" When all is said and done, when the mines come on line, the YEC will be able to lower electrical rates for other customers on the system."
David Morrison, former Chair and CEO Yukon Energy

UCG

UTILITIES CONSUMERS' GROUP

CONSUMER PERSPECTIVE
YUKON ENERGY STRATEGY
PART VI

ELECTRICITY POLICY AND REGULATION FOR INDUSTRIAL CUSTOMERS IN THE YUKON

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APRIL 2015

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" Public utilities are obligated to serve all who apply for service within a market (service) area, ***and within the limit of its capacity (ability to serve)"***
Legal Concepts of Public Utility Regulation 119

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FORWARD

The Utilities Consumers' Group is pleased to present this research paper which is the sixth in a series of articles written with the consumer in mind; i.e. for the people who ultimately pay the bills to keep the wheels of the electrical sector turning.

Prior papers included the Development of a Yukon Energy Strategy, Utility Governance, Secondary Power, Electricity Restructuring and Electricity Regulatory Reform in the Yukon.

This particular report outlines:

- whether there is an obligation to serve all customers;
- various pros and cons for providing electricity to large industrial customers;
- who should bear the risk of such decisions;
- who should pay for new supply, transmission and distribution systems to develop electrical infrastructure for the mining industry; and
- whether to isolate all mining loads.

Since the Yukon is now at a crossroads of ebb and flow for sufficient capacity to supply electrical energy loads to current customers„ it is now doubly important to discuss and evaluate what is to be done for new industrial mining companies wishing to access power from our grid or off the grid, for that matter. We have interested mining companies waiting at the trough: Whitehorse Copper Tailings, Victoria Gold, Carmacks Copper, mines around Ross River area and the huge Casino project.

Traditionally, the social compact to which our electric utilities have been held to involves a common law "duty to serve." This fundamental common law rule requires a utility to serve on reasonable terms all those who desire the service it renders. Permitting a move to a restructured electric industry and a reformed regulatory process provides the opportunity to explicitly rewrite this social compact.

This debate must involve all ratepayer groups and/or interested parties, not just the utilities, the government agencies and the mining companies' who opt for back-room deals which impacts all other firm ratepayer groups.

Due to the fact that we are a small, stand-alone grid, we cannot therefore import nor export electricity. So, we have a catch 22 in our system, when we need a n infusion of supply for a large industrial customer we cannot simply phone up a supplier to deliver the necessary power at current prices. If we build new infrastructure to service these larger customers, then when/if the mines temporarily shut down or permanently leave, we are left with stranded assets and all their costs.

There are two possible options, either the mine builds their own needed electrical infrastructure on sight or they hire a development company such as Yukon Energy, etc. to provide them with power. If this was in the real world of private enterprise, the customer would have to pay the full price for construction and maintenance of any arrangement with a utility provider.

This paper was commissioned by the Utilities Consumers' Group with limited financial support from the Yukon government. It is written with the intent to stimulate immediate action about options for the future by introducing considerations that will assist in deciding various legislative and policy changes essential for the Yukon electricity system and its regulation.

1. HISTORY OF THE ELECTRIFICATION OF THE INDUSTRIAL SECTOR IN THE YUKON

During the Gold Rush era in the Dawson City area of the Yukon Territory, gold dredging activity in the early 20th century drove the necessity for some type of energy to operate these immense machines. Between 1906-1925 the Yukon Gold Corporation controlled nine dredges and at the height of dredging operations some two dozen of these huge bucket-line apparatuses worked the Klondike gold fields. In 1909 Yukon Gold built the Twelve Mile ditch to provide water for hydraulic mining and by 1911 North Fork Hydro Power Plant was in operation and supplying electricity to run all of the dredges.

By one example, the Klondyke Mining Company Dredge No. 4 was electrically powered from this hydro plant on the Klondike River about 30 miles (48 kilometers) away, required 920 continuous horsepower during the digging operation. Extra horsepower was needed occasionally for such things as hoisting the "spud" (pivot) and the gangplank. That was for just one dredging unit!

Since the cost for such equipment and developing the hydro electric system was beyond the wallets of freelance miners, this had to be financed by capitalists. There were two prominent companies formed during this time, the Canadian Klondyke Mining Company and the Yukon Gold Company. By the end of the 1920s, these two large companies and a number of smaller ones all merged into one large business known as the Yukon Consolidated Gold Corporation ("YCGC"). To the locals, it was known simply as "The Company," which operated until 1966.

This clearly demonstrated that even in this early evolution of the industrial thirst for electricity, lone- wolf financiers or some-one/s with deep pockets were required to develop this sector, not the billfolds of common citizens.

