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PLEASE QUOTE OUR REF.

August 15, 2016

Mr. E. Michael Leverock
Chairman, Energy Commission
c/o Ministry of Economic Development
Comer House 4th Floor
20 Parliament Street
Hamilton HM12

Dear Chairman Leverock:

The purpose of this submission by Bermuda Electric Light Company Limited ("BELCO" or "the Company"), referenced in previous correspondence dated June 30, 2016, is four-fold:

- to report on the actions taken by BELCO in response to letter directives of the Energy Commission ("the Commission") dated December 21, 2015 and March 31, 2016;
- to follow up on the Integrated Resource Plan ("IRP") that BELCO filed with the Commission on June 30, 2016;
- to propose three specific rate adjustments, relating to (1) a fuel efficiency sharing mechanism; (2) net metering; and (3) an electric vehicle charging rate; and
- to advance the collaborative discussion with the Commission regarding aggressive energy efficiency and conservation measures and other actions to transform the electric sector to achieve a more sustainable energy future while maintaining First World system reliability.

This submission is organized into five (5) parts:

I. An Introduction, providing a road map to and executive summary of the remainder of the submission and a short summary of the legal and regulatory context within which the submission is framed;

II. A Status Report on BELCO's follow up to the letter directives;

III. Proposals for three specific Rate Adjustments;

IV. A Conclusion listing items needing near term discussion with the Commission; and

V. Appendices (1-6) supporting Sections I-IV.

Consistent with Bermuda's electricity sector policy, BELCO sees a three-pronged energy future: (1) energy efficiency and conservation; (2) renewables; and (3) reliability and stability. The first prong focuses on aggressive use of energy efficiency and conservation to reduce demand. The second prong promotes use of economically sound, renewable generation resources to meet the remaining demand, including solar PV, both large-scale and distributed generation, subject to the ability of the grid to absorb the power. Finally, the third prong ensures the maintenance of reliable, dispatchable generation resources and a modern, efficient grid.

This submission focuses on near and mid-term actions to achieve a more efficient, cleaner and greener energy mix in Bermuda. BELCO envisions submitting another filing with additional concrete steps to advance this three-pronged approach.

The Company seeks to meet with the Commission at its earliest convenience to follow up on next steps regarding the IRP and various other issues identified below. The Company looks forward to the Commission's response to this filing, and would be happy to provide any further materials or to engage in any additional dialogue that the Commission would find helpful in addressing BELCO's proposals and activities.

This is a critical time for developing Bermuda's energy future, and BELCO stands ready, willing and able to play its part.

I. INTRODUCTION

On June 5, 2015, building on the Energy Green Paper 2009 and the Energy White Paper 2011, the Minister of Economic Development announced The National Electricity Sector Policy of Bermuda (Policy). That Policy describes how the Government intends to pursue least cost, high quality, environmentally sustainable, secure and affordable electric service through an electricity sector structure consisting of the Electric Utility (BELCO) providing transmission, distribution, retail, and some generation, with other generation from independent power producers and distributed generation; oversight by the Regulatory Authority; and planning through the IRP process.

Thereafter, consistent with this Policy, the Parliament enacted the Bermuda Electricity Act 2016 to supersede the Energy Act 2009. As the Preamble to the Electricity Act 2016 reflects, the legislative goal of the Act is to develop a regulatory framework to promote effective and sustainable competition, investment and the adoption of innovative technologies for renewable energy, energy efficiency and conventional energy, and the protection of the rights of consumers and end-users. Among other things, the Electricity Act 2016 adopts the IRP process

and sector structure discussed in the Policy and sets forth the governing tariff-setting principles for recovery of reasonable costs of service, including a reasonable return on investment.

Notably, the Policy sets forth an aspirational matrix of supply and demand-side options, geared toward moving away from fossil fuels to renewable resources, while maintaining a high-quality and reasonable cost supply.

In June 2015, still operating under the Energy Act 2009, BELCO submitted rate adjustments upon which the Commission acted in its letter directives of December 21, 2015 and March 31, 2016. In keeping with the spirit of the Policy and the Electricity Act 2016, the Commission, among other things, identified a series of action items for the Company going forward, including the submission of an IRP to the Commission by June 30, 2016.

BELCO fully supports the Policy and its goals, and had been working on an IRP for some time prior to the announcement of the Policy and the issuance of the Commission's letter directives. The Company filed its IRP on June 30, 2016, as mandated by the Commission. That IRP, as well as the proposals included in this submission, are wholly consistent with the Policy. For example, the IRP recommends aggressive energy efficiency efforts; an increase in the use of solar supply and other renewables; and maintenance of thermal base load resources in the near and mid-term until technological advances permit a transition to cleaner and more sustainable dispatchable generation resources. (*See* IRP, §§ 1.3, 4.12.)

The general focus of this submission, aside from complying with the Commission's letter directives, is to establish near-term rates, programmes and study processes that promote and jump-start an environmentally sensitive approach to electricity generation, delivery and supply, while meeting the least-cost, high quality, and security of supply goals set forth in the Policy and Electricity Act 2016.

II. STATUS REPORT ON COMMISSION LETTER DIRECTIVE ACTION ITEMS

The following provides a status report as to each of the action items BELCO understands it was to undertake under the December 21, 2015 and March 31, 2016.

1. "Green" fuel formula

In Paragraph 57(c) of the December 21, 2015 letter directive, the Commission instructed BELCO to devise, in collaboration with the Commission, a formula to increase the incentive to purchase "green" fuels. This requirement was not mentioned in the March 31, 2016 letter directive, and it is not clear whether the action items in the later directive supersede this instruction. BELCO believes that any specific requirement in this area should be assimilated within the broader IRP, and would like to meet with the Commission at the earliest opportunity to discuss the direction the Commission would like to take on this subject matter within the next steps of the iterative IRP process.

2. Credit card fee discontinuance

The March 31, 2016 letter directive, ¶ XXIV, states that BELCO's credit card convenience fee shall be discontinued and that BELCO should simultaneously facilitate use of cards as soon as practically possible. BELCO anticipates incorporating this discontinuance into its rates as of January 1, 2017, and would like to meet with the Commission at its earliest convenience regarding a rate adjustment to achieve this objective by that target date.

3. Fuel efficiency metric

Paragraph XXVIII(d) of the March 31, 2016 letter directive provided that BELCO should devise a fuel efficiency metric in collaboration with the Commission. BELCO's proposal is set forth below, § III.1. Given the collaborative nature of this metric as described by the Commission in its directive, BELCO requests a conference with the Commission to obtain its input and advance this task to completion.

4. New recovery account for CRSEER and net metering

In Paragraph XXVIII(e) of the 31 March 2016 letter directive, the Commission asked BELCO to create a new recovery account like the Fuel Adjustment Rate (FAR), moving the Commercial Renewable System Excess Energy Rate ("CRSEER") and net metering from FAR to the new account.

The amount which BELCO has paid to commercial entities selling at the CRSEER is $3,596 for the first half of 2016. Net metering credits to residential customers over the same period were $138,179, with the total amount paid with the total amount refunded to the customer as a result of rolling credits between January and June, $8,217. The lifetime cost of the net-metering program in total credits to residential customers between 2011 and June 2016 is $594,395, with the total amount refunded to the customer as a result of rolling credits for the same period, $42,870. The cumulative June 2016 YTD impact to the overall rates (total amount paid divided by first half sales) is approximately 0.05 cents/kWh, which would imply a tracking tariff (similar to the FAR) of approximately 0.01 cents/kWh. BELCO will work with the Commission to incorporate this tracking and recovery component in its monthly FAR report.

5. Capital plan

The March 31, 2016 letter directive, ¶ XXVIII(g), provided that BELCO should submit a capital plan for work in progress and to be completed during rate period by May 31, 2016, with semi-annual updates. On June 30, 2016, BELCO submitted a request to extend the date to August 15, 2016.

BELCO's 2016 Capital Expendure Budget is enclosed as Appendix 1. As reflected in the attachment, BELCO's plan can be divided into two categories, (1) maintenance and (2) growth. The first category lists projects BELCO has identified as essential to meet the minimum requirements to serve customers in a safe, reliable and effective way. The second category reflects investments to modernise the system and meet the new energy future, including investment in advanced metering infrastructure ("AMI") and battery energy storage systems

(BESS) for spinning reserve. BELCO is available to answer any queries the Commission may have about specific projects listed and will update the Commission on progress on the semiannual basis as directed.

6. Hotel customer class

The March 31, 2016 letter directive, ¶ XXVIII(c), stated that BELCO should submit a new tariff schedule separating hotels as a customer class from the current demand category. In response, BELCO contemplates a broader hospitality demand and customer class for implementation on January 1, 2017, with a neutral impact for the classes as a whole. BELCO seeks a prompt meeting with the Commission to discuss the specifics of the rate design for this new class.

7. Energy conservation plan

The Commission stated that BELCO should develop with the Commission and submit a plan to collaborate with non-residential classes with respect to energy efficiency and conservation. (March 31, 2016 letter directive, ¶ XXVIII(h).)

Reduction of use through energy efficiency and conservation is a critical component in a more environmentally sustainable energy portfolio. As reflected in the IRP, steps to increase energy efficiency and conservation are a major aspect of BELCO's proposed plan for the future. The Policy assumes approximately 5 percent abatement of demand through demand-side management initiatives and aggressive conservation efforts. BELCO is committed to meeting these targets and using cost-effective efficiency conservation programmes to dampen overall and peak demand. The Company proposes the following approach.

