers, service calls to customers’ premises, telephone assistance, meter reading and billing) account for only 15% of the total costs of service. For a residential customer consuming 1,000 kWhs of electricity in a month, 15% of the bill amounts to \$16 to \$18 per month.

Electricity rates to customers of the MEUs have historically been set, and continue to be set, at or below the rates of customers served by Disco.

As municipal utilities, we are, like Disco, public sector entities created for the purpose of service to customers. Edmundston Energy functions as a department of the municipality,

while Saint John Energy and Perth-Andover Electric Light Commission are accountable to their municipalities through their appointed Boards of Commissioners.

2.2 How We Are Affected by the Regulation of Disco

For Saint John Energy and Edmundston Energy, who purchase wholesale power supply from Disco, the decisions of the EUB affect the major component of the costs to serve customers. Saint John Energy and Edmundston Energy together form the Wholesale class of Disco's customers. Each time that Disco has a rate increase approved by the EUB, that rate increase flows directly into the costs that customers pay in Saint John and Edmundston. The EUB approves not only the total level of revenues that Disco may collect in rates from its retail and wholesale customers, but also approves the way in which the total costs are shared among the customers classes (residential, general service, industrial and wholesale). At the last full review of Disco's allocation of costs to classes, the EUB approved wholesale rates that would recover slightly more in revenues from the wholesale class than the actual costs to serve them. This contributes to Disco's ability to recover slightly less than cost in its rates to some other customer classes.

Because the wholesale rates so profoundly affect the rates that the MEUs must charge their own customers, the MEUA involves itself actively in Disco's rate-related hearings before the EUB. In recent years, the MEUA has retained legal counsel and other specialist expertise to support its participation in these hearings, doing its best to represent the legitimate interest of municipal utility customers. Our participation in the 2007 Disco rate hearings resulted in some decreases in the wholesale rates as compared with the levels proposed by Disco because the EUB found validity in the issues and concerns that we brought forward.

Needless to say, this participation as an intervenor in Disco's rate hearings, including staff time, legal representation and consulting expertise has a cost that must be paid by the MEUA and ultimately by their customers. In addition, the MEUAs pay for a portion of Disco's regulatory costs through the regulated wholesale rate.

2.3 How the Interests of Electricity Consumers are Now Protected in Our Communities

As explained in the previous section, the largest component of the costs that are recovered through rates of the MEUs are already subject to scrutiny by the EUB—in the case of Edmundston Energy and Saint John Energy, through the EUB's regulation of Disco, and in the case of Perth-Andover Electric Light Commission, through the EUB's review of the supply contract.

While the retail rates of the MEUs are not now subject to approval by the EUB, none of the rates exceeds the rates that are charged by Disco (which is subject to regulation by the EUB) to similar customers.

Furthermore, it is the position of the MEUA that the existing framework and processes are very well suited to protection of customers against undue excesses in rate-setting. We are confident that our stakeholders would support the MEUA's position.

- Rate increases are subject to approval by their appointed Boards of Commissioners and/or municipal councils. As representatives in the communities they serve, these individuals are sensitive to the potential local effects of electricity rates, and have incentive through their fiduciary duty to ensure that the utility is managed for good customer service and reasonable cost.
- Unlike a private sector investor-owned utility, which has the financial interests of shareholders to address, a municipal utility does not have to balance the interests of a "bottom line" with the objective of fair rates to customers. There is no incentive to "gold-plate" rate base or make unnecessary expenditures. The interests of the community, who are both the customers and the "owners", are always for reliability, efficiency and reasonable rates.
- The regulatory process that determines rates for the Disco customers in the neighbouring communities establishes an on-going benchmark for acceptable rate levels in the minds of the customers of MEUs. The MEUs would not continue to exist if they were not capable of providing service at rates at or below Disco's rates.
- If customers are displeased with their MEU, either as to rates or in matters of service quality, and if not satisfied with the actions or explanations of MEU staff, the customers have direct recourse to their appointed Commissioners or elected councilors. Access to these individuals is immediate and direct, since these leaders live and work in the community. As the American Public Power Association, which represents some 2,000 public power systems serving about 45 million customers, simply expresses it, "Community citizens have a direct and powerful voice in utility decisions and policies, both at the ballot box and in open meetings where business is conducted."¹

The MEUA also believes that the consistent record of the three members in providing relevant, locally determined conservation and demand management programs to their customers supports the position that regulation is not required to ensure these goals are met. Such programs are there because the MEUs themselves and the customers are committed to their importance.

¹ American Public Power Association, Public Power Fact Sheet, December, 2007.

It is therefore the position of the MEUA that the objectives of fair and reasonable rates and effective conservation and demand management initiatives are safeguarded by the current framework, which is at the same time efficient and low cost.

3 SPECIFIC PROPOSALS OF THE OPTIONS REPORT

3.1 *Overview*

The Government has proposed a number of changes that would significantly affect the mandate and operation of the EUB. The considerations that apply to these proposals are closely interrelated, and the facts to be weighed in one also affect the others. In discussing the specific proposals, we have tried as much as possible to deal with each individually, while minimizing repetition.

The MEUA and the individual members all strongly support the objectives of fair rates and protection of the environment through conservation and demand management. We also believe that these objectives can and should be achieved by well-established practices that do not add unnecessarily to customers' already high electricity bills. Our views on each of the proposals have been framed with these values in mind.

3.2 *Proposal to Eliminate Provision Allowing Disco to Implement Rate Increases of 3% without "scrutiny" by the EUB*

It is the MEUA's understanding that this proposal may mean that any rate change by Disco, regardless of magnitude would be subject to a public hearing before the EUB.