At this same time, Whitehorse was emerging as the transportation and commercial hub for the territory, so power was needed to drive the residential, commercial and light industrial sectors for this growing economy. Yet another independent power producer foresaw the potential economic benefits for the development of this energy source. As far back as 1901 Yukon Electrical Company Limited ("YECL") was chartered to provide electrical services to generate electricity for residents of Whitehorse using a wood fired horizontal piston steam engine.

By 1950 Yukon Electrical Co. Limited ("YECL")had built a 1.3 mega watt hydro plant at Fish Lake, just a few miles on the outskirts of Whitehorse. Today this company, which has changed its name to ATCO Electric Yukon, owns, operates and maintains most of the distribution assets in our territory, while engaging in some energy supply with diesels in various communities as well as the Fish Lake plant..

At the turn of the century, there was yet another area of industrial mining activity taking place in central Yukon. United Keno Hill mines was pioneered during the staking rush of the late 1890s and early 1900s. By 1951 the need for another new hydro plant was built close to Mayo, a 5.5 mega watt facility, installed and payed for by the Northern Canada Power Commission ("NCPC", a Federal government crown corporation), to supply power for the mine in nearby Elsa.

This was the beginnings of the government sponsored energy projects to provide industrial class customers with electricity in our territory. By 1958 Whitehorse Rapids was also developed by NCPC with the construction of a dam and two 7 mega watt hydro turbines at its base to supply power for the fast growing new capital of Whitehorse.

Not long after the closing of the large gold-excavating operations in the Dawson area, a new mining giant was taking shape in the mountains near Faro. The federal government yet again saw a need to build and develop new energy sources for this very large lead-zinc mine; a third 7 Mw turbine was added by the NCPC to the Whitehorse facility and by 1975 NCPC built and installed two 15 mega watt hydro generators at the new Aishihik plant, 111miles northwest of Whitehorse; as well as the 138 Kv transmission line connecting, Whitehorse, Aishihik and Faro, the WAF grid. Then in 1985, NCPC built a new side dam in Whitehorse for a water storage area to add a 20 mega watt hydro turbine, known as the "Fourth Wheel." This was also primarily dedicated to power the mine at Faro.

All of this infrastructure building was in the eyes of the various governments of the day, the way in which the Yukon was to be opened-up to new development. Build it and they will come!

These hydro legacy assets, payed for by federal taxpayers for infrastructure in our territory, did result in a side-benefit from the mining industry evolution (i.e. lower cost hydro generation plants). All this federal electrical infrastructure was devolved to the Yukon Government in 1986 with the purchase by the newly formed Yukon Energy and Yukon Development corporations. A new statute was implemented, the Public Utilities Act and with it a regulatory body to oversee the rates to be charged to various ratepayer groups to make up the revenue requirement.

But this was not without its problems! Since mining was on-again-off-again proposition, this meant that servicing the debt and maintenance of all of this infrastructure was placed on the backs of a very limited, dedicated customer base when these mines closed shop or left the territory.

It was the beginning of the quandary we are still faced with today; i.e. the need for power to feed mining developments, the necessity to develop supply and grid infrastructure and then what to do with this excess power when the mining companies close their doors. And more importantly, who should ultimately pay for all of this infrastructure when the mining loads disappear and the utility no longer receive revenues for this?

2. INTRODUCTION

This is precisely why we need to look at this particular issue with regenerated vision and energize an immediate course of action. This research paper will take on the positions of the firm (i.e. dedicated residential and small business) Yukon electricity consumers, to demonstrate the need for a new direction on policy and regulation, not only for the 'boom and bust' mining industry but for all future larger industrial based customers wishing to come to our Yukon.

The first order is the necessity to fully examine and redefine the term "obligation to serve." Yukon Energy Corporation ("YEC"), being a somewhat typical integrated owner of generation, transmission, and distribution facilities, holds a monopoly granted by government. In return the corporation and its' regulator have interpreted that as a public utility it has an obligation to serve all customers in its area, including larger mining companies. Yukon Energy (along with ATCO Electric Yukon, the major distributor and also has a franchise) are responsible for the operation of this control area, within which they are mandated to maintain reliability and dispatch generation economically. It may be more accurately termed as duopoly market.

This obligation to serve model originated out of a monopoly type situation, i.e. public utilities are basically sole suppliers of essential public services. As such, public utilities were given a special status (i.e. franchise) in our society because these services are necessary for the general health and economic well-being of the communities being served. This pragmatic approach was intended to provide ratepayers with a course of action to ensure electric utilities did not violate their duty to exercise reasonable care to avoid unreasonable risks or harm to their customers.