A rider should be established to BELCO's bills, reflecting a designated fund dedicated to energy efficiency and conservation programmes. The associated charge, *e.g.*, for illustrative purposes, 1 cent/kWh, will appear as a separate line item on customers' bills. Because this fund will have no money in the beginning, BELCO will provide the seed money, *e.g.*, again for illustrative purposes, $1 million, to cover the first six months' expenditures, to be paid back over time, without interest, as sufficient revenues are generated by the rider. This money will be spent on pilot programmes, implemented through requests for proposals issued by BELCO and responded to by Bermuda-based vendors. These pilots, if successful, then become a platform for expansion into broader programming. BELCO will make a data repository of the results of all pilot programmes available to the public. In the beginning of the plan implementation, the regulator will approve the specific pilot programmes. Over time, as this process goes forward, the regulator can simply monitor spending for prudence.

As the initial launch, BELCO believes that programmes can quickly be put in place in the area of energy audits for (1) public school and (2) governmental building energy savings.

Regarding these first two pilots, a school will be selected with the approval of the Department of Education, as a base line for expansion to other buildings, to be expanded in accordance with

the learning and experience gained. A parallel effort will go forward with a governmental building chosen with the approval of the appropriate governmental body.

High priority should be given to improving Government, municipal and autonomous non-governmental organizations ("QUANGOs") (collectively "GMQ") facilities to reduce operating expenses to the Government while simultaneously improving the portfolio of demand side management resources. This can be accomplished by installing utility-financed energy efficiency and energy management solutions on GMQ facilities as appropriate, while providing energy conservation education to the civil service.

Such steps can decrease future capital requirements for power generation resources in the energy mix and reduce energy payments by the GMQs, as well as potentially benefit from the low-cost of capital of the utility model.

GMQs are not only appropriate targets for energy efficiency and conservation efforts, but also assets as sites for renewable generation, producing new revenues for the associated entities while simultaneously improving the portfolio of renewable energy resources. Utility-owned renewable assets can be built on GMQ property where appropriate. Such siting of renewables likewise has the multiple benefits of increasing the number of renewable systems in the energy mix, adding leasehold payments to the GMQ income, and employing the low-cost of capital of the utility model.

Development of solutions from these initial programmes could include "Community Gardens," where customers that are unable to develop rooftop solar systems can purchase ownership in the GMQ sited systems. For example, residents that live in rented accommodations find solar installation inaccessible. The Community Garden approach opens the accessibility to solar PV ownership, irrespective of home-ownership.

Other near-term programmes could involve lighting upgrades and replacements in commercial buildings.

In this submission, as the first step on this path, BELCO seeks approval for this approach; establishment of the energy efficiency rider to create an energy efficiency fund; and approval of first two pilots noted above. BELCO seeks a prompt meeting with the Commission to identify the specific amount of initial seed money from BELCO and the size of the rider, and any details regarding the first two pilots the Commission may desire before issuing RFPs for the same.

8. T&D enhancement

The Commission tasked BELCO with developing and submitting a working paper for the enhancement of the transmission and distribution system that shall include, but not be limited to, facilitation of distributed generation and energy feed-in and intelligent technology integration, by November 30, 2016. (March 31, 2016 letter directive, ¶ XXVIII(i).) The capital plan for 2016 transmission and distribution enhancements of any kind is included in

Appendix 1. Work is ongoing on the task of developing five-year capital plan incorporating such enhancements on this longer planning horizon.

9. Discount phase-out

In the March 31, 2016 letter directive (¶ XXV), the Commission ordered BELCO to phase out discounts except for social assistance and quick payment over a two-year period commencing from the date of the letter. BELCO eliminated the discount in its fuel adjustment clause as of July 1, 2016. As noted above (§ 6), the hotel discounts are scheduled for elimination as of January 1, 2017. Discounts for government facilities will also be eliminated as of January 1, 2017. BELCO looks forward to a discussion with the Commission to discuss specifics and cost impacts.

10. Intercompany loans

The March 31, 2016 directive, ¶ XXVIII(f), provided that BELCO should settle its intercompany or related party loans per BELCO's letter to the Commission dated February 15, 2016, with no further similar arrangements undertaken unless authorized by the regulator.

With respect to intercompany payables, at Ascendant Group Limited ("AGL"), vendor payment processes are structured around the integrated and efficient use of systems. Specifically, AGL, BELCO, AG Holdings Limited ("AGH") and its subsidiaries IEPC Limited, and Ascendant Properties Limited (inclusive of Serpentine Properties Limited) utilize Maximo Asset Management program integrated with SAP to review, approve and process payments tied to a single BELCO overdraft facility. As Air Care Limited, PureEnergy, iFM Limited and Bermuda Gas (sold in April 2016 to Rubis) were never integrated into the Group's Maximo or SAP systems, their vendor payments, internal controls and cash management processes were always kept separate.

BELCO believes that this focus on an integrated process is efficient and provides for a strong internal control environment as the vendor master list, delegated authorities and payment authorization workflows are managed through a robust system. Notwithstanding the benefits of this approach, the Commission has rightly pointed out that BELCO's intercompany payables and receivables were not settled on a regular basis, resulting in significant amounts accruing on BELCO's accounts. At the same time, it should be noted that BELCO's retained earnings has been abnormally high, as the timing and amount of its dividend payments have been tied to AGL's reduced dividend payments, resulting in payout ratios significantly below normal for integrated utilities.

In order to remedy this situation, BELCO proposes the following approach.

- Vendor payables will continue to be run under the same integrated system, internal controls and BELCO overdraft facility. However, BELCO and AGL will settle its intercompany payables on a monthly basis so as to effectively limit the exposures to a reasonable amount. Under no circumstances will the

BELCO overdraft facility be utilized to fund acquisitions or project investments at AGL or AGH;

- BELCO quarterly dividends will reflect its specific situation, taking into consideration its retained earnings, cash flows, capital structure and anticipated capital expenditure requirements. In the short-term, this will result in an increased payout ratio; and

- AGL will separately put in place a working capital facility to ensure that it has sufficient liquidity for unforeseen expenses.

While these changes will not completely eliminate intercompany payables, they will significantly reduce the amounts (on average below $500k). BELCO will retain the internal control benefits and efficiencies of the integrated processes in place, and avoid unnecessary significant IT costs required to either incorporate other entities into the Maximo system or consider other system changes.

This new policy was adopted in July 2016, resulting in a decrease of net BELCO intercompany receivables from $3.1m at year-end 2015 to $448k at June 30, 2016.

11. Intercompany relations

The December 21, 2015, ¶ 57(g), stated that BELCO should provide to the Commission all AGL shared services allocations and methodologies and eliminate any such expenses from the allowed rate of return determination for any expenses not in accordance with the with the normal expense that BELCO would incur for those same services if sourced from the private sector or using its own internal resources. The March 31, 2016 directive noted advantages presented by the shared services model, but did not explicitly rescind ¶ 57(g).

A description of shared service allocation methodology, AGL corporate organization charts and resulting 2016 allocations are enclosed as Appendix 2.

12. Insurance

The December 21, 2016 letter directive, ¶ 57(h), provided that all BELCO insurance coverage to be provided by AGL's captive insurance company (ABIL) shall be subject to at least one other private sector quotation for the same risks coverage, with AGL's company to match or be less than comparable coverage cost.

With respect to first risk loss for property damage coverage in respect of Property Damage (non- Machinery Breakdown), ABIL provides coverage at an annual premium of USD$500k. ABIL's advisor, Marsh IAS Management Services (Bermuda) Ltd., which specializes in captive insurance management, has indicated that the current market cost of a specific private sector insurer would be in the range of USD$650k-750k. BELCO thus believes that it should continue

to procure its coverage from ABIL. BELCO would be happy to provide any additional information the Commission may need and to discuss this topic further with it.

13. Baseline revenue and expenses

In the December 21, 2015 letter directive, ¶ 57(i), the Commission stated that BELCO shall collaborate with the Commission to determine baseline operating expenses as a percentage of revenue for financial years 2013, 2014 and 2015, with the baseline to be used as a means to assess whether to allow certain extraordinary expenses.

A summary reflecting data from the five-year period of 2012-2016 is enclosed as Appendix 3.

BELCO seeks a near-term meeting to discuss this data and continue its collaborative dialogue with the Commission.

III. RATE ADJUSTMENTS

BELCO believes that what is best for Bermuda is the advancement of an environmentally friendly approach to electricity service, without sacrificing security of supply or reasonable costs. The Policy echoes that goal, as does the IRP. Set forth below are three specific rate adjustments that BELCO proposes to adopt now, which also advance this approach.

1. Fuel efficiency metric

Paragraph XXVIII(d) of the March 31, 2016 letter directive provides that BELCO should devise a fuel efficiency metric in collaboration with the Commission. BELCO proposes a sharing mechanism whereby it is incentivized to be more efficient, with ratepayers sharing the benefits of such increased efficiencies.

Background

Currently, BELCO uses a fuel budget internally to derive its fuel efficiency targets. This budget is developed looking at projected sales, plant auxiliaries, administrative buildings, transmission & distribution losses, generating plant reliabilities rates, maintenance schedules (particularly the major overhauls), and the dispatch/merit order (both economic and environmental). Fuel efficiency performance is largely impacted by forced outages, maintenance extensions and large variations in sales.

As BELCO does not have a homogenous generating plant, various machines have different efficiencies and fuel types that they may be able to use. The more modern plants (E1 - E8) can operate on both Heavy Fuel Oil ("HFO") and Light Fuel Oil ("LFO"), while the older plants can only operate on ("LFO"). The 'E' engines are also the most efficient units in the fleet, and are dispatched first in the merit order. HFO is a lower cost fuel than the LFO product, so these units have an increased positive impact on the generating costs, while LFO is a cleaner fuel, with a lesser environmental impact.