The MEUA appreciates that the current provision is unusual as part of regulatory framework. The 3% limit exceeds the rates of inflation that have existed for a decade or more. Furthermore, the provision as it exists has no mechanism that provides for regular (i.e. annual) review of regulated net earnings to determine whether the level of rates continues to be justified; nor is there any maximum period before which a comprehensive review is required.

As wholesale customers of Disco, we therefore share the concern that an increased level of accountability is necessary, and that the EUB should be empowered accordingly.

However, we are also cognizant of the fact that a public hearing is an expensive undertaking and customers ultimately bear the costs as incurred by the EUB itself, by Disco, and by themselves for their own participation. For its 2007-2008 rate approval application,

Disco projected regulatory costs for the test year at more than \$4.8 million², and it is not clear to what extent this includes the diversion of management and professional time within Disco itself (which would undoubtedly have been substantial). It is therefore in the interest of ratepayers to avoid hearings as long as the objective of appropriate rate regulation can be achieved without them.

Therefore, while we concur with the recommendation that the current provision should be changed, we also recommend that approaches be considered to apply a streamlined and efficient regulatory process.

An option to consider is a multi-year rate adjustment approach which has been widely implemented in other jurisdictions and most commonly called “Performance-Based Regulation” or “PBR”. Under such an approach, once rates have been approved for the utility by the regulator following a full cost of service review, rates are adjusted annually without a full review, according to a pre-determined formula for a pre-determined number of years, after which there would be another full rate review. Both the adjustment formula and the number of years are approved by the regulator, along with “off-ramps”, which are events or conditions that terminate the application of the PBR and trigger a requirement for a full cost of service review. Part of the requirement would be for the utility to report at regular intervals to the regulator on its actual financial performance, and in some regimes there is provision for “excess earnings” beyond some specified level to be shared with the customers through rebates.

An appropriately determined PBR regime in New Brunswick would have the potential to:

- reduce regulatory costs, while providing for small rate increases between full regulatory reviews;
- insure regular reporting of financial results to the regulator and limit the degree to which the utility could benefit in its rates by failing to bring forward a new application for rates; and
- define the time period or the events that would bring the utility before the regulator again.

If this suggestion were to be implemented, the EUB could, with appropriate jurisdiction, either design the PBR formula itself or request Disco to come forward with a specific proposal for approval.

² ADDITIONAL EVIDENCE - REVISED RATE DESIGN, 03 July 2007 Revised 14 September 2007, Board Reference: 2007-004, Appendix 2, NB Power Distribution and Customer Service Class Cost Allocation Study, Addendum III

3.3 Proposal to Eliminate Provision Allowing Cabinet to Overrule a Decision of the EUB Regarding Distribution Rates

The MEUA supports a proposal that would prevent overrule by Cabinet as a matter of routine. This would strengthen the authority of the EUB. Parties should continue to be able to bring matters of law and jurisdiction to the Courts. Of course Government is always in a position to act through legislation when the situation warrants.

3.4 Proposal for the EUB to Regulate Municipal Distribution Utilities

The MEUA has conducted a brief canvas of North American jurisdictions to determine how widely the practice exists of regulating municipal distribution utilities as to rates. The results are attached as Appendix A. The results can be summarized by saying that it is more common for municipal utilities *not* to be regulated than to be regulated, and where they are regulated; there are often specific conditions that have resulted in a decision to regulate them.

At present, the rates of the three New Brunswick municipal utilities are set at no more than the rates of Disco, and of course the rates of Disco are subject to full review and approval by the EUB. The MEUs have found that this level of rates allows all expenses to be covered, as well as providing for the funding of any necessary capital expenditures.

Furthermore, as mentioned previously, in the case of Saint John Energy and Edmundston Energy the wholesale cost of power is at Disco's EUB-approved wholesale rate, and for Perth-Andover Electric Light Commission, its contract for wholesale power is reviewed by the EUB. This means that in each case more than three-quarters of the total cost of serving customers is already subject to EUB.

In the view of the MEUA, effective mechanisms are already in place to ensure that the electricity rates in their communities are "fair and reasonable". The MEUs are community owned and operated as a vital service to the community. Unlike the situation that might exist if the utilities were investor-owned, there is no dichotomy of interest between owners and customers. The customers, as residents and voters in the communities, are well positioned to exert influence on the local decision-makers who determine the rates, and those decision-makers, have every incentive to make sure the rate levels are acceptable. This results in scrupulous control of capital and operating budgets.

Given these facts, the MEUA believes that a regulatory process would not result in rate decreases over the long term, and might in fact result in rate increases given the high cost associated with a full cost of service, cost allocation and rate design hearing, as well as any other processes and requirements that might come under the scope of regulation.

To provide some cost benchmarks, the MEUA obtained some information as to the costs incurred by small utilities in Canada for their regulatory proceedings. For example, under the relatively “light-handed” regime faced by municipal utilities in Nova Scotia, a municipal utility estimated costs of its rate approval at about \$12,000. As well, the utility pays an assessed fee to the UARB which is in the range of \$1,200 to \$1,500 annually³.

Regulated utilities in Ontario face a far more rigorous and costly regulatory regime before the Ontario Energy Board. Renfrew Hydro Inc., a municipal electricity distribution utility that filed an application for rate approval in May, 2010, estimated the costs of that filing, including consulting, public notice, legal, and intervenors’ costs, at \$122,000. The Ontario Energy Board has a multi-year regulatory regime for electric utilities as described in Section 3.4. Therefore, in computing the costs to be included in its annual revenue requirement, Renfrew Hydro added a further \$75,000 to cover three years of filings to obtain the annual increases under the regime, and divided by four years to obtain an annual expense amount of \$49,250. They then added \$11,800 in annual “regulatory assessments” for a total annual cost to be recovered from customers of \$61,050. Renfrew Hydro serves about 4,200 customers, which means that the cost is \$14.50 per customer per year⁴.