Was this concept ever intended to offer similar positions to every new large customer such as come-and-go mining firms or any large industrial/commercial groups?

The second and equally important task is to clearly identify the concept of isolating all large industrial customers, such as all new mines requesting to come on line. This would require repealing, or at the very least amending, O.I.C. 1995/090 rate policy directive and replacing it with new cabinet direction. The intent of this would be to ensure that all new mines coming on line could not be inter-connected with electrical service provided to established Yukon customers who have continually paid for the assets of our crown corporation through our rates and who are charged regulated prices.

3. ELECTRICAL RATEPAYER GROUPS

In theory there are three basic customer groups in the territory, retail, industrial and secondary. In practice all ratepayer groups are separated further into residential, commercial, secondary and industrials; residential and commercial groups are then divided into government and non-government customers.

The rates to be charged for all of these classes of customers are technically set by the Yukon Utilities Board, but before this regulator finalizes any outcome they must first adhere to any prior or new directives from the government of the day (i.e. Orders-in-Council).

To further complicate this process, the Yukon Energy Corporation negotiate purchase power agreements with various industrial customers requesting to come on line. Yukon cabinet then issues directives from the Commissioner in Executive Council, outlining conditions and rates to be implemented, strangling the regulator. All of this makes for a very complicated and complex smorgasbord for arriving at rates that are fair and accountable.

For example, after determining the revenue requirements for each Company, a cost of service ("COS") model (combining the two Companies revenue requirements) has to be decided upon and defended in front of the regulator, the Yukon Utilities Board ("YUB"). In the last COS hearing, the Board determined that the utilities did not provide sufficient evidence and up-to date load forecasts to properly shape the realities of what should be quantified for each ratepayer group. This decision expressed:

> "*The Board does not accept the cost of service study as filed by the Companies...".* [1]
>
> *115. Therefore, in respect of the next COS study, the Board directs the Companies to* ***collaborate*** *to identify and select appropriate cost-effective measures that will effectively measure actual Yukon-specific customer loads (proxy study) so that the ATCO Alberta models can be calibrated to provide reliable Yukon-specific load.* [2]

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The main problem stems from the fact that Yukon Energy and ATCO Electric Yukon have conflicting load data, metrics and analysis to determine Yukon-specific customer loads. This combined load exercise has to then be modified in an attempt to fit into a model formulated for larger jurisdictions with very little in common with our small stand-alone Yukon electrical system.

[1] Board Order 2010-13

[2] Ibid, Reasons for Decision

4. OBLIGATION TO SERVE AND GRID CONNECTIONS

What exactly is a public utility's obligation to serve? Was this concept ever intended to include large commercial or industrial customers or was the vision simply to protect the firm smaller ratepayers from corporate expectations?

In the Yukon, there has been limited discussion of the full impact of this basic principle of public utility regulation, particularly when contending with new mining customers.

As earlier stated, electric public utilities are "monopoly suppliers" of an essential service, therefore they are/were given a special status (i.e. franchise) in our society because these services are necessary for the well-being of those communities they serve. This is often called the "regulatory or social compact".

Ergo, a public utility's duty to serve had its origins in common law principles as opposed to statutory law.

These 'obligations and rights' of public utilities have been defined in common law principles and generally have four major responsibilities imposed on them because of their special status:

1. public utilities are obligated to serve all who apply for service within a market (service) area, and within the limit of its capacity (ability to serve);
2. public utilities are obligated to render safe and adequate service;
3. public utilities have the obligation to serve all customers on equal terms. Unjust or undue discrimination among customers is forbidden. If reasonable, regulation does permit the classification of customers for the purpose of rate making. But within each class, the same rate structure must apply. Regulation also permits the use of graduated rate structures; again, they must be reasonable; and
4. finally, public utilities are obligated to charge only a "just and reasonable" price for the services rendered. It is up to the various commissions and the courts to interpret this duty. [3]

Various governments (regardless of which political stripe, when in power), along with the publicly-owned Yukon Energy Corporation and their regulator, the Yukon Utilities Board, have all neglected this issue. They conspicuously ignore the reasoning of the common law principle that this obligation **only** stretches as far as the "limit of its' (the public utility's) capacity or ability to serve."

To top it off, there is nothing in the current Yukon legislation, the *Public Utilities Act*, that clearly demonstrates there is an obligation to serve industrial companies. There are no specific definitions on this matter in the Interpretation section. The end result has therefore maintained a political decision to continue with this outdated method of regulation.

