An Analysis of a Monopolist In a Small Open Economy

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Abstract: A monopoly can be defined as a market that has only one seller but many buyers. As a sole producer of a product, a monopolist is in a position of market power. This is because there are no competitors who could compete for market share. The monopoly exists due to economies of scale, because of sole access to some resource or technology or because of the use of non-market means to eliminate competition. This could be buying out competitors, colluding with suppliers or customers to discriminate against competitors, enacting legislation to restrict competition, threatening costly law suits or even engaging in physical violence. In this paper we focus on one firm, working as a natural or pure monopolist within a small open economy. A brief overview of both the case country and the case firm is given. Choice of output and prices, price discrimination within the company, the impact of the current government subsidy for electricity and the role of the regulatory board governing utility companies in the case country will all be covered in this paper. Monopolistic tendencies within a Capitalist system, firm collusion, political influences and corporate control will also be briefly discussed. [Report and Opinion 2010;2(2):35-42]. (ISSN: 1553-9873).

Key words: Monopoly; Price Discrimination; Government Regulation; Capitalist System
JEL Classifications: (JEL D11/JEL D21/JEL D24/JEL D40/JEL D42)

1. Introduction

Monopolistic tendencies more often than not occur within the utility sector – telecommunications, gas, electricity, water. This is because of the high initial investment in the running of telephone cables, power and gas lines etc. Such high costs tend to deter other players in the market especially in smaller countries such as those in the Caribbean. Monopolies of this type are labelled **Natural Monopolies**.

Electricity is a factor input in all industries and so can be determined as both a commodity and a public service. In this paper, the electricity industry has been characterised by natural monopoly conditions because production and delivery technologies and economies of scale in production plants determine that service by one firm can be provided more efficiently than by two or more firms. Therefore, the industry is said to be dominated by vertically integrated companies throughout the world. However, later on we will consider the influence of the host country's Capitalist structure.

The topic is of special interest not only because of the unquestionable importance of electrical power in general but because of its current relevance within the selected case country. The case firm has had a monopolistic advantage for almost one hundred years and has recently applied to the governing board for an increase in rates. The scope of the paper is the current market behaviour of the firm, the implications of the rate increase if granted and to a smaller extent the behaviour of the state. Mention is also made of corporate control and monopolistic tendencies in a capitalist system in an effort to broaden the readers' thinking.

A brief overview of both the case country and the case firm is given to make the readers' understanding a bit clearer for preceding chapters. The paper is divided into four main sections. Section 1 looks at how the company chooses their output and prices, section 2 deals with price discrimination within the company, section 3 reviews the impact of the current government subsidy for electricity and the final section looks at the regulatory board governing utility companies in the case country. The paper concludes with my personal view about the company's monopolistic power in the case country. Does the electricity market need more competitors and would it be beneficial to both the government and consumers alike?

2. Literature Review

Studies have been done on the liberalisation of trade within Barbados' service sector, in particular the telecommunications sector. However, to date studies

have not been carried out on the Barbados Light and Power Company operating as a monopolist in that country. Hence we will draw reference from previous studies carried out on the telecommunications sector, in particular Schmid's case study, and compare them to the electricity sector.

Like the electricity sector, the telecommunications sector was once also controlled by a sole provider until 2002. The British based Cable and Wireless Limited was granted a twenty year agreement in 1991 and was due to expire on 2011. However, due to the new telecom reform policy in Barbados, this agreement was ended in 2002.

According to Schmid in her case study of Barbados' telecommunications sector, Barbados liberalised the sector to enhance its competitiveness and to spur economic growth. In addition, as consumers became more exposed to new technology, international practices and foreign markets they became increasingly dissatisfied with the services provided by the company. This latter observation can also be applied to the electricity sector as it relates to purpose of a rate increase by the sole provider of this commodity. Barbadians are generally aware of the current economic downturn worldwide and are cognisant of the fact that many companies are under pressure to meet their expenses and so a large percentage of the population, though not in favour of the overall increase in cost of living, do not dispute the current price increases within the utilities sector.