A more extreme example is that of a regulated natural gas utility, Natural Resource Gas Limited, which serves about 7,000 customers in and around Aylmer in Southwestern Ontario. That company has projected the cost of its current filing with the Ontario Energy Board at \$625,000, including legal and consulting fees and a \$50,000 provision to administer the annual cost of its proposed multi-year rate adjustment regime. In addition, the utility expects to incur annual costs of \$12,000 for the regulator’s assessment, and \$9,000 of costs associated with approval of quarterly adjustments for changes in gas costs. If approved, this means that the total costs amount to \$104 per customer, to be recovered over a five-year period⁵.

It is important to note that in the examples above, the regulatory burden on these distributors is mitigated by mechanisms that provide for the flow-through of wholesale supply costs, so that a full scale retail rate approval application is *not* triggered by changes in the wholesale rates.

³ From conversation with Don Regan, Electric Superintendent, Berwick Electric Commission, Nova Scotia.

⁴ From information filed with the Ontario Energy Board by Renfrew Hydro Inc., 31 May, 2010, EB-2009-0146, Exhibit 4, Tab 2, Schedule 1, Attachment 4, Page 2 of 2.

⁵ From information filed with the Ontario Energy Board by Natural Resource Gas Limited, EB-2010-0018, Exhibit D1, Tab 3, Schedule 6, Page 1 of 3.

The question becomes, is the increased transparency and refinement in the rate setting and approval process achieved in these jurisdictions of sufficient benefit to justify the costs, which will ultimately be borne by consumers? The MEUA believes that it will not.

An additional question meriting extensive consideration before implementing any change is: What aspects of the MEUs' operations, in addition to rates, would be subject to oversight by the EUB? In Ontario, the regulator involves itself with electric distribution utilities with respect to such aspects as:

- Conservation/demand management budget, program implementation and monitoring of results;
- Annual filing of financial reports;
- Accounting procedures and chart of accounts;
- Capital planning and asset management standards;
- Affiliate relationships (sharing of services with the municipality); and
- Metering policy and practice.

New initiatives in any of these respects result in participant consultations and requirements, all of which are costly. It is important to note that the MEU's already file their annual budgets with the Department of Local Government and also their rate changes with the EUB.

The MEUA believes that the Government's objectives for the electricity sector in New Brunswick can be achieved without regulation of the MEUs by the EUB.

3.5 Proposal Regarding Efficiency and Conservation Measures

The MEUs are proud of their record of implementing energy efficiency and conservation measures in their communities, and have no objection to reporting their activities and results to the Government or alternatively to the EUB.

They also believe that this record of achievement justifies the confidence of the Government that the MEUs will continue to select programs wisely, reflecting the profile of their communities, implement them effectively, and monitor them diligently. The MEUs therefore recommend that they continue to be allowed to select a portfolio of programs for themselves and implement them in their service territories.

The MEUs are of the view that involvement of a Government agency or the EUB does not imply or require regulation of the MEUs as to their rates.

3.6 Proposal Regarding EUB Approval of Capital Spending Plans

A mechanism for approval of capital spending plans in the regulation of Disco may be appropriate, and would be consistent with the powers of regulators in some other jurisdictions. The approach might be either a simple budget approval, or (especially for large-scale projects) a budget approval combined with technical approval in a separate proceeding leading to granting of a permit to construct.

In the case of very large capital expenditures proposed by Disco, the MEUs believe that such a mechanism would allow the interested public to have input into the need for the project, the selection of the technology, route, etc., the total costs, and the rate impact. However, in order to control costs, the MEUA would recommend that the requirement apply only to projects that exceed some predetermined minimum cost level. For New Brunswick, the MEUA recommends that the level be set after a survey of other jurisdictions and consultation with Disco.

3.7 Proposals Regarding Objectives, Goals and Plans of the EUB

A process of goal-setting, planning, reporting and benchmarking has become a best practice for North American regulators. The MEUA supports an initiative that would enhance these approaches at the EUB, provided that the size and level of activity of the EUB is taken into account in developing the requirements.

3.8 Proposals Regarding the Public Advocate

The MEUA concurs with the proposals of Government in this regard.

3.9 Proposals Regarding Role of the EUB in Dealing with Consumer Complaints

The MEUA concurs with the proposals of Government in this regard, and would also reiterate that customers of MEUs have excellent access to decision-makers in their communities if they have complaints regarding the rates or service policies of their utility.

Appendix
Regulatory Framework
for Municipal Electric
Utilities – Survey of
North American
Jurisdictions

Table of Contents

1	SUMMARY	2
2	PURPOSE AND METHODOLOGY	3
3	CANADIAN JURISDICTIONS	4
3.1	ALBERTA	4
3.2	BRITISH COLUMBIA	5
3.3	MANITOBA.....	6
3.4	NEWFOUNDLAND AND LABRADOR.....	6
3.5	NOVA SCOTIA	6
3.6	ONTARIO.....	7
3.7	PRINCE EDWARD ISLAND.....	9
3.8	QUÉBEC	10
3.9	SASKATCHEWAN.....	11
4	UNITED STATES JURISDICTIONS	11
4.1	UNITED STATES OVERVIEW	11
4.2	INDIANA.....	13
4.3	MAINE	14
4.4	MARYLAND	14
4.5	RHODE ISLAND	15
4.6	VERMONT	15
4.7	WISCONSIN	16

1 SUMMARY

Of the nine Canadian provinces other than New Brunswick, two (Manitoba and Newfoundland and Labrador) have no municipal electric utilities. The municipal electric utilities of British Columbia, Saskatchewan and Prince Edward Island are not regulated by the independent utility regulator.