As stated, the legislative jurisdiction in the Yukon is severely restricted on this point of law. It is left to the very last paragraph in the *Public Utilities Act*:

> **Duty of company to supply utility service**:
>
> ***106. All companies having the privileges conferred by this Part shall supply the utility controlled by them to all persons within the area covered by the privilege except where the company may lawfully refuse to supply the utility.*** [4]

This passage is so grey that one of the huge dredges mentioned earlier could be driven through it...i.e."*except where the company may lawfully refuse to supply the utility*."

"Lawfully" is not defined in Interpretation section of the *Act* nor is there any reference given to a distance limitation away from the grid for a customer to legitimately request connection and service.

The utilities in the Yukon and many other jurisdictions have frequently played this ''obligation to serve'' card when it fits their needs. In the past decade, utilities have manipulated this ''duty or obligation'' as their means for obtaining valuable concessions from various legislatures and regulatory bodies.

> *"The utilities have exploited this regulatory principle as one of their primary weapons to justify billions of dollars of rate recovery and concessions. "* [5]

Other reasons to fuel this debate is that this reasoning most often unjustly impacts all other firm ratepayers, while at the same time serves to protect the utility's monopoly position in their respective service territories.

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[3] Legal Concepts of Public Utility Regulation 119

[4] Public Utilities Act, Chapter 186, Revised Statutes of the Yukon 1002

[5] Peter W. Hanschen and Gordon P. Erspamer, A Public Utility's Obligation to Serve: Saber or Double-Edged Sword?.2004 The Electricity Journal

The fight for the rights to serve the new industrial customer in the Whitehorse Copper Tailings during the last round of rate cases serves as a prime example. And this was only for the distribution rights!

In reality it boils down to being a money-making proposition for the publicly-owned utility and the sole shareholder, the government. With little or no risk! The risk is placed on the backs of firm Yukon electricity ratepayers and/ or taxpayers. All while the government of the day pursues their economic agenda impacting these same ratepayers/taxpayers.

The application of the current model of power purchase agreements ("PPA"s) with these larger industrial mining customers solidifies this point. Although the Board abstractly regulates these agreements, the premise takes place behind closed doors and are very politically motivated. In other words, the government utilizes the public utility and its regulator to facilitate the implementation of their economic plan. It is our understanding that these two government bodies [.e. the public utility (Yukon Energy/Yukon Development Corporations) and the Economic Development department] should be completely detached to avoid any conflict of interest. The public utility is mandated to be an independent arms-length body with its own decision making process. The same holds true for the regulator, the Yukon Utilities Board.

What have we learned from the past experience of Faro and the more recent PPA framework?

As stated in the history background, the federal and Yukon government spent millions of dollars developing hydro and transmission infrastructure to service the huge lead-zinc mine at Faro. When in full swing our diesel generators were also operating at full capacity. This all made money for the utility and its sole shareholder, the Yukon government.

For example, the first year Yukon Energy Corporation was formed to take over the NCPC assets, they profited more than $13 million dollars, so this was clearly a "cash cow" for the corporation and the government shareholder. But this was not without major setbacks for Yukon ratepayers of electricity!

From the late 1960s until 1982 the Cyprus Anvil mine more-or-less remained in constant production. As it was at one time the largest open-pit operation in the world, this was a golden goose for all those who had any business enterprise with this corporation, including NCPC and later Yukon Energy (i.e. provided the power to operate this mine). There was one lapse during this time, when the unionized workers went on strike. This threw a wrench into all the creditors, who were left without payment. The electrical utility happened to be one of these creditors! Not only was there a debt left behind, but also there was no longer any mining income for the utility. This was the first experience for Yukoners of a massive rate hike required by the utility to pay for all the stranded assets that were used to power the mine!

When the world prices for metals fell in 1982, the owners of Cyprus Anvil announced in May of a two-month halt in production starting in June. In July of the same year, the owners announced that shutdown would be indefinite and bankruptcy proceedings would be commenced. Guess who payed for the accumulated electrical credit allowed to this mine, the stranded assets and all the maintenance of these assets?

Under new ownership of Curragh Resources, with government funding to first strip waste-rock, production resumed from a new pit in 1985, which remained again more-or-less open for business until 1993. A very fragile business venture with our public utility again supplying the new company with energy. And guess who again was taking the risks for this one when they closed shop?