However, it should be noted that consumers have now become insensitive and so in opposition of companies who seek rate increases during this time to further increase profits.

Similar to the telecommunications market, high fees for electricity negatively affect businesses and become a stumbling block to foreign companies when trying to establish subsidiaries on the island. Schmid notes that the monopoly had no economic incentive to match developments abroad; hence there was a need for up-to-date infrastructure and affordable pricing to improve competitiveness within international business on the island.

The telecommunications reform was done in stages beginning with allowing access by other providers in the internet and domestic mobile phone services through interconnection with the incumbent network. The final phase opens up international long distance and fixed line services to the competition.

Is a similar process needed within the electricity market to further improve services and enhance the attractiveness of the island to international businesses? This case study seeks to address this question using economic theory considering both the international and the local economic environment with the expectation that the outcome and suggestions will be helpful to future similar research.

3. Methodology

Data was gathered from the worldwide web and Professors in the field of Economics. In addition to this, past knowledge and references from previous economic courses were also useful in this venture.

The analysis of the firm is mainly theoretical where actual data could not be retrieved in a timely manner. Therefore, the inserted graphs represent direction of shifts etcetera for explanation purposes only (figures are not actual).

4. A Brief Overview

4.1. About the Case Country: Barbados

Barbados is the most easterly island in the Caribbean chain of islands. Known as the island on which the sun rises first, it has a land mass of 166 square miles with a population of approximately 281,968 (July 2008 est.), making it one of the world's most densely populated countries. The official language is English. It is a small open economy whose dollar is pegged to the US dollar at 2:1 parity and managed by the Central Bank of Barbados. GDP per capita was US$19,300 at the end of 2008, the adult literacy rate is 98% and the average life expectancy is 77 years.

As a small island, there are no major natural resources, other than some small deposits of oil and natural gas and it is susceptible to natural disasters such as drought and hurricanes. Due to these factors, the country's small potential market size due to its land mass and its limited range of goods produced, we can say that Barbados suffers from diseconomies of scope and diseconomies of scale, hence monopolistic behaviour in the market.

Plagued by monopolists companies especially in its utility services, this paper will focus on the electricity sector, where the Barbados Light and Power Company Limited is the sole provider of such services.

There are currently no set emissions controls in the country but there is a regulatory board to monitor and control the rates of utility companies and represents the consumer. This will be expanded in further detail later in the paper. In addition, the government subsidises diesel and gas by about US$16 million annually and while international oil prices were moving to US$80 per barrel, Barbadians were still paying for gas and diesel based on a price of US$65 per barrel at May2006.

4.2. About the Case Firm: Barbados Light and Power Company Limited (BL&P)

Founded in 1911, BL&P is an investor owned electric utility incorporated under the laws of Barbados and is the sole generator, transmitter and distributor of electricity in Barbados. 38% of the company is owned by the Canadian International Power Company, which is owned by Lukadia of Salt Lake City, USA. The other 40% is private ownership and 22% government ownership through the National Insurance Board.

Its customer base is over 100,000 and is made up of domestic residential customers and commercial/industrial customers. At the end of 2000, the company had 12,300 commercial, 89,000 domestic and over 22,000 street lights as its customer base and uses price discrimination for each category of customers.

Fuel is the largest component in the cost of production of electricity, making it BL&P's largest variable cost (labour is the other). The company has been plagued by the frequent and unpredictable rises in fuel due to the rising world oil prices. However, BL&P has been able to absorb most of the costs by installing new cost effective infrastructure and by changing the grade of oil used. It has also found means of generating electricity from water on a small scale to help alleviate increasing costs. In addition, the company is continually in discussions with the agricultural sector to find ways to generate a new type of electricity from using the by-products of the local sugar cane production.

BL&P was previously protected by competition due to government interest in the company but as government opens up more and more markets to competition, the company uses the method of plant expansion to deter other entrants into the market.