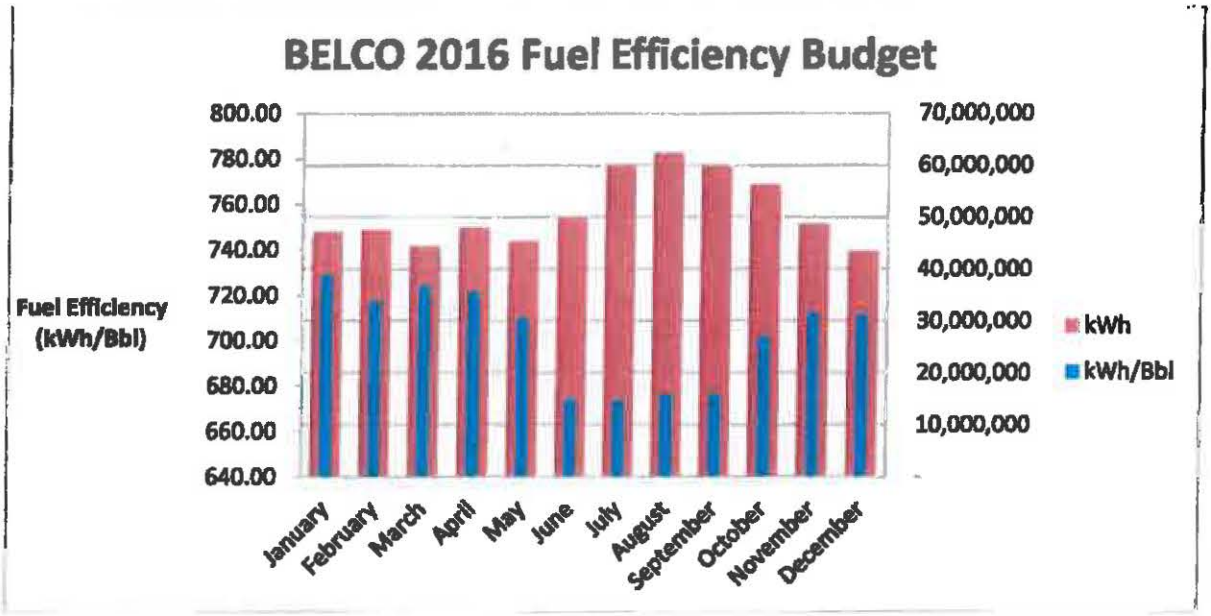
Set forth below is BELCO's internal fuel budget (Figure 2.1) and the associated fuel efficiency (Figure 2.2).

The first table shows both fuel types, the kWh generated (not sales), and the resulting fuel efficiency:

Figure 2.1
BELCO 2016 Fuel Budget

	HFO (U.S. Bbl)	LFO (U.S. Bbl)	kWh	kWh/Bbl
January	59,826	4,985	47,253,672	729.10
February	57,204	9,103	47,572,130	717.46
March	57,086	4,399	44,538,139	724.38
April	60,328	6,408	48,138,879	721.33
May	47,199	16,819	45,448,138	709.93
June	50,361	23,808	50,003,637	674.18
July	65,550	23,810	60,226,022	673.97
August	66,131	26,294	62,543,841	676.70
September	67,430	21,125	59,914,549	676.59
October	66,032	14,303	56,389,867	701.93
November	64,725	3,791	48,795,716	712.18
December	57,364	3,842	43,561,309	711.72
Total	719,235	158,688	614,385,899	699.82

Figure 2.2



The overall actual fuel efficiency for 2015 was 709 kWh/Bbl, and is expected to decrease to 699 kWh/Bbl for 2016. This is largely due to the number of major overhauls in 2015 versus 2016, two and five, respectively. This larger number of major maintenance periods in 2016 contributes heavily to the decrease in fuel when comparing 2016 to 2015.

Performance Incentive

BELCO recommends that a performance incentive should be established around this fuel budget that consists of a shared savings model, in which BELCO and its customers share the benefits of any savings.

BELCO proposes that any savings in excess of a fuel efficiency target of 699.82 kWh/Bbl kWh/Bbl be split 50/50 with the customer. BELCO would be allowed to retain these earnings in addition to the 2016 7% allowed return and the 2017 8% return. This is a modest gain per kWh/Bbl efficiency improvement, with $43,896 for both the customer and BELCO (e.g., @ $0.10 FAR * 877,923 Bbl {2016} = $87,792 for a one (1) point improvement in kWh/Bbl), assuming a ten cent fuel charge and the 877,923 figure reflecting the total LFO and HFO showing in the table above.

BELCO notes that it supports a broader adoption of performance-based formulaic rates, and hopes once the IRP is adopted to collaborate with the regulator to develop a rate formula that can reduce the transaction costs of frequent rate filings, provide predictability as to energy costs to the consumer, and incentives both the Company and ratepayers to reduce or dampen costs while moving toward a greener energy mix.

2. Net metering

Multiple factors are converging to require a change in the current net metering treatment. As explained in more detail below, given these factors, BELCO is closing its existing net metering residential programme and proposes a transitional rate treatment for any new residential or commercial solar PV installation until regulations implementing the provisions of the Electricity Act 2016 can support a permanent alternate approach.

The current net metering programme

In 2010, BELCO recognised the emerging value of solar PV renewables for the community, and introduced a net metering programme to incent residential customers to install solar PV and encourage early adoption. Participants were compensated at the sum of the highest tier retail rate plus the Fuel Adjustment Rate. As discussed below, this price includes fixed transmission, distribution, generation and retail costs, not just variable generation costs, such as fuel, and thus results in a subsidy above the economic benefit of the power generated. BELCO has paid this subsidy and did not seek recovery from its customer base. The initial programme was envisioned undergoing review after entry of 200 participants, and the total subsidy paid by BELCO to date, as noted above, amounts to $594.395.

Factors requiring a change in the net metering programme

A number of events have occurred requiring alterations to the existing programme.

First, the number of participants is now at 308, far over the 200 meant to trigger review. The goal of incenting adoption has been achieved, as also confirmed by the Government's elimination of solar rebates in 2014. With a broader number of participants, application of fundamental cost-based ratemaking principles must now be applied, and the current approach is unsustainable for large-scale deployment.

Second, this conclusion is confirmed by the Commission's March 31, 2016 directive, providing for an account recovering the costs of net metering and the Commercial Renewable System Excess Energy Rate ("CRSEER"). BELCO will have this account in place by the end of the year. Hence, at that time, other ratepayers will be called upon to pay any further subsidies.

Third, such cross-subsidization is not only contrary to fundamental rate making principles, but, BELCO believes, also contrary to Paragraph 36 of the Electricity Act 2016, as explained below.[1]

The actual costs of serving solar PV users and the economic value of the power they supply

An electric company's costs consist primarily of the large fixed costs associated with generating, transmitting and distributing electricity. These costs are for the most part unavoidable. There must be generating units (owned either by the utility or independent power producers). In order to deliver that power to customers, there must be a network of wires that keep customers connected to the electric grid, with fixed operations and maintenance costs to keep the grid in good, safe operating order in order to serve customers reliably.

The second set of costs associated with providing service are customer costs, that is, the costs of metering and billing the customer.

Finally, there are variable operating costs, consisting primarily of fuel costs to generate the electricity that customers use in their homes and business. Whenever a customer conserves a kilowatt hour of electricity, the primary operating costs that are avoided are the variable energy costs (plus in the long-term, potentially, avoided capital costs). Thus, it only makes sense to pay the avoided costs – the cost of running generators. All the fixed costs and all the customer costs must be covered; they do not go away just because the electric utility buys power from a household, unless the customer disconnects entirely from the grid. The utility must continue to transmit the energy to all customers and stand ready to generate electricity when no other cheaper sources are available.

[1] Notably, studies have shown that such subsidies can end up benefiting higher income ratepayers, paid by ratepayers with lower incomes. *See* http://www.cpuc.ca.gov/NR/rdonlyres/75573B69-D5C8-45D3-BE22-3074EAB16D87/0/NEMReport.pdf

In sum, from a cost and economic benefit perspective, payment for solar PV should be at avoided energy costs.

The Electricity Act 2016

Avoided costs is also the measure that that BELCO believes is mandated by the Electricity Act 2016.

Section 36 of the Electricity Act 2016 provides that the cap for feed-in-tariffs shall be "(i) the actual cost of generation that the TD&R Licensee [BELCO] avoids by purchasing power from distributed generation; and (ii) an estimate of any economic benefits from distributed generation." From a ratemaking perspective, the economic benefits from distributed regulation not reflected in the avoided costs of BELCO generation would be any capital costs BELCO avoids in not having to upgrade the grid due to distributed generation deployed in areas that would otherwise require such upgrades.

BELCO does not read the Act as permitting any higher rate based on a perceived *environmental* benefit, giving the term *"economic"* used in the Act. Hence, BELCO believes that the rate adjustment it proposes in this submission is not only economically rational, but legally required: the price paid for the excess power delivered to the grid by solar PV customers cannot, as a matter of law, exceed the price that BELCO proposes to include in the tariff.

It may be, that for policy reasons, the Government will want to continue to provide an additional incentive to property owners to install solar PV arrays. From an economic perspective, such incentives are best established through the tax system, because, among other things, the policies supporting such a subsidy benefit all Bermudians, not just ratepayers. BELCO takes no position as to whether such tax incentives should be provided. BELCO does not believe, however, that such a subsidy can be effected through a rate higher than the rate proposed by BELCO in this submission under the new statute or sound rate making principles.