A third operation at Faro, by the Anvil Range Mining Corporation, which opened in 1996 which was an even more delicate venture. Production was on-again-of-again for much of its tenure, when in January of 1998 they filed for full bankruptcy. Much of the heavy mining and milling equipment was sold to pay the many creditors, for which Yukon Energy was one of the many. But they were way down in the line-up on the list of creditors and received little compensation, if any. The golden goose in the long run turned out to be a tragic legacy for Yukon ratepayers of electricity, not to mention the billion dollar clean-up bill left behind for taxpayers.

When Minto Resources requested access to hydro electricity, the YEC would first have to proceed with the building of the grid line from Carmacks to Minto Landing and then off-shoot a spur line to the mine site. This clearly demonstrated that this obligation to service could have been denied (i.e. the service company could have clearly lawfully refused to supply off-grid power as new structure would be required). Yet it went ahead, despite objections to the contrary, with this bilateral (or tripartite) purchase power agreement and construction.

To be impartial in this situation, Minto had terms and conditions applied through this contract for them to pay for a portion of the main grid extension as well as the expenses for all of their spur line to the mine. However, the money for this infrastructure was fronted through our publicly-owned corporations, thus the ratepayer and taxpayer beared all the risks. It has never been proven, beyond a reasonable doubt, that this mining firm did indeed pay its fair share, but it was enough to appease the government and its body of regulation. *Prospects* were that the mining company would pursue their indebtedness and perchance this would all materialize as beneficial to all concerned. The only saving grace was fate, i.e. that this particular mine has remained open through this time period. As well, Minto had to prove itself as a good corporate citizen to achieve these benefits for all.

The mining company, Alexco Resources, in Keno is another story, however. Although there was an old line

connecting the grid to the town itself, it was necessary to upgrade considerably to hook up this mine load. It must also be noted that this particular transmission line from Mayo to Elsa-Keno had been refurbished not long before, when the old Keno Hill Mines was on-again-off-again.

As the load on the Mayo/Dawson line was already close to capacity, the utility also needed a larger more stable generation facility to provide power to this larger customer. With government subsidies to help construct this new infrastructure, the public utility pursued this course.

So this yet again demonstrated that the obligation to serve could have been denied if the provider so lawfully refused, due to the fact that this base of operations needed major upgrades as well as new infrastructure. The public utility and the government of the day decided it was in *their* best interest to develop this necessary infrastructure.

Through the resulting purchase power agreement, with this 'outside' mining firm, the connection and rehabilitation costs for this line was negligible for this particular industrial customer, with the rest of us paying the tab through political and regulatory gamesmanship.

Now we are hearing that the taxpayer will yet again be on the hook to upgrade (necessity for higher voltage) this power grid to Keno, while in meantime the mine has only operated for a year or so. [6] All appearances point to this firm not functioning as a good corporate citizen nor have they paid their fair share. When they want to come back on line will the YEC simply turn on their switch without a large connection fee for all the new infrastructure to provide power (i.e. refurbished and extended grid, Mayo B facility, etc.) for this on-again-of-again residual customer?

Also, what is consistently overlooked in these bipartite agreements and resulting regulatory reviews is the high cost of building the resources that are required to avoid peak-period demand when these large industrial customers are added to the base load. [7]

A case in point is the requisite to construct the $40 million (plus continually escalating) cost of the newly installed LNG generators and all of the necessary accessories. Is this really for backup generation or is there an underlying motive of hooking new projected mines, such as the Whitehorse Copper Tailings. Such a decision would also result in a major increase in peak load, especially in the coldest winter months.

Most other jurisdictions have long ago corrected these regulatory loop-holes, some due in part by the restructuring of the electrical sector, while others can connect to a national/inter-continental grid system .

For example, in Alberta they have clearly given the regulator the mandate to order a utility to provide or withhold service under its' statutes. [8] They have also given other ratepayer groups decision-making status by devising a balancing pool of customers, which determine if and when to terminate power purchase arrangements. [9]

5. ISOLATION OF INDUSTRIAL CUSTOMER

Our research indicates that regulatory snags would be somewhat relieved if we had an accurate way to allocate the costs for each customer class. In a general rate case, the regulator determines the appropriate revenue requirement, then next decides how each class of consumers should contribute to meeting this requirement, based on the usage characteristics of each class.

Not all jurisdictions use the same categories for customers. Some have separate classes for single-family and multi-family residential consumers, on the theory that the cost of serving apartment buildings is lower because more customers are served by a given amount of investment. The same rationale is used for large commercial or industrial customers. Some have agricultural classes; some have institutional classes for government buildings; others have special classes for unique needs — for example, to provide power to cruise ships when they dock (these are seldom-used, but very large connections).