5. What is a Monopoly?

A monopoly is a market that has only one seller but many buyers. As a sole producer of a product, a monopolist is in a position of market power. This is because there are no competitors who could compete for market share. Therefore, the monopolist is the market and controls the amount of output. There are different types of monopoly but for this paper, we will label the firm as a pure monopolist or a natural monopolist. In the case of BL&P, it was previously protected by competition due to government interest in the company. However, as government opens up more and more markets to competition, the company uses the method of plant expansion to deter other entrants into the market.

5.1 Why do Monopolies Exist?

A monopoly exists due to economies of scale, because of sole access to some resource or technology or because of the use of non-market means to eliminate competition. This could be buying out competitors, colluding with suppliers or customers to discriminate against competitors, enacting legislation to restrict competition, threatening costly law suits or even engaging in physical violence.

However, arguments are continually put forward regarding the connection between monopolies and the type of rule in a country. Barbados uses a Capitalist system; hence this is the system we will be addressing.

According to Marx, a Capitalist system presumes monopoly creation. Economists following this thinking, believe that this system encourage the drive for profits. The pattern of thought is that as the profit-drive becomes more desirable, monopolies are formed and continue to increase their capital investments and shareholder equity. This in turn brings about **Monopoly Capitalism** which is centred on the concentration and centralisation of capital. In short, fewer firms are in the market as large firms and small firms merge.

The case used for this paper is an ideal example of monopolistic tendencies not only because the case country has the theoretical framework for such tendencies but in particular because of the type of system that prevails. The Barbadian market is one that stresses on performance. In recent times several mergers have occurred, particularly within the financial sector. Monopolies can be formed due to such mergers. An example is in the supermarket and retail sector where most of the larger supermarkets fall under one parent company/ownership. What is currently happening is that the smaller supermarkets are finding it impossible to compete with larger supermarkets who either don't use a middle man supplier or who purchase enough to cut their costs. That being said, our focus can now shift to the focal point of our discussion.

6. Section I: BL&P's Choice of Output and Price

Utility companies are characterised by very large costs for their infrastructure (fixed costs) and it is often inefficient to have more than one firm in a region because of the high cost to duplicate facilities. However, in the event that other firms enter, the firm with the largest market share is capable of pricing its product below the competitors' cost of production and still makes a profit.

In the case of BL&P, due to the small size of the island and its customer base, the company falls into the category of a natural monopoly. It can also be deemed a pure monopolist because of the same reasons in addition to its expensive infrastructure and again, relatively small customer base.

For utility companies, consumption or demand by customers becomes the company's output. In the short run, demand for prices will be inelastic because price hikes would do little to diminish consumption. However, in the long run, higher prices would cause a decrease in consumption and output.

Hence, as a monopolist, in order to maximise profit, BL&P must set its output so that marginal revenue (MR) is equal to its marginal cost (MC) as seen below.

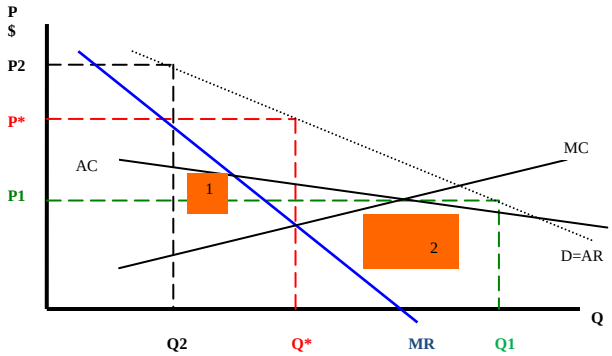

Figure 1: BL&P's Choice of Output & Price (theory)

As of May 8 2009, BL&P submitted its first application in twenty-six (26) years for review to increase their rates. The last increase occurred in May 1983. BL&P has stated that 'the present rates are inadequate to meet operating and maintenance expenses, satisfy lenders and attract new capital to replace older plant equipment'.