All municipal utilities are regulated in Québec, Nova Scotia, and Ontario¹. Ontario implemented an extensive and costly regulatory framework for municipal utilities as part of an overall restructuring of the industry that made the municipal utilities for-profit business corporations. In Alberta, regulation applies only if the municipal utility has an affiliate providing competitive retail supply (for profit) outside its municipal boundaries. As a result, some of Alberta's municipal utilities are regulated and others are not regulated.

In the United States, all but one state have public power systems. According to the American Public Power Association, municipal electric utilities are not regulated in 43 states. In the six states where regulation applies, regulatory requirements and the range of matters subject to regulation differ by state. Of the approximately 2,000 public power systems in the US, only 6% are regulated. In Indiana, any municipality can choose to withdraw from regulation and instead have its rates approved by a locally established Board. In Maine, rate increases are reviewed by the regulator only if there are complaints from customers following a local consultation process. In Vermont, although applications to increase rates must be filed with the regulator, in practice very few of the applications are actually subjected to an investigation process.

Although the reasons for the choice to regulate or not to regulate municipal utilities were not clarified in every jurisdiction, a relevant context for a change to more regulation was identified in these jurisdictions:

- Alberta – expansion of the business mandate of some municipal utilities to include for-profit retail services outside their municipal boundaries;
- Ontario – changes in legislation that reconstituted the municipal utilities as shareholder-owned business corporations that were expected to be operated for-profit;

¹ The OEB has to date refrained from rate regulation of one utility, Cornwall Electric, which is investor-owned, but which receives its wholesale supply from outside the province.

- Quebec – concern that municipal utility rates were higher than those of the provincial utility Hydro-Québec;
- Vermont – to address perceived abuses in treatment of customers served by the utility outside of their municipal boundaries.

Except for Ontario and the regulated municipal utilities in Alberta, the entities under consideration are relatively small in terms of number of customers and are operated primarily as community services. For these types of entities the cost/benefit ratio of regulation would be of concern. Some of the mechanisms seen in this survey that contribute to avoiding or minimizing regulatory cost burden for municipal utilities are:

1. Exempting completely from regulation;
2. “Opt-out provisions;
3. Regulatory review only if customer complaints received;
4. Light-handed” regulatory requirements that allow filings without extensive consulting, legal and expert witness services, or allow for approval without an investigation process;
5. Separate process for pass-through of wholesale supply cost increases;
6. Low assessed fees from the regulator;
7. Representation of consumers by a government agency in the regulatory process;
8. Formation by the utilities of groups to provide rate case support services and share costs.

2 PURPOSE AND METHODOLOGY

The purpose of this Appendix is to provide information to supplement the Government’s statement that “several provinces regulate all municipal utilities, while others exempt those serving customers within their own boundaries”² and thereby assist the Government and stakeholders in reaching a conclusion as to whether further consideration should be given to bringing New Brunswick’s municipal electric utilities under regulation by the EUB. The MEUA undertook a survey of jurisdictions in Canada and the United States through review of information available at websites and by contacting people by telephone or email in the jurisdictions. For each jurisdiction surveyed, an attempt was made to contact *either* the regulatory agency *or* a municipal electric utility, with the choice determined by the availability of contact information.

² The New Brunswick Energy Regulatory Framework Options for Improvements, June 15, 2010, page 3.

As will be seen in reading the resulting documentation of information, the scope and level of detail of information obtained in each jurisdiction is different. In view of the timeframe allowed for response, no attempt was made to delve more deeply into the background or reasons for the local policy. Nor is the information gathered sufficient to compare in depth the regulatory processes or requirements for municipal utilities where they exist. However, it is hoped that the level of information is sufficient to enable a more in-depth survey to be designed in the future if necessary, and to identify the jurisdictions that might provide responses to such a survey.

The survey does, however, in our view, provide an overview of the prevalence of regulation of municipal utilities across North America, and some indication of the industry structure in the jurisdictions in which municipal utilities are regulated.

The names and contact information of survey respondents have been provided by way of footnotes throughout this Appendix.

3 CANADIAN JURISDICTIONS

3.1 *Alberta*

Alberta's restructured electricity industry provides an example of varied and complex requirements as to the regulation of its municipal electric utilities. Alberta has a competitive market for electricity generation and retail open access for consumers. According to information at its website, the Alberta Utilities Commission ("AUC") regulates investor-owned natural gas, electric and water utilities, *certain municipally owned electric utilities* and regulated retailers, setting their terms and conditions of service, as well as their rates.

Albertans are served by both investor-owned and municipally-owned utilities. Transmission is regulated by the AUC according to section 37 of the Alberta Electric Utilities Act³ ("EUA") regardless of ownership. A municipal owner of transmission assets, such as the City of Red Deer Electric Light & Power Department ("EL&P"), is required to get AUC approval of its transmission revenue requirement and rates for every year⁴.

³ <http://www.auc.ab.ca/acts-regulations-and-auc-rules/acts-and-regulations/Documents/EUA/ACT.pdf>

⁴ Andreas Zabel, CGA, Utility Specialist, Electric Light & Power Department, The City of Red Deer, Ph 403-309-8468.

With regard to regulation of distribution rates, Section 102 of the EUA exempts a city owned wires owner (i.e. a municipal distribution utility) if it does not own an affiliated retailer operating outside of its service area. Specifically subsection 102(2) says:

“102(2) The owner of the electric distribution system must apply for approval of its distribution tariff..”

(a) to the Commission, [i.e. the AUC]

(b) to the council of a municipality, if the owner is a municipality or a subsidiary of a municipality

(i) that does not have an affiliated retailer that provides retail electricity services outside the service area of the municipality..”

This provision results in different treatment among the Alberta MEUs. EL&P has no affiliated retailers operating outside of its service area, and its distribution function and rates are approved by Red Deer City Council⁵.