Determining prudent customer costs for each class for each utility is crucial, and no single method is right for all systems. Some costs are allocated based on the number of customers, some on the basis of their peak demands, some on their total energy consumption, and some on other aspects of usage. There are as many ways of doing this as there are analysts doing cost-allocation studies, and no method is "correct" for every utility. Often a regulator will consider the results of multiple studies, and make an informed judgment that considers all of these studies.

[6] YEC reasons the benefits of replacing and upgrading the transmission line include reliability for customers in the region and for the continued economic development of the territory.

[7] A particular utility may have the capacity for moderate peak period increases to their loads, but when a large customer comes on-line this ability is severely impaired.

[8] Electrical Utilities Act, Alberta Queen's Printer, Government of Alberta

[9] Ibid

As stated earlier, in the Yukon this cost allocation is suppressed since we don't have the proper measuring tools and equipment to adequately determine the suitable loads for allocation. The utilities can only use a model from somewhere else and this does not work for us as was determined by the Yukon Utilities Board in the last PhaseII hearing. Also each utility has their own numbers/data that they utilize. This becomes a very costly process and generally ends as an exercise in futility without a reasonable outcome!

One method which would help remedy some of this cost of service quandary would be to isolate all large commercial or industrial customers (i.e. make certain that any customer engaged in manufacturing, processing or mining would not be inter-connected with electrical service provided to other regulated Yukon customers).

If the utility chooses to provide the new industrial with electrical service, separating the new customer costs out of the rate base ensures the risk is on this service provider, not other ratepayers. Whichever way the utility's board of directors or cabinet direct how to provide this service, the onus will be on the utility to charge full costs for any new infrastructure needed, in their respective hook-up fees and rates to be charged to the new industrial customer. [10]

For illustration, this regulatory decision was delivered in another jurisdiction:

> *Case No. U-8371 (East Lake)*
> *• 54 customers located in an isolated area outside of any telephone providers service area; and*
> *• The Commission "cannot require a utility to extend a service the East Lake area without allowing it to recover the costs…it is equally unfair to force the utility to recover its costs from its existing customers".* [11]

In 1993 during the first major shut-down in Faro, the Yukon Energy requested a 50% increase in rates to all other ratepayers to make up for the lost mining revenue and to pay for the remaining mortgage on the stranded assets. This resulted in a major pubic back-lash with a petition and a newly formed consumer lobby group. The public took a firm stand that some type direction be made by the government, to isolate the mines in our electrical system, to help remedy this dilemma for the future. The Conservative government of the day held various stakeholder meetings and finally implemented a rate policy directive, O.I.C. 1995/090, to satisfy the general public, unfortunately only resulted in a "smoke-and-mirrors" appeasement..

In this cabinet rate directive, the government did identify and define an *"isolated industrial customer"* as those "*whose electrical service is not inter-connected with electrical service provided to any other customer",* in the respective Interpretation section. But there was a scapegoat to this clause; an add-on denotation *"major industrial customer" (i.e. whose peak demand exceeds 1MW, but does not include an isolated industrial customer).* [12] It quickly became obvious that this was specifically added to protect any future opening of the Faro mine or reopening by any new company taking over this operation.

In reality, with these above given definitions from the Interpretation section, there was no isolated industrial customer at that time, nor has there ever been any identified.

This did absolutely nothing to provide any type of solution, but muddied- the-water in a major way with the sub-section added to this same directive: **Rates-major and isolated industrial customer**:

> *6.(1) The Board must ensure that the rates charged to major industrial power customers, whether pursuant to contracts or otherwise, are sufficient to recover the costs of service to that customer class; those costs must be determined by treating the whole Yukon as a single rate zone and the rates charged by both utilities must be the same.*
> *(2) Rates of isolated industrial customers served by Yukon Energy Corporation or The Yukon Electrical Company Limited must conform with any contract and the costs may not be considered by the Board when establishing rates for other customers.* [13]

The addition of the section, to this day, strangles the regulator in identifying any newly constructed energy project nor peak diesel usage to be classified directly to the industrial customer for which it should be dedicated (i.e. Whitehorse 4, and Aishihik facility to Faro at that time and the newly constructed Mayo B to Alexco or whoever takes over this mining operation or any mining development in the Mayo/Dawson corridor, in current times).

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[10] Inclusive of all the operation and maintenance costs needed to supply this new customer, as welll as any extra diesel costs needed for base load or peak supply.