However, though there has been considerable increases in wages, cost of living and the cost of fuel since 1983, BL&P should be aware that if they raise their rates in accordance to increases in world oil prices, though electricity is a necessary commodity, consumers will reduce their consumption in the long run, and hence BL&P's total profit would reduce by an amount equal to the shaded area labelled 1.

On the other hand, if BL&P decreased prices below P*, where MC is greater than MR, it would be making a loss. Hence, the shaded area labelled 2 represents the profit that could be made if output Q* was selected.

If there was no increase in oil prices and BL&P increased the price of electricity, as is the case now, depending on the size of the increase (if small), there would be a similar reduction in quantity, though it would not be as large, as consumers may not feel a big impact from the increase.

7. Section II: How does Price Discrimination work for BL&P?

Price discrimination is the practice of charging different prices to different consumers for the same product. Price discrimination can take three forms – first degree, second degree and third degree. First degree price discrimination is when the firm charges each customer the maximum price that they are willing to pay. Second degree price discrimination is when a firm charges different prices per unit for different quantities of the same good or service. Third degree price discrimination, which is the category that BL&P uses, is when a firm divides consumers into two or more groups with separate demand curves and charges different prices to each group.

In the case of BL&P, they divide their customers into two broad categories – domestic and commercial with two more sub-categories within the commercial category – large power and secondary voltage power. However, for simplicity and for this paper, we will just look at the two broad categories – domestic and commercial. BL&P knows that regardless to the number of categories they create, total output will be divided among each group and the MC and MR for each group must be the same. As can be seen from the price schedule in Appendix I, commercial customers are charged a higher price. This means, that the demand elasticity for this group is lower than that of the domestic group. We could also calculate that the fixed rate charged to the commercial group is 1.7 times higher than the domestic group.

Figure 2 demonstrates how third degree price discrimination works. 1 represents commercial and 2 represents domestic. MRT represents the horizontal summation of MR1 AND MR2.

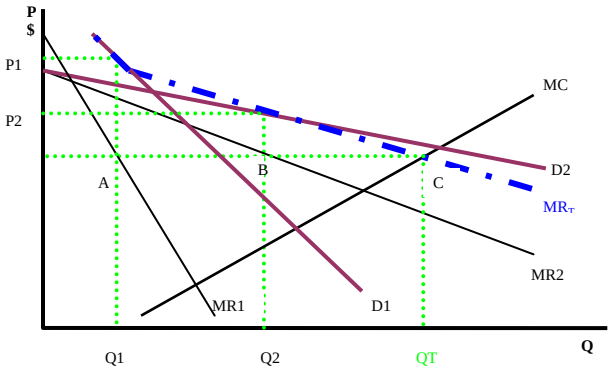

Figure 2: Third Degree Price Discrimination at BL&P

BL&P's total MR would be the horizontal summation of the two individual MR curves. Likewise, its total output would be the sum of output for domestic and output for commercial customers. At point C, where MRT equals to MC, a line was drawn from that point to MR1 and MR2 respectively. Hence, we get the points A and B where MR1=MR2=MC. These are the points that give the ideal quantity for each group to attain profit maximisation.

For the price, we draw lines from each quantity to the respective demand curves. So we see that the price for commercial consumers is higher and its demand curve is less elastic.

8. Section III: The Impact of a Government Subsidy

A firm controlling a large chunk of the market could maximise profits by restricting output below the level of a competitive market and so raise their price. However, it is at this point that government should become concerned with the effects that this would have on social welfare. Some economists also refer to this as the point of 'market failure' and believe that government intervention is needed to regulate prices and output levels. However, since monopolists of this type (natural) need marginal cost to be above average per unit costs but below price, such an intervention may cause the firm to suffer a loss. Therefore, the government either has to subsidise the firm or set a price cap that is above the marginal cost of production (i.e.) where AR and AC intersect.