By contrast, Alberta also has municipally owned energy companies that are widely diversified and that compete in Alberta’s restructured market. For example, ENMAX Corporation is wholly owned by the City of Calgary, and is a vertically integrated utility that provides electricity, natural gas, renewable energy and value-added services to its customers throughout Alberta (i.e. not solely within the municipal limits of the City of Calgary). Its core operations include electricity generation, transmission and distribution and the sale of electricity, natural gas and renewable energy products to residential and commercial customers in Alberta, operated for profit. According to ENMAX’s website, the company achieved net earnings of \$205.9 million and a return on shareholder's equity of 12.3% in 2009.

Regulatory approval of ENMAX Power was transferred from The City of Calgary to the EUB in January 2004. This is the regulated side of ENMAX’s business and involves filing regulatory applications with associated tariffs to the EUB. These are examined and challenged in hearings that are open to the public.

3.2 *British Columbia*

The largest electricity service provider in British Columbia (“BC”) is the provincially-owned BC Hydro. Fortis BC, a private, regulated utility that generates and distributes

⁵ Andreas Zabel, CGA, Utility Specialist, Electric Light & Power Department, The City of Red Deer, Ph 403-309-8468.

electricity to customers throughout south-central BC, is BC's second largest electricity retailer with approximately 1,450 km of high voltage transmission lines and approximately 5,550 km of distribution lines.

There are also several municipally owned electric utilities. The City of New Westminster, City of Grand Forks, City of Kelowna, City of Penticton, Summerland Power and Hemlock Valley Utilities operate distribution systems for local residential, commercial and industrial customers. These utilities purchase electricity from BC Hydro or FortisBC. Nelson Hydro operates generation, transmission and distribution facilities in and around the City of Nelson.

The municipal utilities are not regulated by the British Columbia Utilities Commission ("BCUC") but operate under the "community charter"⁶.

BC is not a restructured jurisdiction. Retail customers are served by the monopoly utility in their service territory. Wholesale customers, such as municipal utilities have the right to change suppliers on two years notice.

3.3 *Manitoba*

There are no municipal electric utilities in Manitoba. The entire province is served by the provincial integrated utility, Manitoba Hydro⁷.

3.4 *Newfoundland and Labrador*⁸

There are no municipally-owned electric utilities in Newfoundland and Labrador.

3.5 *Nova Scotia*⁹

There are six municipal electric utilities in Nova Scotia. The rest of the distribution service territory in Nova Scotia is served by an investor-owned utility, Nova Scotia Power Inc. The regulator is the Nova Scotia Utility and Review Board ("NSUARB").

The NSUARB regulates the municipal utilities as to rates. The MEUs have controlled the costs of supporting rate studies by jointly retaining local advisors, but do not typically use legal counsel in their rate processes. Applications are posted on the internet, and there is a process for questions and answers. There is a simplified process to flow

⁶ Rod Carle, Manager of Electric Utility, City of New Westminster, rcarle@newwestcity.ca

⁷ Telephone message of staff of Manitoba Public Utilities Board, 204-945-2644.

⁸ Doreen Dray, Financial & Economic Analyst, Board of Commissioners of Public Utilities.

⁹ Source: Don Regan, Electric Superintendent, Berwick Electric Commission, 902-538-4744, dregan@town.berwick.ns.ca.

through changes in the wholesale costs of power. Berwick Electric Commission, an MEU serving about 7,000 customers, estimates the cost of its rate approval process at about \$12,000, and also pays an assessed fee to the NSUARB of \$1,200 - \$1,500.

3.6 Ontario¹⁰

Ontario provides an example of transition from a not-for-profit MEU sector, subject to very light oversight, to a commercial MEU sector with extensive oversight by an independent regulator.

Until the *Energy Competition Act, 1998* (the “Act”) came into force, MEUs in Ontario were constituted either as departments of the municipal government or as independent “commissions”. Rate increases were first approved by the commissioners or by the municipal council as applicable, and then forwarded to a department of the integrated provincial electric utility, Ontario Hydro, for final approval. Ontario Hydro’s review of the rate increase applications was based on formulas and guidelines, and a small staff scrutinized the rate proposals of Ontario’s more than 300 MEUs each year in a period of less than two months. The MEUs were operated to deliver “power at cost”, with rates recovering only the amounts necessary to pay annual operating costs and fund capital programs. Most of the MEUs were either totally debt-free or had very low levels of debt as of 1998.

The present regulator, the Ontario Energy Board (“OEB”) existed at that time, and exercised full regulatory authority over the province’s natural gas utilities, but had no jurisdiction over MEUs. The OEB did review the bulk power rate proposals of Ontario Hydro, and conducted public hearings, but its recommendations were not binding on Ontario Hydro.

The Act made it mandatory for each MEU to be restructured as a corporation under the *Business Corporations Act*, with the municipality as its shareholder. Operating profits became subject to “payments in lieu of tax” on the same basis as corporate income taxes would apply to private sector business corporations. These measures were intended to establish a level playing field as to rates between electricity distribution utilities under public sector ownership and those under private sector ownership. It was intended by the government of the day, in making these legislative provisions, that MEUs would be allowed to earn a rate of return on equity at the same level that would be required by private sector investors. The government hoped that the profit motive would drive improvements in efficiency, including consolidation in the sector. However, the addition of costs of capital to the revenue requirements of MEUs (interest on debt, return on

¹⁰ Source: Paula Zarnett, an Ontario-based rate and regulatory consultant. Vice President, BDR NorthAmerica Inc. 416-214-4848.

equity, and the payments in lieu of tax attracted by the return on equity) have increased the distribution component of customers' electricity bills by between 40% and 100%, depending on the rate levels and financial structure of the MEU prior to the Act.