For all these reasons, BELCO proposes the following methodology to address existing net metered customers, facilitate wider adoption of renewable energy, and maximise the benefits of renewable energy solutions.

Termination of the existing net metering programme

BELCO will close the existing net metering programme effective as of the date of this filing. No new entrants will be permitted beyond this point; however, verified systems that are permitted as of that date will be included in the programme. BELCO will need to have evidence of physical construction of a residential solar PV installation to be considered for inclusion in the legacy programme.

The new small-scale transitional solar PV tariff

For the reasons given above, BELCO recommends that all non-utility scale, solar PV installations, residential or commercial, be compensated based on an avoided cost methodology. There will

be no limit in the size of the installation for inclusion in the rate for residential customers; any installation above a capacity of 0.5 MW by a commercial customer will be deemed an independent power producer outside this rate and subject to individual negotiation.

The inputs for this cost calculation should be avoided fuel, avoided lubricating oil, avoided capital construction, and avoided transmission losses. Items not included in the calculation are capacity payments, spinning reserves and other ancillary services (such as kVar/voltage support, waveform profile, outage management and response), as well as distribution, metering and billing charges.

Currently, BELCO's projected weighted average marginal cost of fuel for 2016 is 15.74 cents/kWh (FAR + $30/Bbl included in tariff). (*See* Appendix 4.) Adding the other avoided costs, the total avoided cost and tariff is 17.36 cents/kWh. (*See* Appendix 5.)

Under the transitional rate, the price paid will be netted monthly (in contrast to the previous programme's six-months schedule). So, for example, if a solar PV customer uses 600 kWh in a month and generates 500 kWh, it will pay for 100 kWh at the normal retail rate. If the solar PV customer uses 500 kWh and generates 600 kWh, it will be paid for 100 kWh at the avoided cost rate, calculated here at 17.36 cents/kWh.

This tariff will be recalculated annually based on projected kilowatt hour sales, fuel and lubricants costs and grid losses and subject to monthly review by the regulator. To the extent that avoided capital costs can be identified, then this will be factored into the calculation based on the cost of the asset(s) avoided and the expected recovery period.

This tariff model replaces the CRSEER and will improve the compensation rate for the owners of these systems.

BELCO proposes that this feed-in-tariff be available first come, first serve, for a two-year period, capped at 350 new solar PV customers, at which time, the results and the impact on the grid can be assessed.

The future solar PV rate

While the transitional rate proposed is adequate to meet legal and cost-based principles, it can and should be altered as advanced metering is deployed to allow a more refined approach and customers migrate to real time pricing in the future. BELCO is happy to have further discussions with the regulator on this topic at any time deemed appropriate.

3. Electric vehicle public charging tariff

The benefits of increased electric vehicle (EV) use in Bermuda are set forth in the Energy White Paper 2011, § 7.2.1. As of 2015, there are currently approximately 49,000 registered motor vehicles on Bermuda roads using gasoline or diesel and emitting resultant pollutants. Over half of these are private cars. Use of EVs reduces low-level airborne emissions, thereby improving air quality at pedestrian levels. It can lower operating costs and reduce carbon emissions from

the existing transportation sector. This, in turn, would improve significantly as the power supply transitions in accordance with the IRP. As EV use increases, the revenue from the charging tariff can reduce the pressure on the rate base, allowing for the lowering of other tariffs should significant adoption occur. The Government has already recognized the benefits of a switch to EVs, by eliminating the customs duty on EV cars entirely and reducing the custom duty on commercial vehicles to 10 per cent.

BELCO has already begun converting its own fleet to use electricity to lower operating costs and to promote a reduced environmental impact. It currently owns and operates 14 electric vehicles – 12 intermediate vans, and two cars as pilots for its corporate motor pool. The Company plans to switch to an all-EV fleet, including its large bucket trucks, in the course of its normal retirement cycle. The Company currently has chargers for its vehicles inside its gates, with more under construction, and six chargers outside its gates.

BELCO proposes a simple flat tariff initially to incent a market transition, to be replaced with a Time of Use rate after completed deployment of Advanced Metering Infrastructure. It has also has constructed some E-Mobility infrastructure and will make it available for public use. The specifics for the proposed EV tariff are set forth in Appendix 6. As reflected in this enclosure, using the mid-level adoption scenario as a base line, the initial price for EV power will be 27.11 cents/kWh, to be adjusted monthly to reflect fuel costs. Ninety percent of the assets to be used are included in the rate base, and BELCO will only be recovering 10% of its O&M and variable costs. Hence, just as with the initial solar PV programme, a subsidy is offered to allow penetration of the new technology. This subsidy will be phased out in five years. By that time, BELCO anticipates that the benefits and adoption of EV for transportation will be sufficiently broad-based to eliminate the need for a subsidy. In the future, new technology should also allow use of such vehicles as power generators off the grid, expanding options, uses and reducing overall costs. As just one example, development is underway of technology allowing an electric car to be used as a generator to power the home during periods when the grid is down, *e.g.*, during hurricanes.

Conclusion

As this submission reflects, BELCO is moving forward with the tasks assigned to it in the Commission's letter directives and has submitted its IRP. As noted above, the Company seeks to confer with the Commission at the Commission's earliest convenience to discuss how to proceed with the iterative IRP process, and to address the items needing further dialogue identified above, including:

- Development of a green fuel incentive formula if deemed appropriate within the iterative IRP process;
- Rate design and rate adjustments to achieve the letter directive tasks regarding credit card convenience fees, a new hospitality rate and elimination of discounts, targeting such rate adjustments for January 1, 2017;

- BELCO's proposed fuel efficiency metric, set forth above, § III.1;
- Finalization of the details incororaiton of BELCO's tracking and recovery account for CRSEER and net metering into its FAR report;
- BELCO's energy efficiency and conservation Plan and implementation of the first two pilots identified in that plan;
- Identification of BELCO's baseline operating expenses; and
- BELCO's proposed fuel efficiency metric as a first step in developing formulaic rates.

BELCO looks forward to meeting with the Commission soon to discuss and agree on next steps.

Denton E. Williams

Denton E. Williams

Senir Vice President & Chief Operating Officer

APPENDICES

1. BELCO's 2016 Capital Expenditure Budget.
2. Description of shared service allocation methodology, AGL corporate organization charts and resulting 2016 allocations.
3. Summary of BELCO revenue and expenses from the five-year period 2012-2016.
4. Calculation of BELCO's weighted average marginal cost of fuel at 15.74 cents/kWh.
5. Calculation of BELCO's total avoided cost/solar PV tariff at 17.36 cents/kWh.
6. Calculations reflecting BELCO's proposes EV tariff.

APPENDIX 1

Energy Commission Directive - BELCO 2016 Capital Expenditure Budget

		2016 Budget
Engineering		
110000507	Fire Pump System Upgrade	227,155
150000055	Repairs of GT6, 7, & 8 2015	203,981
150000113	Upgrade of Lube Oil Handling Systems	315,606
150000117	Upgrade Battery, Inverters, and UPS Phase II	35,563
160000016	E3-E4 Engine Realignment	214,751
160000017	Control Air Upgrade	205,042
160000018	Tank 7 Corrosion Removal and Painting	81,351
160000019	Improved Eurotainer Safety Access	61,346
160000020	E1-E2 HV Terminal Access Platform	61,238
160000021	Upgrade Battery, Inverters, and UPS Phase III	76,831
160000022	Procurement of Strategic Spares for Life Expired Transformers	797,991
160000023	Upgrade & Replacement of Plant Electrical Systems 2016	473,748
160000024	E3-E4 Radiator Fan motor Reorientation	43,001
160000025	Triconex Upgrade	74,881
160000026	Ultra TEV Monitor	70,471
160000027	IR Window Installation	44,915
160000028	E5-E6 Brazed Heat Exchanger Upgrade	91,572
160000029	Upgrade and Replacement of Tools and Service Equipment 2016	360,042
160000030	GT5 Corrosion Repairs	100,463
Engineering		3,539,948
	Subtotal Power Generation	3,539,948
Grid Operations General		
160000046	Grid Operations Transport 2016	555,561
160000047	Distribution System Refurbishment and Upgrades 2016	2,617,096
160000048	New Supplies & Customer 2016 Projects	1,535,212
160000049	Meter Services 2016	1,530,208
160000050	Grid Operations Capital Tools & Equipment 2016	184,905
Grid Operations General		6,422,982
ED Engineering		
160000076	BLDC Channel House	86,360
160000077	SSB 22kV Bushing Replacement	183,817
160000080	SSB Contingency	97,243
160000081	SSB National Stadium Feeder Rationalization	74,942
160000082	Upgrade of Main and Back-Up Protection on Transmission Branch Segments	116,652
160000083	SSB Generation Move (North)	544,848
160000084	Protection Relays Integration	69,074
160000085	22kV Cable Replacement Grey's Bridge	259,863
160000086	PC&M Plant and General	151,425
160000088	SCADA East Communication Ring	119,872
ED Engineering		1,704,096
Operations Center		
120000566	Plant Metering	0
Operations Center		0
	Subtotal Grid Operations	8,127,078