International prices reached almost US$150 per barrel. Hence, in December 2007, government interceded by subsidising the cost of fuel used in electricity production for residential customers, causing the Fuel Clause Adjustment to remain constant (23.5375 cents per KWh). The subsidy was on heavy fuel oil, the major fuel used in electricity generation but ended in November 2008 after the Fuel Clause Adjustment fell below the subsidised level as the oil prices fell. The subsidy cost the government a total of about $36 million dollars. Figure 3 shows how the subsidy kept the fuel charge fixed, hence billing rates.

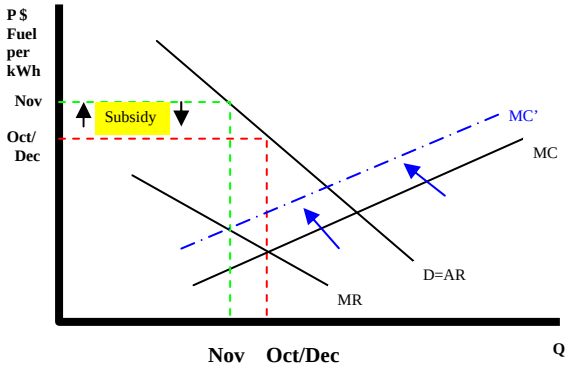

Figure 3: The Impact of a Government Subsidy on BL&P Price

An increase in fuel cost (variable cost) would increase BL&P's total cost; hence, MC will also increase. Therefore, the MC curve would shift to the left. As it shifts to the left, the price of fuel would increase from October's price to November's price and quantity demanded would drop from October's quantity to November's quantity in the long run. However, because government wanted to cushion the impact to consumers, the subsidy they paid was (November's Price - October's Price). Hence BL&P had no need to worry about the additional variable cost.

Now suppose government had made the decision to control the electricity pricing by placing a price cap on the bills. Well it would certainly be beneficial to the high consumers of electricity but how would it affect BL&P? Figure 4 explains this.

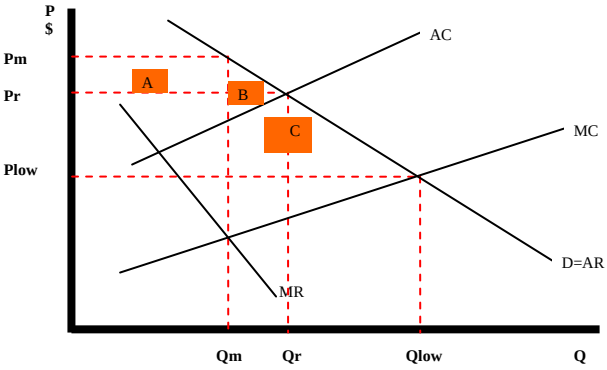

Figure 4: The Impact of a Government Imposed Price Cap on BL&P Price

We see from the above diagram that without regulation, BL&P could charge Pm with consumption at Qm. If prices are too high the consumer will have to spend more in paying for this commodity, leaving less income for other items.

It may lead to increases in the price of goods, consequently leading to an increase in the cost of living. However, with price regulation, though the government would set a price below the monopoly price, it would seek to set price where average cost (AC) equals to demand. Hence the firm could still operate though excess profits would be zero. Any price below this, for example Plow would cause the firm to go out of business.

9. Section IV: Regulatory Board

Monopoly companies such as BL& P are not subject to competitive market forces, hence if left unmonitored, it could charge very high prices and be selective in which areas of a country to provide service. These problems can be easily controlled through opting for public ownership or by carefully controlling private companies by government regulation through a specialised agency.

In the case of Barbados, that agency is the Public Utilities Board via the Fair Trading Commission (FTC). The FTC was established in 2001 and is responsible for the enforcement of the provisions of the Utilities Regulation Act, Telecommunications Act, Fair Competition Act and the Consumer Protection Act. The Utilities Regulation Act states that all Barbadians have access to reasonably priced, reliable utility services from all utility companies.

The board determines the principles, rates and standards of service applicable to all service providers,

monitors general business conduct, investigates possible breaches of the law, takes enforcement action where appropriate and educates and informs suppliers of goods and services and consumers about the requirements of the laws.