[11] Robert W. Kehres, Obligation to Serve and Economic and Legal Incentives Energy Regulatory Partnership Program, Lansing Michigan, November 30 to December 6, 2008

[12] O.I.C. 1995/090, Public Utilities Act

[13] Ibid, p. 4 Yukon Regulations

The utilities contend this Order-in-Council compels them to "blend" all these new generation and diesel costs to all customers on the system in their service area. [14].

According to the latest Yukon Energy's 2013 Annual Report the costs for the various rate groups were at that time:

	Cents Per kWh.
Residential	14.48
General Service	16.44
Industrial	11.07
Wholesale	9.21
Secondary Sales	6.94 [15]

In the last cost of service proceeding (Phase II) in the Yukon, it was highlighted that general service/commercial customers were not paying their fair share, due to the fact that they are now taking much more of the power load than in the last study. [16]

Although they found this occurrence pertaining to larger customers, neither Yukon Energy nor the regulatory Board mentioned anything about the mines/industrials' share, except that their rates appear to comply with the Order-in-Council.

As it stands, not only are industrials given preferential "blended" rates, but their services are also given a heavier weighting on customer and demand usage. Due to the fact that all costs are blended to all rate zones and classes, classifying greater demand costs on various plants, skews in favour of the larger customer. This results in higher allocation to demand and to peak demand which place more burden on residential users, while in reality without the new much larger customer coming on line, there would be no peak load required.

Peak load is also arbitrarily determined, depending on what definition is used for 'peak'. Some definitions consider only a few hours a year, others consider just the highest peak demand on each of several months of the year, others the highest 200 or more hours of the year. Some studies divide energy costs by season or time of day, others do not.

To summarize, different definitions of peak can have very different impacts on specific customer classes. A prime example of this is what is likely to take place when the time comes to classify the new liquified natural gas facility. Due to this facility already being classified as a peak load requirement, the incremental cost of this plant will be treated as demand-related for which most of these costs will be borne by the residential and small business customers. The reverse would be true, if the costs were properly treated as energy-related (constructed to meet year round usage/baseload) to provide energy for Whitehorse Tailings or other new mines. Then, more of the costs would be borne by large commercial and industrial customers.

The rate group chart listed above demonstrate over a 3 cent difference between cost per kilowatt hour of power to a residential customer and 5 cent difference with general service to that of an industrial. Although there are some economy of scale in providing electricity to a larger customer, there is also the fact that new infrastructure costs, increased diesel costs due to greater peak load requirements, new operation and maintenance costs to provide power to the mine are all blended into the rates for all ratepayer groups.

A subsidy exists when a good or service is below the long-run marginal cost. [17] Marginal cost pricing occurs when regulatory agencies or governments direct a utility to set prices at marginal cost. Marginal cost is defined as the *"cost of producing one additional unit of output."* [18]

Logic dictates that this means the real cost for Yukon Energy and/or ATCO Electric Yukon to generate, transmit and distribute a new kilowatt hour of electricity, including the cost to construct any new facility, operation and maintenance of these plants and the burning of more diesel, is the marginal cost to provide power to the new residual customer.

[14] By osmosis this means that any new residual customer, including larger mining companies, have the same access to lower cost hydro as all the long-term firm customers who have continually paid off the mortgage on these assets and who are charged regulated prices. In reality the new industrial should be paying the costs of all new generation, transmission and distribution supply.. Only then would these residual operations and all their costs be black and white!

[15] Yukon Energy 2013 Annual Report, Summary of Utility Operations, p.9

[16] Board Order 2010-13,Appendix, Reason for Decision

[17] Wikipedia.ca

[18] Wikipedia.ca

6. Conclusion

Public utilities are generally granted special franchise status as they are considered natural monopolies. As such they must be regulated and this regulation ("regulatory compact") is distinctly intended to protect the "public interest."

The main contention used by the Yukon Energy and other public utilities during rate cases is that recovery of all prudent costs and a fair return on assets (both equity and debt) are warranted because the "regulatory compact" requires it. This is based on a misconception that the regulatory compact exists simply because the utility incurs costs on behalf of its customers due to the "obligation to serve" so, therefore, customers are obligated to pay. This is a mis-characterization of what the compact was and how it evolved.

Through this systematic investigation one can only conclude that regulatory compact, derived from obligation to serve, was created originally to protect ratepayers interest, not primarily utility providers.

Accordingly, this obligation to serve must immediately be clearly identified and defined for the public good!