Energy Commission Directive - BELCO 2016 Capital Expenditure Budget

		2016 Budget
Fuel & Logistics		
150000005	Smith Electric Bucket Truck	675,000
160000101	Warehouse Phase II	385,683
160000102	Intermediate Electric Van	252,000
160000103	Hyster 2.5CT Forklift	38,000
Fuel & Logistics		1,350,683
Occupational Health, Safety Environment		
160000111	Environmental Monitoring Upgrades 2016	70,536
160000112	Air Quality Monitoring Station (BDA 4) 2016	210,000
Occupational Health, Safety Environment		280,536
	Subtotal Fuel, Logistics and OHS&E	1,631,219
Customer Care		
Customer Care		0
Information Technology		
150000133	BELCO Radio Replacements	100,000
160000121	BELCO SECURITY SYSTEM UPGRADES 2016	28,500
160000122	BELCO SCADA FAULT TOLERANCE 2016	31,720
160000123	BELCO SCADA NETWORK UPGRADE 2016	24,000
160000124	BELCO SCADA NTU UPGRADES 2016	15,600
160000125	BELCO Cayenta PREPAY Implementation & Consulte. 2016	100,000
160000126	BELCO ESB IT Support & Consulting Cost 2016	300,000
160000127	BELCO Maximo Anywhere Implementation & licenses thereafter	150,000
160000128	BELCO Maximo Upgrade 2018 (Support is in operational forecast)	
Information Technology		749,820
Facilities and Canteen		
134000461	Admin Building Aircon replacement	980,000
134000462	Admin building window replacement	1,180,000
160000141	Administration Building Bathroom Improvement Project Phase II	362,865
160000142	E5/E6 Fuel Treatment Room & Cable Tunnel "B" Fire Suppression Project	90,000
160000143	Administration Building front Foyer	40,000
160000144	Hago Building Aircon	12,000
160000145	E1-E2 Engine Hall Kitchen re-establishment	15,000
160000146	Generation Facility Kitchenette	12,700
160000148	Perimeter Fencing - Replace ≈ 200ft of fencing per year	40,000
160000149	Warehouse #2 - Replace exterior walls	350,000
160000150	Old Power Station - Floor D5	150,000
Facilities & Canteen		3,232,565
	Subtotal Administration	3,982,385
	Subtotal BELCO Maintenance Projects	17,280,630

Energy Commission Directive - BELCO 2016 Capital Expenditure Budget

		2016 Budget
BELCO Growth Projects		
110000412	2015 Integrated Resource Plan (BELCO)	531,000
160000200	BELCO Energy Efficiency & Conservation Programme	575,000
160000201	Battery Energy Storage System (BESS) for Spinning Reserve	250,000
Advanced Metering Infrastructure		
120000930	GRID Modernization - Phase 4 of 5	0
120000931	GRID Modernization - Phase 5 of 5	0
150000086	Grid Modernization - Phase 6	506,215
150000096	Grid Modernization - ESB	
150000097	Grid Modernization - IVR	23,357
150000098	Grid Modernization _OMS	911,380
150000099	Grid Modernization PrePay	100,000
160000078	Plant and Substation Metering	822,607
160000089	Grid Modernization Phase VII	1,805,450
AMI Sub-Total		4,169,009
	Subtotal BELCO Growth Projects	5,525,009
Total BELCO Capital Expenditures		22,805,639

SUMMARY	
Maintenance Capex Categories	
Grid Operation Asset Integrity	6,591,866
Grid Operation Growth Assets (Routine New Supplies)	1,535,212
Facility Energy Efficiency, Conservation, Modernization	3,232,565
Power Generation Asset Integrity	2,741,957
Electric (T&D) Vehicles	927,000
Power Generation Strategic Spares	797,991
IT Hardware & Software BELCO	749,820
Warehouse Optimization	423,683
Environmental Systems	280,536
Growth Capex Categories	
Grid Operation Growth Assets (AMI)	4,169,009
Grid Operation Growth Assets (Major New Supplies)	0
Power Generation Growth Assets (Rate Case - IRP Project Development)	1,356,000
BELCO Capex Totals	22,805,639

APPENDIX 2

Shared Services

In 2010, BELCO's corporate functions (Finance, IT, HR, ERCC) were moved to a separate legal entity Sigma. The objective of this re-organization was to leverage common functional resources across Group companies to leverage synergies and realize operating efficiencies. In 2013, the same functions were moved into AGL in an effort to streamline the number of legal entities while still maintaining the objective from the original re-organization. The staff charts of these functions are included as Attachment 1.

AGL functional costs are budgeted on an annual basis based on approved headcounts and estimated materials and service expense. The budget is reviewed by Management and approved by the Board. Shared service allocations are then determined by the Finance Department in conjunction with the departments. The department allocation methodologies take into consideration project requirements (i.e. hourly time estimates), system usage (IT license fees/maintenance charges) and effort (routine overhead support are allocated on an estimated % of effort basis). On a monthly basis, BELCO is charged a fixed amount equal to the budget. It should be noted that the Group reviews its allocation methodologies during the budgeting process to ensure that they are consistent with the overall direction and strategy of the Group.

The shared service methodology results in savings for BELCO. An example would be the finance department. If BELCO were a standalone entity, the headcount would be unchanged as the work scope would justify the staffing in place. Moreover, AGL's material subsidiaries (IFM, AirCare and BGU) all had separate finance managers and standalone financial systems in place. In this example, the 20% cross-charge on payroll-related costs to AGL/ subsidiaries reflects a cost benefit to the ratepayer. In addition, only a portion of the public company costs (i.e. Board fees, publications) are allocated to BELCO notwithstanding that BELCO represents the dominant entity in AGL with respect to capital markets needs and governance requirements.

In addition to the corporate functions, the BELCO transport group also serves as a Group shared service as it performs vehicle maintenance for Air Care and Bermuda Gas via service level agreements with appropriate transfer prices. By utilizing a shared service costs for the transport group, the transport garage capacity utilization is improved resulting in ratepayer cost savings vis-à-vis a standalone operation with no synergies. BELCO service level charges reflect arms-length pricing ($110/hour labor, appropriate mark-ups on inventory) competitive with other third party providers.

In summary, BELCO believes that the shared service allocation process is fair, simple and reasonable, resulting in cost savings for the benefit of the ratepayer.

The following table highlights the methodologies utilized in the 2016 budgeted shared service allocations to BELCO.

Department	Payroll-related	Materials & Services
Finance Headcount - 9	Accounting staff performs all BELCO operational accounting functions and prepares audited financial statements for the Group. Accounting staff does no operational accounting for material subsidiaries (BGU, AirCare, IFM). 80% of payroll is charged to BELCO, 20% charged to AGL and subsidiaries.	External audit charges are specific to each legal entity.
Treasury/Risk Headcount - 2	Treasury/Risk are responsible for the following activities – investor/bank relations, corporate finance, risk management, insurance, BELCO rate filings	External consulting/advisory charges are specifically allocated to the company or transaction. For instance, the financial advisory fees associated with the sale of Bermuda Gas are specifically charged to that transaction.
IT Headcount - 13	IT Department provides infrastructure and corporate allocation support to AGL companies. Headcount allocations % based on estimated workloads. Time control used to allocate costs between operating expense and capitalized projects.	Maintenance/license fees are allocated based on estimated system usage (i.e. Cayenta billing system 100% - BELCO, GP ERP 100% to BGU).
Legal (including Internal Audit) Headcount - 5	The legal department oversees all legal and corporate secretarial matters across the Group. Allocations are based on an annual estimate of effort with [45]% currently charged to BELCO.	Third party legal costs are charged to each legal entity for the work performed.
Human Resources Headcount - 8	The HR Department oversees all HR policies across the Group. The ratio reflects the approximate BELCO headcount ratio to the Group (excluding IFM and AirCare who have separate HR capabilities).	Third party costs are charged directly to each legal entity for the work performed.
Corporate Communications Headcount - 4	Payroll costs are allocated based on headcount numbers.	Community programs and third party programs are charged based on work performed.
Executive Headcount - 7	BELCO costs are allocated by position as follows – CEO (80%), CFO (80%), VP Risk/Treasury (80%), MD AGH (0%)/MD BGU (0%) Properties/EV Mgr (50%) Admin Assistant (80%)	Board-related expenses are allocated 50% to BELCO/50% to AGL. Long-term incentive compensation will be charged, if incurred, based on the employee's actual work allocation. For budgetary purposes, 100% of the charge is included in AGL.