Standards were created in a number of areas and are used along with indices as indicators for evaluating the general performance of a company. The most important ones are:

- response time for restoring supply
- billing punctuality
- reconnection time after payment of overdue amounts
- connection time of new supply
- making and keeping appointments
- time taken to close accounts after customers' requests
- the quality of the electricity supply

The creation of regulatory boards comes with its fair share of criticism and many critics state that there is no theoretical or historical evidence that regulatory agencies will bring output and prices to the theoretical optimum. They support this notion with the Marx theory that most monopolies are created not by diseconomies of scale but rather have been politically motivated by the probes of dominant firms who become fearful of competition. Like Marx, they argue that natural monopolies tend to be a rare phenomenon and may only exist for a short time since technology continually creates opportunities for new firms to enter the market. In the event that they occur over a long period, critics say that due to the availability of substitute goods and the high elasticity of demand, the monopoly's price will eventually fall into line with that of a competitive industry.

10. Conclusion

According to the Marxist train of thought, a monopoly within a capitalist system may only have the characteristics of a natural monopoly in theory but may very well be a product of the system itself.

In the case of the Barbados Light and Power Company, besides the island's limitations and the obvious high initial cost, the fact remains that it is a profit driven company as it is a shareholder firm. Social welfare must remain an important factor when policies are being made concerning requests for price increases and transparency and accountability should reign.

Besides the size of Barbados' population and land mass, other underlying thoughts come into play when discussing monopolies in this type of economy and should be addressed. Such issues as marital alliances between major players in the market and the formation of associations may lead to price fixing. Alliances and mergers can also weaken consumers' influence in the market as product choice diminishes. There are also issues concerning businessmen who get involved in the political system, hence having considerable influence on legislation and policy setting. Issues of persons sitting on the Board of several influential companies and the ever present 'string-pulling' tend to thwart the market and display monopolistic behaviour.

Within the last 5-10 years, there has been an increase in credit card usage, cost of living have risen and the age of 'keeping up with the Jones' mentality is very much prevalent. The buying and selling of land has seemingly taken precedence over traditional trade and consumption clearly outweighs production.

It appears that the promotion of 'everyone owning a piece of the rock' now outweighs developmental strategies and ways to tackle the free trade regulations of such organisations like WTO. Where I agree that such populist strategies are favourable, these strategies without encouragement and reinforcement of industry could lead to the creation of a consumption society that becomes heavily dependent on government support. In other words, an economy with excess demand, consuming more than it is producing will be created. This is what Barbados is currently experiencing and according to Marx, are all traits of long term capitalism.

Such issues along with the fact that the island also has a highly paid workforce need to be tackled at the governmental level by controlling costs in sectors where they have great influence in order to retain current foreign based companies and attract new ones to their shores. In addition, private enterprises should not continue to control prices due to political affiliation or financial wealth at the expense of democracy. Put differently, and according to Mr. George C. Brathwaite in his essay entitled, "Changing State Dynamics – erosion of democracy in Barbados", 'if democracy is to prevail and offer ventilation for the masses at large, the political will must combine with the social forces in Barbados to assure the ascendency of people over systems and ideologies'.

Such private control could take us full circle and we may find ourselves facing the traditional 'plantocracy' of long ago and the rule of the market will remain in the hands of a small but wealthy oligarchy. Hence the state must intervene through political means to ensure employment via monetary and fiscal policies and wages and prices need to be regulated to sustain economic stability.

All that being said and done, the opening question remains, does the electricity market need more competitors and would it be beneficial to both the government and consumers alike?

In recent times, the government of Barbados has awarded licenses to more cell phone providers within the telecommunications industry, breaking over a

decade of monopolist power by its once sole provider, Cable and Wireless, now LIME (Barbados). Though the company still holds monopoly power within the fixed line sector, what this competition has done within the cell phone sector is not only flood the market with affordable cell phones, but it also gives the customer the power of choice and forces all players to constantly upgrade their service because of this consumer power. In addition, remote areas that were previously ignored under the monopoly are now receiving service and the rates/packages charged are now more affordable and attractive to consumers. How did this affect the firms? All players in the market since opening this sector have all reported profits.