Not only is this above point obvious from this academic research perspective, but history has also demonstrated that providing electrical infrastructure for mining industry in the Yukon has resulted in assets that are rarely payed- off before the mines move on (i.e. the mines come-and-go, thus resulting in stranded assets that the utility now wants to see these unrecoverable costs passed on to the other ratepayers). Not only do they request this from their regulator, but also that the operation and maintenance of these stranded assets also be passed on to firm ratepayers. This is not what is intended in the regulatory compact concept.

> "*The idea of "stranded cost," and more importantly arguments for its recovery, is a concept with little basis in economic theory, legal precedence, or precedence in other deregulated industries.* [19]

What have we learned from this history lesson? **The major point is that is not prudent to use our public utility to pursue economic policy, mainly due to the fact that we have a small-scale, isolated electrical system with a very modest ratepayer base.**

The public utility must be purposefully detached (at bona fide arms-length) to protect Yukon ratepayers from any risk associated with the government of the day's economic priorities to pioneer mining or other industrial projects.

Today, in many other jurisdictions, 'vintaging of cost' laws and regulation stipulate that power generated at public utility dam sites must be preferentially distributed or sold to private distributors that service smaller firm electrical customers at low prices.

> *"Some commissions reserve certain low-cost resources for particular classes of customers. These types of set-asides may reserve limited low-cost hydro power to meet the essential needs of residential customers, or choose to treat specific power plant as serving a specific industrial customer whose demand has 'caused' its construction."* [20]

Again, logic prevails that if an industrial customer wins access to lower blended prices, then their gain is at the expense of the remainder of the rate payers. Consequently, in most jurisdictions, utilities currently are no longer mandated to wheel power for larger individual customers (e.g. industrial users and co-generators) who would be in direct contention for this service from others.

Anyone who has taken part in a Phase II regulatory process in the Yukon, fully understands that the classification and allocation of costs for a utility-owned facility that jointly benefits several rate classes is an inherently arbitrary process. The two utilities have the benefit of all the asymmetrical information and numbers and even they cannot agree on these forecasts for loads, revenues or costs.

To make this even more convoluted, the utilities and the regulator must then rely on allocation models used in other jurisdictions that are very incompatible to our small isolated system.

To throw in a new class given special status, under government decree and a bilateral purchase power agreements with the service provider, only further exacerbates the confusion.

[19] Library of Economics and Liberty, Electric Utility Regulation

[20] RAP, Electricity Regulation in the US: A Guide

Accordingly, we must discontinue with industrial status in our regulatory compact by amending, or repealing O.I.C. 1995/090 to make it clear that all industrial and larger commercial customers are to be isolated and not included in the rate base.

At the same time we must pursue a totally reformed regulatory process. This includes not only the above, but the changes necessary for a Phase I regulatory hearing where a particular utility applies to receive transition cost recoveries from the regulator who again has incomplete or imperfect information and is therefore left unable to detect when opportunities to reduce costs are not actively pursued by a particular utility.

In other words, in the current regulatory system, there is a serious lack of evidence provided as to whether the utilities are operating efficiently or whether our resources are being appropriately managed. The utilities have all the asymmetrical data and these have never been tested by an independent auditor. As the Board does not receive any contradictory evidence during a rate proceeding, they accept the Company's details as "the best available information". They maintain that cost recovery is required for economic efficiency.

> *"This presumes, however, a very narrow definition of efficiency based on preventing "uneconomic" bypass of the utility and that utilities minimize costs."* [21]

To remedy this mal-situation in the Yukon, we need the political will to immediately put in place a modern reformed regulatory system that will entitle the regulator to oversee that the utilities are rewarded for operating efficiently or penalized for poor management of our resources.

This can only be accomplished by first authorizing an unbiased independent collection and analysis of all the data necessary to benchmark each of the utility costs. Many types of alternative solutions to our current out-of-date-cost-plus regulatory regime, (i.e. the cost of service/rate of return model ("COS/ROR"), have been explored in the previous Part V Utilities Consumers' Group review on Electricity Regulatory Reform in the Yukon, for those with interest to investigate and make positive change.

[21] Library of Economics and Liberty, Electric Utility Regulation

Summary and Recommendations resulting from this research paper:

1. **Obligation to serve must be immediately clearly defined for the public good.**

2. **It is not prudent to use our public utility to pursue economic policy, mainly due to the fact that we have a small-scale, isolated electrical system with a very modest ratepayer base.**

3. **Isolate all industrial customers in our regulatory process by amending, or more preferentially repealing O.I.C. 1995/090.**

4. **At the same time we must pursue a totally reformed regulatory process**.

5. **All of this can be accomplished with a modern up-to-date directive from the cabinet and Commissioner of the Executive Council.**

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