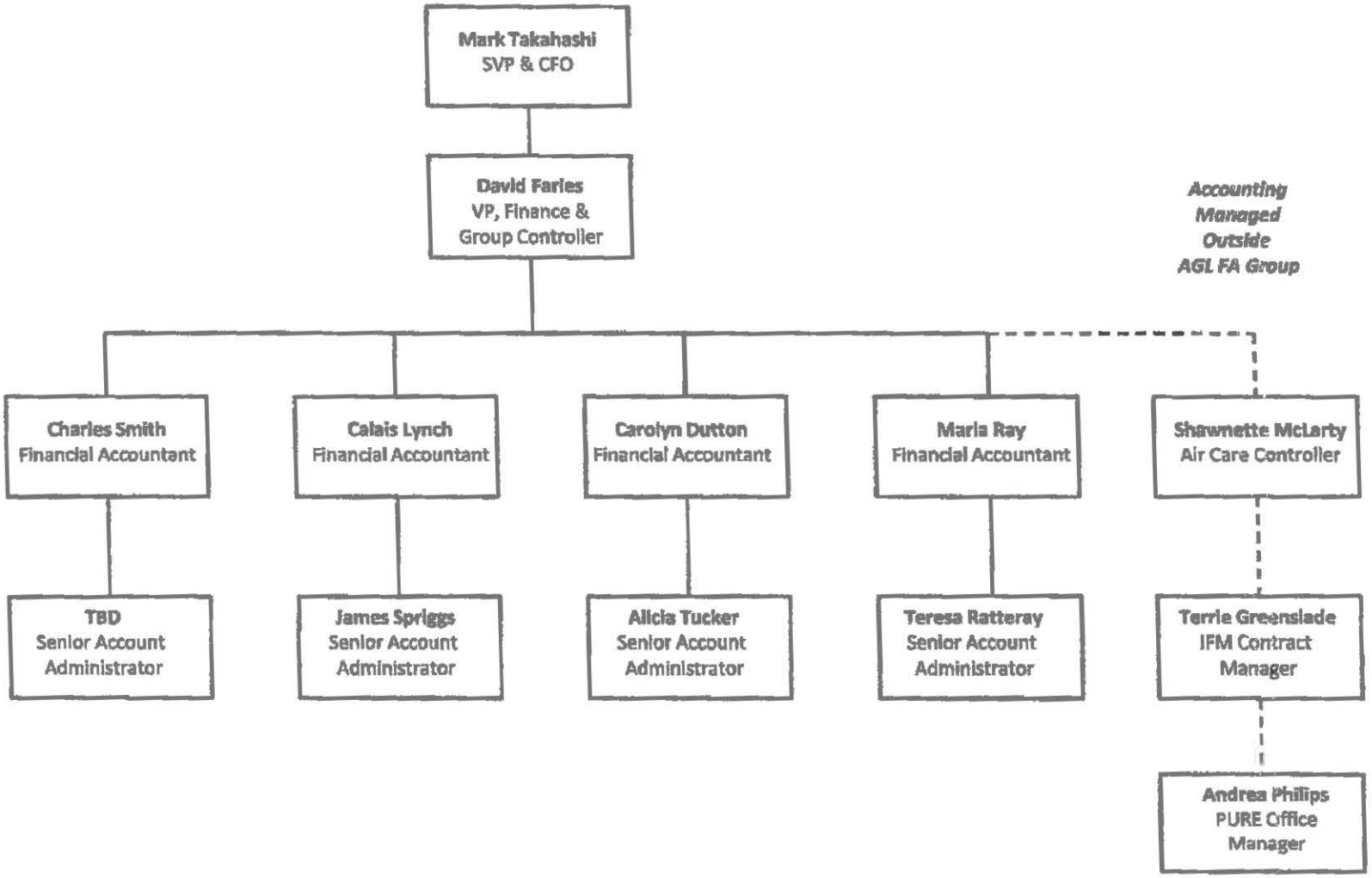
A summary of the 2016 Budget allocation is included in the following table –

$000	AGL	BELCO	BELCO Allocation %
Finance	$1,278	$906	71%
Treasury/Risk Management	$422	$296	70%
IRP	$270	$219	80%
IT	$5,533	$4,150	75%
Legal	$1,334	$608	45%
Human Resources	$1,370	$990	72%
Corporate Communication	$989	$ 574	58%
Executive	$5,133	$1,526	30%
Totals	$16,330	$9,050	55%
BELCO/AGL Group			
% of Total Assets (1)	$363,692	$322,018	89%
% of Revenues (1)	$252,573	$218,695	87%
% of Employees (2)	427	261	62%
Adj % of Employees (2)	427	297	70%

(1) Based on 2015 Actual.

(2) Based on 2015 year-end. Adjusted employee number assumes 75% of AGL employees are re-allocated to BELCO as their workload is primarily BELCO-related.