Based on this, though the two sectors are predominately different and the company strategies differ (no major consumer complaints recorded for BL&P), the answer to the question posed at the beginning of this article would be yes. Opening the market to other players would be beneficial to the consumer; it would give them power of choice, it would force improvement of service as firms compete for market share and it would create better rates as firms would be forced to become more creative in seeking more cost effective measures of generating electricity. As mentioned earlier, the magnitude of the rate increase would determine consumption of this commodity in the long run.

In the case of the government, due to natural market forces that would be created through competition, the regulatory board's role in this sector would become a bit easier to monitor. In addition, their budget would decrease, as large subsidies such as the one previously implemented would no longer be necessary and the country would become more attractive to foreign companies as the low utility costs complement current tax incentives while taking the limelight away from negative factors such as high wages (as compared to other developing countries).

Other means of electricity generation are available and have worked for other countries e.g. water generation and this should be looked into in greater detail for Barbados. As previously mentioned, it is noted that the company has announced its efforts to create new means of creating electricity power by using the by-products of the local sugar cane industry and wind power and these should be investigated further until it becomes a reality.

Though pollution in Barbados is relatively low, there is concern about the fact that the country currently has not enforced strict emission controls to deal with pollution. Controls should be instituted so that companies are forced to improve the emissions of their machinery. In the case of electricity, natural gas is an optional fuel that could be used as it has less impact on the environment (emits smaller carbon content and less carbon dioxide per tonne) and it would reduce the overall cost of energy as it is produced locally and within the region, therefore making it cheaper than other fossil fuel sources.

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Appendices

Appendix I

Rate Schedule

Domestic Service (50Hz @ specified nominal secondary voltage, 2 wire or 3 wire up to a maximum of 2000kwh monthly). Residence occupied by a person or household and used entirely for their own personal abode for long periods of time.

Monthly Rates

Domestic		Commercial
1. **Fixed rate**	$3	$5
Tax (15%)	$0.45	$0.75
Total	$3.45 *monthly*	$5.75 *per monthly*
2. **Energy Charge *(per kwh)***		
1st 100kwh		
	$0.176	***All kW $***0.226
Tax(15%)	$0.026	$0.033
Total	$0.202	$0.259
Next 900kwh		
	$0.196	
Tax(15%)	$0.029	
Total	$0.225	
Over 1000kwh		
	$0.216	
Tax(15%)	$0.032	
Total	$0.248	

3. Fuel Charge

All kWh are charged at the fuel clause adjustment (see Appendix II) which may vary from month to month with the cost of fuel and is also subject to the standard 15% tax.

General Service

Service to non-residential Customers. (50Hz, single phase; 2 or 3 wire service up to a maximum demand of 5KVA and/or a monthly consumption of 1000kwh.

4. **Discounts**

10% for payment within 15 days of issue of bill, but is not applicable to fuel clause adjustment.

Large & Secondary Voltage Power

Applicable to all except domestic consumers.

Appendix II

Fuel Clause Adjustment

Fuel prices rise and fall frequently and unpredictably and a mechanism is needed to adjust the electricity tariff other than frequent rate hearings. The costs of rate hearings are very high and are eventually passed onto the consumer. To avoid this, the Public Utilities Board, under the FTC authorised BL&P to use a fuel clause adjustment to deal with changes in the cost of fuel.

The clause is a mechanism designed to recover the cost of the fuel oil used to generate electricity. Only a portion of the fuel charge is collected through the energy charge on the bill. The remainder is collected via the fuel clause adjustment by adjusting the price that customers pay for each kilowatt hour of electricity used depending on if the cost of fuel rises or falls. BL&P assures that the revenue collected from the fuel clause adjustment does not contribute to profits but rather, is paid directly to the oil suppliers.

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