The change in structure, with built-in provision for the profit motive in operation of Ontario's MEUs, created for the first time the same dichotomy of interest between the municipalities as shareholders of the MEU and customers, as exists between shareholders of investor-owned utilities and their customers. Therefore, the Act brought the MEUs (along with Ontario Hydro's distribution and transmission successor entity, now called Hydro One), under full regulation by the OEB.

The Act also provided for establishment of a competitive market for electricity in Ontario, and made the distribution utilities (MEUs and the few investor-owned utilities alike) responsible for default supply to their customers and for market settlement of the cost of consumption by all customers in their service territories.

Over the period between passage of the Act and the opening of Ontario's competitive electricity market in May, 2002, the OEB brought into effect the following:

- a licensing regime for the MEUs;
- four "codes" to govern their operations;
- an Accounting Procedures Handbook including a uniform chart of accounts; and
- a set of guidelines for the computation of unbundled distribution rates.

All of this was done by a combination of extensive work by OEB staff and stakeholdering processes with the MEUs. Budgets and staff levels of the OEB were increased significantly. The OEB now has an operating budget in excess of \$30 million.

The OEB now has oversight over all aspects of an MEU's operations, and requires extensive annual compliance reporting. From the outset, the OEB established a multi-year rate approval regime, such that between full cost of service reviews, the rates may be increased by a percentage that is the computed as a cost escalation factor less a factor for improvements in productivity. In order to continue earning the allowed rate of return for its shareholder, the MEU must be able to achieve annual reductions in real cost levels equal to the productivity target. Cost of service reviews now take place at four-year intervals, and require the MEU to file hundreds of pages of supporting evidence. Several consumer groups may intervene and participate in a pre-hearing process of information requests and responses, technical meetings and settlement meetings. If not all issues are settled, the OEB decides whether or not to hold an oral hearing. Legal counsel is retained, and most MEUs also have their evidence, including special studies, prepared by

consultants. The cost is typically in the hundreds of thousands of dollars, including these expenses, the OEB's costs, and the costs awarded to intervenors by the OEB. In the years between full cost of service hearings, the MEU must file information in support of its formulaic rate adjustment, and also incurs a cost for this.

MEUs also participate at their own cost in numerous ongoing stakeholder processes of the OEB, for such matters as metering changes, changes in rate filing guidelines, cost allocation methodology, distribution rate design, code changes, conservation and demand management target and compliance requirements, and cost of capital determination. They address these requirements by adding specialists to their staff, reassigning existing staff, hiring consultants, or some combination of these options.

3.7 *Prince Edward Island*¹¹

Only one Prince Edward Island municipality, the City of Summerside ("COS"), has its own electric utility. The rest of the province (i.e. 90% of the provincial load) is served by an investor-owned utility, Maritime Electric, which also provides transmission services throughout the Island.

COS serves customers within its municipal boundaries, as well as about 80 customers outside its boundaries, as a distribution utility. Transmission services are provided by Maritime Electric, and COS has contracts for generated power supply with a mainland source and also with a wind generation facility on the Island, and also owns some generation facilities.

Provincial legislation provides for rate regulation of Maritime Electric by the Island Regulatory and Appeals Commission ("IRAC"), but the same legislation specifically exempts a municipal corporation from regulation with respect to service of customers within its municipal boundaries. COS is therefore subject to regulation under the legislation insofar as it serves customers outside its municipal boundaries; however in practice IRAC does not impose any regulatory requirements on COS as long as COS supplies its customers at the same rates as Maritime Electric. COS applies Maritime Electric's rates to all of its customers, both within and outside the municipal boundaries, so that all Prince Edward Island customers are served at the same rates.

Chapter E-4, Electric Power Act, Section 1(f) states as follows, in defining who is subject to regulation as described under the Act:

“(f) “public utility” means any person and the lessees, trustees, liquidators or receivers of any person that owns, operates, manages or controls, or is

¹¹ Paula Zarnett, BDR NorthAmerica Inc. 416-214-4848.

incorporated for the purpose of owning, operating, managing or controlling any plant or equipment for the production, transmission, distribution or furnishing of electric energy,
(i) repealed by 2003,c.3,s.2,
(ii) repealed by 2003,c.3,s.2,
either directly or indirectly, to or for the public; unless the Lieutenant Governor in Council by proclamation otherwise declares, this clause does not apply to any city or town except insofar as the city or town furnishes electric energy to customers beyond its corporate limits;”.

3.8 *Québec*

Most of the province is served by the provincial integrated utility Hydro-Québec. However the following municipal utilities exist, purchasing power from Hydro-Québec and distributing it in their service territories:

- Ville de Jonquière
- Coopérative régionale d'électricité de Saint-Jean-Baptiste de Rouville
- Énergie électrique Westmount
- Ville d'Alma
- Ville d'Amos
- Hydro-Coaticook
- Ville de Baie-Comeau
- Ville de Joliette
- Hydro-Sherbrooke

Rates of the municipal utilities are restricted by legislation to be no higher than the rates approved for Hydro-Québec:

“They must in no case involve, for any class of consumers of the electricity system of a municipality, a higher cost than would result to an equivalent class of consumers of electricity under the tariff fixed by the Board for electricity supplied by Hydro-Québec.”¹²

The municipal utilities have been regulated by the Régie de l’Energie since 1998 at which time there was concern that rates charged by municipal utilities were higher than those of Hydro-Québec. Since 1998 municipal utilities have filed rate changes with the Régie de l’Energie however, as the municipal utilities have been in compliance with the above legislation, they have not been required to appear before the Régie de l’Energie in

¹² An Act respecting Municipal and private electric power systems, R.S.Q. c. S-41, s. 8. R. S. 1964, c. 186, s. 9; 1980, c. 9, s. 1; 1996, c. 2, s. 951; 1996, c. 61, s. 133; 2005, c. 28, s. 134.

justification of their rates. Each utility pays an annual fee to the Régie. An example is Westmount's fee of \$6,990.¹³

3.9 Saskatchewan¹⁴

The cities of Saskatoon and Swift Current in Saskatchewan have municipal electric utilities.