Ascendant Group Limited
Finance & Accounting
2016 Organization Chart

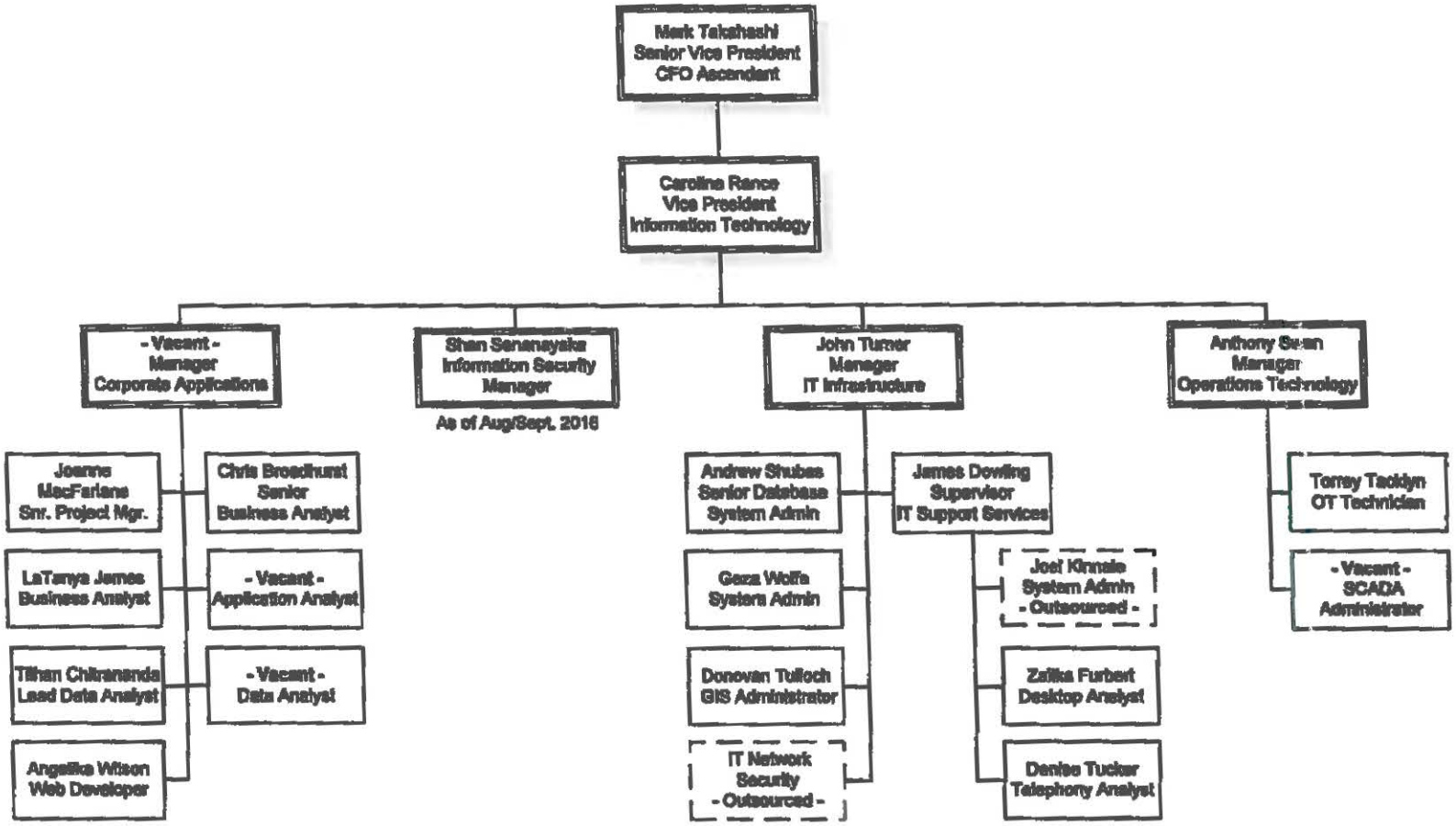


Ascendant Group Limited
Risk Management & Treasury
2016 Organization Chart

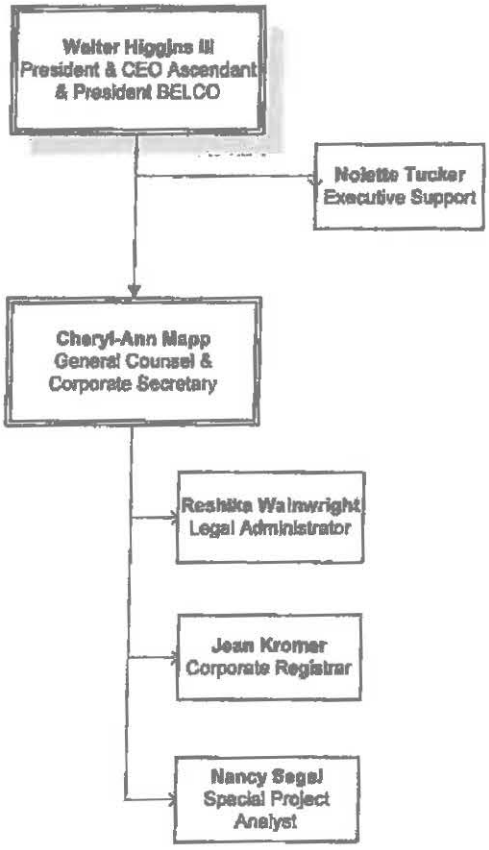
ASCENDANT group

Organizational Chart
Ascendant Group – Corporate Information Technology

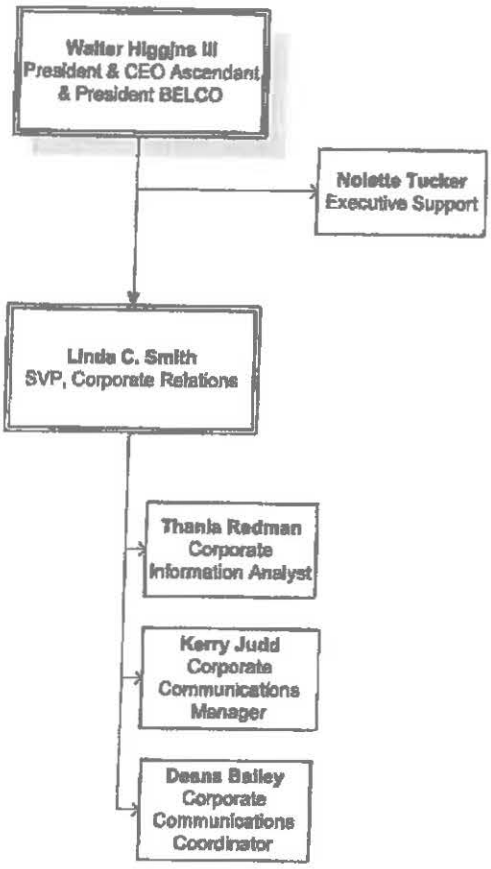
As of July 18, 2016



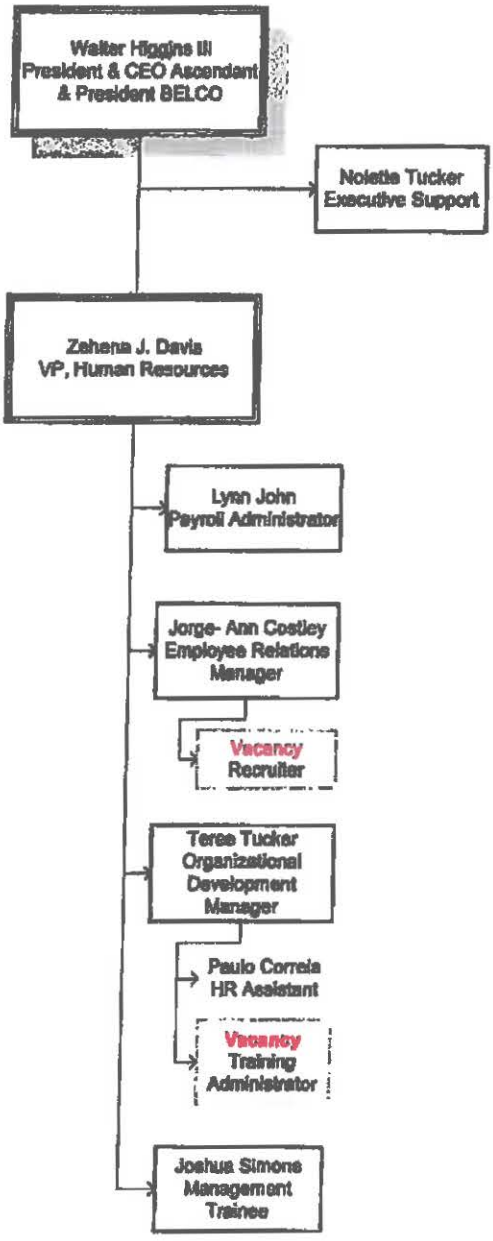
Ascendant Group
Legal Department



Ascendant Group
ER & CC

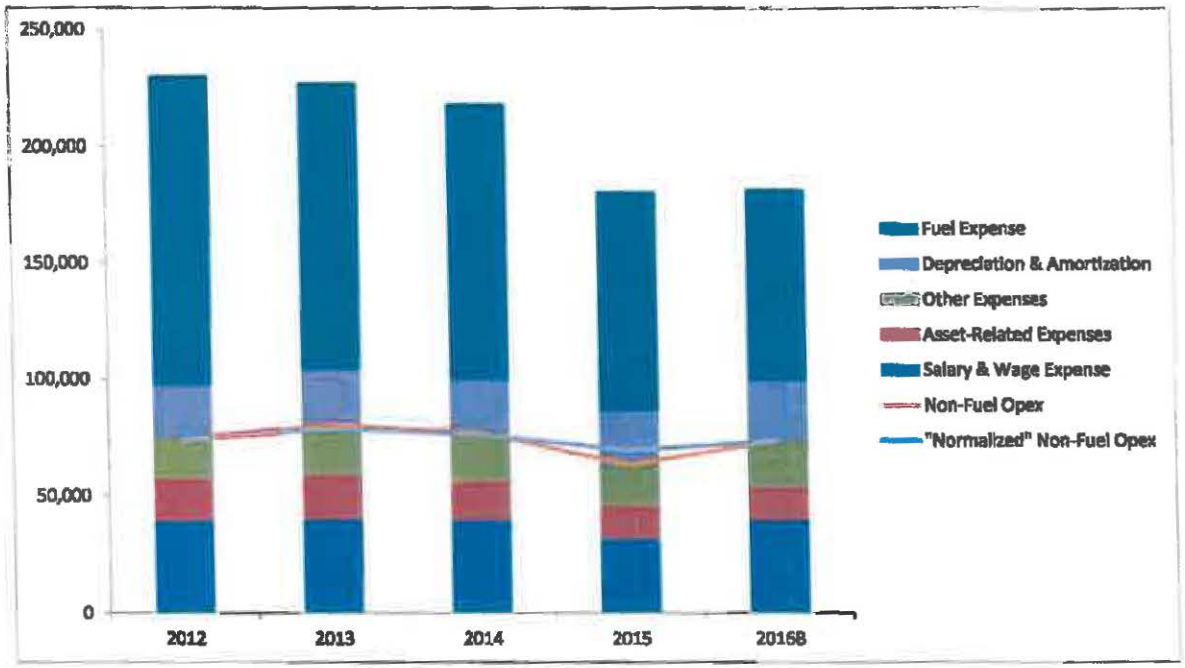


Ascendant Group
Human Resource Department



2012-2016 BELCO Operating Expenses ($000)

APPENDIX 3



($000)	GAAP Actual	GAAP Actual	IFRS Actual	IFRS Actual	IFRS Budget	
Total Operating Expenses Summary	2012	2013	2014	2015	2016B	Average
Salary & Wage Expense	39,001	39,661	39,283	31,398	39,720	37,813
Asset-Related Expenses	18,237	19,377	16,683	14,454	14,042	16,559
Other Expenses	16,904	21,195	21,028	17,443	19,603	19,235
Non-Fuel Opex	74,143	80,234	76,995	63,295	73,364	73,606
Depreciation & Amortization	23,521	23,857	22,882	23,346	25,910	
Fuel Expense	133,241	123,617	118,874	94,323	83,000	
Total Expenses	230,905	227,708	218,750	180,964	182,274	

2012-2016 BELCO Operating Expenses ($000)

Non-Fuel Operating Expenses Detail	GAAP Actual 2012	GAAP Actual 2013	IFRS Actual 2014	IFRS Actual 2015	IFRS Budget 2016B	Average
Labor Costs & Payroll Taxes	34,336	31,679	34,173	33,967	34,838	33,799
Indirect Labor Costs	1,086	1,291	1,232	1,045	1,293	1,189
Benefits (Healthcare/Pension/Life Insurance)	7,126	9,904	9,091	1,168	8,588	7,176
Labor Capital Charges	(3,547)	(3,212)	(5,213)	(4,783)	(4,999)	(4,351)
Salary & wage expense	39,001	39,661	39,283	31,398	39,720	37,813
Lubricants	5,021	5,369	4,184	3,342	3,736	4,330
Transport (net of opex/capex transfers)	(290)	(404)	(392)	(454)	(387)	(385)
Material issues	7,336	7,036	7,416	6,186	5,197	6,634
Maintenance & Outside Contractors	8,826	11,813	11,874	7,412	8,855	9,756
Engine Overhaul Deferral	(2,656)	(4,438)	(6,399)	(2,032)	(3,360)	(3,777)
Asset Related Expenses	18,237	19,377	16,683	14,454	14,042	16,559
AGL Shared Services	6,852	9,301	9,301	8,608	9,000	8,612
IEPC Charges	-	179	260	173	420	206
ER&CC	1,095	1,479	1,268	880	1,166	1,178
Insurance/Taxes	3,413	3,540	3,599	3,769	3,596	3,583
Consultants	903	444	1,782	1,090	1,085	1,061
Bad Debt	1,422	1,282	532	(485)	700	690
Other	3,220	4,971	4,286	3,408	3,635	3,904
Other Expenses	16,904	21,195	21,028	17,443	19,603	19,235
Non-Fuel Opex	74,143	80,234	76,995	63,295	73,364	73,606
Normalization						
DB Pension Gain				5,005		
A/R Provision Reduction				1,200		
Hurricane Expense			(1,400)			
Asset Impairments/Provisions		(1,673)	383			
"Normalized" Non-Fuel Opex	74,143	78,561	75,978	69,500	73,364	74,309

(1) Plan amendment gain associated with change in future retiree health care.

(2) Reduction in accounts receivable provision based on improved collections record.

(3) Impairment/expense associated with hurricanes Fay and Gonzalo.

(4) Miscellaneous impairments (Maximo dispute, Grand Atlantic, Par-la-ville SS, other), partially reversed in 2014.

APPENDIX 4

BELCO Full Marginal Fuel Cost July 25, 2016

Conversion factors		Energy per HFO Barrel		August 2016 cost of fuel
1 kWh = 3412.14 BTU	3412.14	HFO	6,632,925,278.22 J	$ 71.23
1 kWh = 3,600,000 J	3600000	LFO	6,254,054,054.05 J	$ 94.76
1 BTU = 1055.06 J	1055.06			
1 m3 = 6.29 US Bbls	6.29			

Energy Density of BELCO Specification Fuels

Nominal HFO	42.1 MJ/kg	@	991 kg/m3
Nominal LFO	44.2 MJ/kg	@	890 kg/m3

Heat rates

HFO Recip	8,612.02 BTU/kWh
LFO Recip	9261.994066 BTU/kWh
LFO GT	13172.61378 BTU/kWh

Marginal Fuel production by Unit Fuel type

January	HFO Recip	$ 0.0976
February	HFO Recip	$ 0.0976
March	HFO Recip	$ 0.0976
April	LFO Recip	$ 0.1481
May	LFO Recip	$ 0.1481
June	LFO GT	$ 0.2106
July	LFO GT	$ 0.2106
August	LFO GT	$ 0.2106
September	LFO GT	$ 0.2106
October	LFO GT	$ 0.2106
November	LFO Recip	$ 0.1481
December	HFO Recip	$ 0.0976
Weighted Average Marginal Cost of Fuel		$ 0.1573

Based on BELCO generation rates, BELCO fuel specifications and current market pricing. The Weighted Average Marginal Cost of Fuel shows the incremental fuel cost of electricity. This is calculated as a weighted average based on the units required to meet the marginal electricity demand.

Appendix 5

Component	Cost
Avoided Fuel Cost	15.73¢/kWh
Avoided Lubricants	0.59¢/kWh
Avoided Transmission Losses	+1.6% /kWh
Total	**17.36¢/kWh**

APPENDIX 6

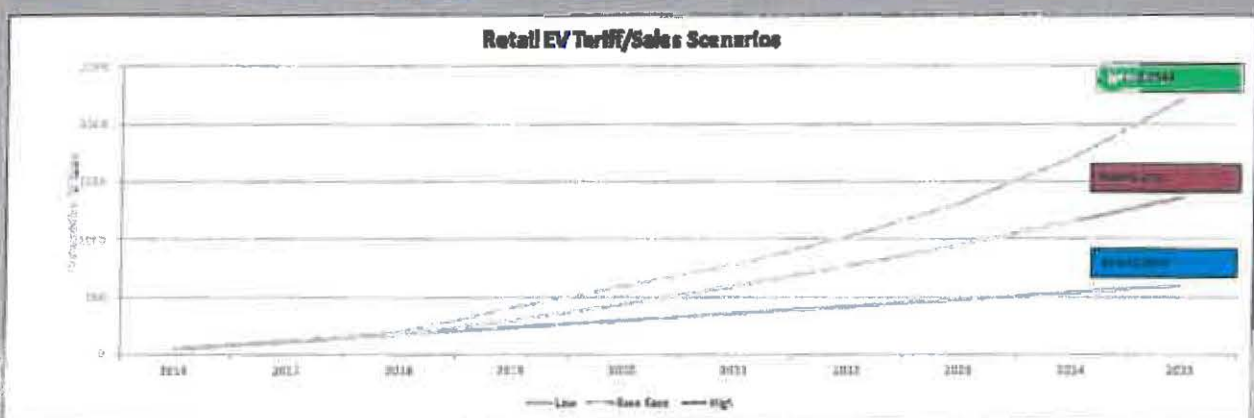
EV Rate Model	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
5 Year Average of Total New Sales Growing at 1%	1,150	1,160	1,173	1,181	1,203	1,215	1,227	1,239	1,252	1,264	1,277
EVs as a % of Total New Sales	5.00%	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Yearly EV Sales	58	58	59	119	144	159	172	186	200	202	511
Cummulative EV's on the road	58	116	175	294	439	597	768	954	1,155	1,357	1,868
Yearly Revenue Needed From Each EV Owner	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Average Revenue Needed Per EV owner (10 Years AVG)	$22										

Forecasted Annual Use of Charging Stations (kWh)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Use of Public Chargers (kWh)	10,266	20,880	31,175	52,375	78,870	106,194	136,764	169,656	205,906	241,514	332,432
Revenues to Recover	$1,552.50	$8,481.41	$8,602.28	$8,886.21	$8,532.84	$8,180.52	$7,829.26	$7,479.10	$7,130.07	$6,782.19	$6,435.50
Revenues to Recover+CCFEES	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Rates Needed To Recover Cost	$0.1540	$0.4187	$0.2817	$0.1732	$0.1116	$0.0786	$0.0584	$0.0449	$0.0354	$0.0287	$0.0198
Total Fuel	$0.1276										
10 Year Average	$0.1277										

Cost of Fuel + Lubricants	$0.1434	$/kWh
Fixed Cost + O&M	$0.1277	$/kWh
EV Tariff 8/1/2016	$0.1271	$/kWh
Estimated non-home charging per EV	30.00%	
Energy Per Vehicle p.a.	1,700.00	kWh

Estimated Adoption Rate (Cumulative)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2025
Low	58	116	175	235	296	356	417	479	542	605	668
Base Case	58	116	175	294	439	597	768	954	1155	1357	1553
High	58	116	193	401	601	784	1017	1314	1715	2221	2726



Average MPG	kWh per 28 miles	Liters Per Gallon	Cost Per Liter BMD	Cost per kWh BMD	Cost per Gallon BMD	Bermuda egallon
28	6.83	3.79	$1.94	$0.2711	$7.34	$1.85

State	Company	EV Rate Winter	Ev Rate Summer	Standard Rate	Winter % of Standard	Summer % of Standard	egallon winter	egallon summer	Gasoline
AK	Alaska Electric Light and Power	0.056	0.056	0.089	59.15%	59.15%	$0.40	$0.40	$2.07
AZ	Arizona Public Service Company *	0.042	0.042	0.094	44.68%	44.68%	$0.29	$0.29	$1.62
IN	Indianapolis Power & Light*	0.027	0.023	0.067	40.30%	34.33%	$0.18	$0.16	$1.92
MI	Consumers Energy	0.09	0.09	0.128	70.31%	70.31%	$0.61	$0.61	$1.96
MI	DTE Electric Company[1]	0.092	0.092	0.119	77.31%	77.31%	$0.63	$0.63	$1.96
MI	Indiana Michigan Power	0.037	0.037	0.082	45.12%	45.12%	$0.25	$0.25	$1.96
MD	Baltimore Gas & Electric	0.058	0.056	0.094	61.70%	59.57%	$0.40	$0.38	$1.86
MD	Pepco								
	(PIV)	0.066	0.082	0.122	54.10%	67.21%	$0.45	$0.56	$1.86
	(R-PIV)	0.099	0.121	0.122	81.15%	99.18%	$0.68	$0.83	$1.86
	*(R-EV)**	0.079	0.086	0.122	64.75%	70.49%	$0.54	$0.59	$1.86
	*(R-TM-EV)**	0.078	0.08	0.122	63.93%	65.57%	$0.53	$0.55	$1.86
	Established Rates/Riders								
AL	Alabama Power[2]	0.094	0.094	0.094	40.48%	40.48%	$0.23	$0.23	$1.67
CA	Pacific Gas & Electric Company[3]								
	(EV-A)	0.1	0.097	0.203	49.26%	47.78%	$0.68	$0.66	$2.52
	*(EV-B)**	0.099	0.097	0.203	48.77%	47.78%	$0.68	$0.66	$2.52
CA	Southern California Edison*	0.115	0.12	0.15	76.67%	80.00%	$0.79	$0.82	$2.52
CO	Xcel Energy *	0.033	0.033	0.046	71.74%	71.74%	$0.23	$0.23	$1.84
GA	Georgia Power Company *	0.014	0.014	0.056	25.00%	25.00%	$0.10	$0.10	$1.82
HI	Hawaiian Electric Company								
	*(EV-R)**	0.182	0.182	0.291	62.54%	62.54%	$1.24	$1.24	$2.54
	(TOU)	0.216	0.216	0.291	74.23%	74.23%	$1.48	$1.48	$2.54
IN	Northern Indiana Public Service	Free at night		0.098					$1.92
MN	Otter Tail Corporation*	0.047	0.029	0.082	57.32%	35.37%	$0.32	$0.20	$1.92
NV	NV Energy *								
	(North)	0.054	0.054	0.093	58.06%	58.06%	$0.37	$0.37	$2.11
	(South A)	0.042	0.055	0.119	35.29%	46.22%	$0.29	$0.38	$2.11
	(South B)	0.045	0.056	0.119	37.82%	47.06%	$0.31	$0.38	$2.11
VA	Dominion Virginia Power *								
	*(EV)**	0.051	0.051	0.07	72.86%	72.86%	$0.35	$0.35	$1.67
		0.024	0.014	0.07	34.29%	20.00%	$0.16	$0.10	$1.67
AVG		0.07	0.08	0.12	57.19%	58.42%	$0.50	$0.51	$2.03

[1] Flat monthly rate is also available for DTE Electric Company
[2] Rate rider offers $.01755 discount ('RTA-Energy Only' schedule is shown)
[3] Standard rate is tiered, therefore "Average total rate" is given for standard rate

How is eGallon calculated?
To determine the eGallon price for each state, the Department of Energy calculates how much electricity the most popular electric vehicles would require to travel the same distance as similar models of gasoline-fueled vehicles would travel on a gallon of gasoline. That amount of electricity is then multiplied by the average cost of electricity for the state. This gives consumers a clear comparison of the cost of driving on electricity vs. a similar sized car that uses gasoline.

$$MPGe = \frac{total\ miles\ driven}{\left[\frac{total\ energy\ of\ all\ fuels\ consumed}{energy\ of\ one\ gallon\ of\ gasoline}\right]} = \frac{(total\ miles\ driven) \times (energy\ of\ one\ gallon\ of\ gasoline)}{total\ energy\ of\ all\ fuels\ consumed}$$