The City of Saskatoon operates an electric utility, Saskatoon Light & Power, providing electrical service to the area of Saskatoon which lies generally within the 1958 City boundary. Bulk power is purchased from the provincial crown utility, SaskPower, which also distributes power to retail customers. Saskatoon Light & Power serves approximately 59,000 customers and has revenues of \$120 million.

The Department of Light and Power is the main power supplier for the City of Swift Current. It buys power in bulk from SaskPower. Any surplus resulting from the City's Light and Power operations is used to help keep Swift Current's municipal taxes at one of the lowest levels in the province¹⁵.

The regulatory authority, Saskatchewan Rate and Review Board, does not regulate the rates of the municipal utilities. The rates are approved by City Council.

4 UNITED STATES JURISDICTIONS

4.1 United States Overview

Since it was our previous information that it was uncommon for municipal utilities in United States jurisdictions to be regulated by regulatory commissions, and since a full survey would involve contacting 50 jurisdictions, our first step was to contact the American Public Power Association ("APPA"). The APPA represents publicly-owned not-for-profit electric utilities in the United States as an industry stakeholder, and also provides trade association and educational services.

In a fact sheet published in December, 2007 and available from the APPA's website, it was reported that there were about 2,000 public power systems in the United States, owned mainly by cities and towns, but a handful of states also have public power systems. In contrast to Canada, where public ownership of the power systems

¹³ Hydro Westmount, Work Order HW-1000026, 01/13/2010; info@westmount.org

¹⁴ Wayne Hill, Rate Analyst, Saskatoon Light & Power, 306-975-7940.

¹⁵ http://www.city.swift-current.sk.ca/city_hall.php?name=Sections&op=viewarticle&artid=64

predominates, in the United States 69% of customers are served by 217 investor-owned utilities. Nevertheless public power systems have a significant place, serving about 15% of customers; rural electricity cooperatives serve a further 12%. Every state except Hawaii has one or more public power systems serving customers in it.

The largest U.S. public power system is the Los Angeles Department of Water and Power, serving 1.4 million customers; however more than 2/3 of U.S. public power systems serve communities with populations of 10,000 or fewer.

Jurisdiction over distribution and retail rates is at the state level, so that each state has its own regulatory agency (most typically called a Public Utilities Commission or a Public Service Commission). State legislation empowers these regulators, and within the confines of that legislation, the regulators each develop policies and procedures that are reflective of the local situation. Some, but not all states have instituted retail competition for electricity.

Our inquiry to the APPA was intended to prevent the necessity of canvassing each state separately, and to focus our inquiries on those states that do regulate public power utilities as to their rates. According to the APPA¹⁶, of 49 states with public power systems, only the following six (6) have full rate regulation over municipals:

State	Applicable Legislation	Number of Public Power Utilities in 2007 ¹⁷
Indiana	Code: Title 8, Article 1, Chapter 2, § 8-1-2-1 and § 8-1-2-42.5; Article 1.5, Chapter 3, § 8-1.5-3-8, § 8-1.5-3-9 and § 8-1.5-3-9.1 Municipal utilities can remove themselves from Utility Regulatory Commission jurisdiction by ordinance or majority vote of citizens.	73

¹⁶ Ursula Schryver, Director, Customer Programs, American Public Power Association, 1875 Connecticut Ave. NW, Suite 1200, Washington, DC 20009-5715, Ph: 202.467.2980

¹⁷ American Public Power Association • 2009-10 Annual Directory & Statistical Report, page 38. www.APPAnet.org.

State	Applicable Legislation	Number of Public Power Utilities in 2007 ¹⁷
Maine	Title 35-A, Chapter 1, §102 and Chapter 3, §301; Title 32, Chapter 32, §3201 and §3207	5
Maryland	Public Utility Companies Article, § 1-101 and § 2-113	5
Rhode Island	Chapter 39, § 39-1-2	1
Vermont	Title 30, Chapter 5, § 201, § 203, and § 218; Chapter 79, § 2901 and § 2923	16
Wisconsin	Chapter 196, § 196.01 and § 196.02	84

The following sections set out the information that was gathered by directly contacting either the regulator or a utility in the jurisdiction.

4.2 *Indiana*¹⁸

The Electricity Division of the Indiana Utility Regulatory Commission monitors and evaluates regulatory and policy initiatives that affect the electric utility industry. The division director and staff reviews and advises the Commission on regulatory proceedings initiated by Indiana electric utilities, including those for rate changes and demand management programs. It also monitors electric utility performance for reliability and service quality.

A unique provision of the Indiana framework is that every municipal utility has the option to withdraw from regulation. Sixty (60) municipal utilities have withdrawn over the past 20 years. Once a utility withdraws, the municipality establishes a local Board accountable for the utility, which has the power to approve rates. The Commission then ceases to monitor the rate activities of these utilities.

For those utilities remaining under regulation by the Commission, the Commission’s jurisdiction applies only to rates and charges. Rate application and review processes leading to Commission approval may take 12 to 18 months. A state agency represents consumers in the proceeding. Rate applications by municipal utilities are infrequent.

¹⁸ Danielle McGrath, Indiana Utility Regulatory Commission, 317-232-2297.

4.3 *Maine*

In Maine, a process exists that allows municipal utilities effectively to set their own rates, with intervention from the Maine Public Utilities Commission only if the proposal is disputed by customers, or if the requested rate increase exceeds 15%.

Initially the Board of Trustees of the municipal utility will develop and approve its rate proposal. It must then give 30 days' notice in the community at the end of which the "hearing" takes place. The "hearing" consists of a presentation made by the utility to any members of the public who wish to be present, and answers questions. Customers who have attended the hearing then have a further 30 days during which they can register complaints. Ten complaints would be required in order to trigger further investigation by the PUC. If ten complaints are not received, the rates are filed with the PUC and go into effect. If ten or more complaints are received, the PUC has discretion to review the proposal more extensively, or to simply approve it without further hearing.

It is typical in the communities that the initial presentation by the municipal utility is not attended, and that if any customer attends, there is no subsequent complaint. The manager of Kennebunk Light and Power District¹⁹, the utility contacted for this survey, said that the utility Board of Trustees is elected, and is very sensitive to the needs of the community. Any complaints directed by customers to the Board are dealt with promptly.

Municipal utilities are also subject to state-wide standards of service on matters such as customer notification and disconnection policy.

4.4 *Maryland*²⁰

In Maryland, municipalities with their own distribution systems purchase and re-sell electricity. Rates are established through a relatively simple application process, and are not re-assessed until the utility applies again. Applications for rate reviews are necessary only if required by distribution cost increases, because changes in the wholesale cost of power are passed through.

¹⁹ Sharon Staz, General Manager Kennebunk Light and Power District (207) 985-3311

²⁰ www.psc.state.md.us, 410-767-8000.

4.5 *Rhode Island*²¹

The Pascoag Utility District (PUD) is the only not-for-profit, rate payer owned, public power in Rhode Island, and is regulated by the Rhode Island Public Utilities Commission (“RIPUC”). The Pascoag Utility District was incorporated by a special act of the Rhode Island General Assembly. A quasi-municipal utility, Pascoag provides Electricity and Water on a "not for profit" basis. Currently PUD provides electric service to over 5,000 customers in Pascoag and Harrisville RI and 1,200 Water customers in Pascoag.

The RIPUC has full authority to approve or deny rates. Distribution rates are approved based on a cost of service study on an as-needed basis, usually every five years. The requirements for rate approvals are the same as for the investor-owned utility (NGRID) in Rhode Island. Two public agencies, the Rhode Island Attorney General and the Division of Public Utilities and Carriers intervene as representatives of ratepayers.

In order to control costs, rate cases are prepared by internal staff, with PUD executives appearing as the witnesses, and the General Counsel serving as the legal counsel. On this basis the costs associated with a cost of service application are approximately \$50,000. In addition, the RIPUC assesses all utilities an annual charge. PUD’s assessment averages \$20,000.

Purchased fuel costs and transmission costs are unbundled on the bills, and are adjusted annually. An approval is also required for this. Utilities including PUD also apply for approval of their Demand Side Management Plan annually, and must support the application with formal evidence. Each customer in Rhode Island is assessed 2.3 mills/kWhr to support this program (rebates for Energy Star, renewable etc).

4.6 *Vermont*²²

Vermont’s municipal utilities are regulated by the Vermont Public Service Board (“PSB”), and are subject to largely the same filing and scrutiny requirements as investor-owned utilities. One difference is that a municipal utility can implement its rate increase prior to receiving the Board’s approval, provided that the increase is applied equally to all rate classes. The Board can order a refund if it is ultimately determined that all or part of the rate increase was not justified. Changes in rate design must be approved before implementation. The utility must file cost information in support of its requirement for increase. Investigation and approval of the application may take up to seven months. Increases in costs of purchased power are the most frequent drivers of applications for rate increases.

²¹ Ted Garille, Pascoag Utility District, tgarille@pud-ri.org .

²² Sue Hudson, Vermont Public Service Board.

Most of the Vermont municipal utilities are small, between a few hundred and a couple of thousand customers. Thirteen (i.e. most) belong to the Vermont Public Power Supply Authority, a joint action agency which, among other services to its members, provides help with rate cases. Vermont law provides that the Vermont Department of Public Service (“DPS” the consumer advocate) and the Board will review a tariff filing and the Board will decide whether to open an investigation into it. Most of the tariffs filed by municipal utilities (and all other electric utilities) are not investigated. For tariff filings that are not investigated, the utilities typically incur very little legal costs. If a tariff filing is investigated, the utility will incur significantly higher costs. While the Board and the DPS have the authority to pass through their costs associated with reviewing municipal utility tariff filings to the utilities, in practice this has not been done for at least a decade.

The municipal utilities have been regulated for many years, but this was not always the case. Because of the way electricity service came to Vermont, nearly all of the state’s municipal utilities serve some customers outside of their municipal boundaries. It is the understanding of Board staff that some of the municipal utilities differentiated in their rates between customer within and outside the municipalities. This prompted legislature to authorize a predecessor agency of the PSB to regulate the municipal utilities.

As well as rates, the PSB scrutinizes the utilities’ capital programs, integrated resource plans and service quality indicators.

4.7 *Wisconsin*²³

In Wisconsin, the regulation of municipal utilities is generally the same as investor owned utilities. However, coops are generally exempt from Public Service Commission regulation. The municipal utilities have always been regulated.

Approximately half of the municipal utilities are members of WPPI Energy, which provides rate application processing at no added cost for its members. Regulatory commission expenses are approximately \$3,500-\$7,000. Non-WPPI utilities may also incur consulting fees of approximately \$5,000-\$12,000. However some of the larger non-WPPI utilities have the in-house expertise for rate application processing. Generally there are no legal fees for municipal rate applications, which are normally uncontested.

²³ Jerry Albrecht, Senior Rate Engineer, Public Service Commission of Wisconsin, (608) 267-5111
Jerry.Albrecht@wisconsin.gov

Intervention is rare in municipal utility cases and costs have not been included in the revenue requirement.

Generally the amortization period for rate application expenses is 3 years. However, if an unusually large expense is incurred a longer amortization period may be used to minimize impact to customers.