Regulating Electricity, Promoting Our Energy

CONSULTATIVE DOCUMENT

NOTICE OF PROPOSED RULE MAKING

Document Reference: 2015/001/NPRM-01

Weighted Average Cost of Capital (WACC)

For

DOMINICA ELECTRICITY SERVICES LTD

FEBRUARY 2015

Independent Regulatory Commission

42 Cork Street, P. O. Box 1687, Roseau
Roseau, Commonwealth of Dominica
Office: 767 440 6634/7247 Fax: 767 440 6635
admin@ircdominica.org

CONSULTATION PROCESS

Persons who wish to participate in this consultation and to express opinions on this Document are invited to submit comments in writing to the IRC. Reponses/Comments should be sent to:

Executive Director
Independent Regulatory Commission
P.O. Box 1687
42 Cork Street
Roseau
Commonwealth of Dominica

Fax No: 767-440-6635

Responses, clearly showing the Document Reference identification, may be sent by mail or fax to the address or fax number above or by e mail to: admin@ircdominica.org.

Confidential information provided with responses should be submitted as a separate document and clearly identified as such.

In order to stimulate debate, the IRC will place any responses received on its website at www.ircdominica.org immediately following the last date for receipt of responses. Comments on the responses will also be entertained by the IRC which should, likewise, be submitted by the date indicated.

The references and proposed time table for this consultation are:

Document Ref No: 2015/001/NPRM-01
Document Title: Weighted Average Cost of Capital for DOMLEC

Event	Proposed Date
Publication of Document	February 28, 2015
Responses close	March 16, 2015
Statement of Results and Commission's Decision	March 19, 2015

Table of Contents

Introduction and Background 4
Policy and Legal framework 5
DOMLEC Proposal 12
The Commission's Considerations 14
Conclusions 25
Summary of Proposed Decisions 26
Summary of Consultation Questions 26

WEIGHTED AVERAGE COST OF CAPITAL FOR DOMINICA ELECTRICITY SERVICES LTD

Introduction and Background

The Commission issued two new Licences, a Generation Licence and a Transmission Distribution and Supply Licence, to Dominica Electricity Services Ltd (DOMLEC), both which became effective on January 1 2014. These two Licences complete the process for aligning the regulatory framework for DOMLEC with the principles and intent of the Electricity Supply Act 10 of 2006 (ESA) and established a regime of separate licensing for each of the business sectors of public electricity supply undertakings – generation, transmission distribution and supply.

The Transmission, Distribution and Supply Licence (the Licence) sets out the provisions for conducting tariff reviews and, at Condition 33, specifically addresses the procedure for the initial tariff review as follows:

> *DOMLEC shall, within 7 days of the Commencement Date, submit a timetable for the filing of an application to the Commission for a tariff review, and that the date for such a filing shall not be later than 9 months after the Commencement Date without the approval of the Commission. The application for a tariff review shall be in the format set out in the Commission's Decision Tariff Regime for Dominica Electricity Services Limited - Document Ref 2009/004/D and the tariff review shall be conducted in accordance with the process set out in that Decision.*

The Commission has been of the view that in order to ensure timely completion of its review of any application for a tariff review submitted by DOMLEC it would be minded to consider certain critical issues in separate proceedings leading up to the tariff review itself. These issues, which are critical inputs to the tariff determination, are:

- Depreciation Policy
- Determination of Weighted Average Cost of Capital (WACC)
- Determination of Asset Base
- Approval of Investment Programme

The Commission will, if requested by DOMLEC, conduct its review of and make determinations on these issues prior to the formal submission of the tariff review request on the presumption and condition that the Commission's Decisions on these issues will be used by DOMLEC as the input in the tariff request.

The Depreciation Policy was addressed and completed with the Commission's Decision Document Ref: 2014/001/D, June 2014 - "Depreciation Policy for Dominica Electricity Services Ltd".

The overall rate of return is the WACC which is the average cost of long term debt and the approved rate of return on equity. The return is the compensation which the company receives for the capital that is invested in the regulated asset base and is calculated by applying the WACC to the asset base. Both the WACC and the regulated asset base have to be approved by the Commission.

The Commission in its letter dated June 3, 2014 advised DOMLEC as follows:

1. That, pursuant to Condition 33 of the Licence, the date for DOMLEC to file for a tariff review is changed from October 1, 2014 to May 1, 2015.
2. That in the meantime, as far as practicable, DOMLEC and the Commission continue to work on DOMLEC's:
   - Weighted Average Cost of Capital (WACC);
   - DOMLEC's Asset Base to be used in the Tariff Application; and,
   - DOMLEC's long and medium term investment plans.

   These are all to be completed and submitted to public consultations prior to the filing.

The Commission is mindful that in discussions with DOMLEC which were held in preparation for this rate case the Commission agreed that the consultation on the WACC would be to settle on the **methodology** to be used by DOMLEC. This would at least allow for timely review of the WACC proposals during the full tariff review. DOMLEC's submission however constitutes and is a fulsome request to set the value of the WACC to be applied to the regulatory rate base to compute the return at the tariff review proceeding scheduled for May 2015. This is also reinforced by Article 8 of DOMLEC's "*Application To The Independent Regulatory Commission Of Dominica For Approval Of Weighted Average Cost Of Capital (WACC) Dominica Electricity Services Limited*." The Commission has decided that it will consider DOMLEC's request now submitted in full, the outcome of which will lead to a determination of DOMLEC's WACC.

In this regard, therefore, this NPRM document sets out the Commission's thinking in response to DOMLEC's requests.

The Commission's objective in this proceeding is to consider and decide on:

1) The WACC which will be applied to DOMLEC's regulatory rate base in the tariff determination for DOMLEC at the tariff review to be conducted in 2015.

Policy and Legal framework

The Commission's duties and functions with regard to tariff making are provided for pursuant to provisions in three principal instruments – (i) the Act, (ii) the Licence and (iii) Commission's Determination "Tariff Regime For Dominica Electricity Services Ltd Document Ref: 2009/004/D 9" (the Determination).

The Act provides at Section 18

The Commission shall be independent in the performance of its functions and duties under this Act and shall not be subject to the direction and control of the Government or of any person, corporation or authority, except that the Commission shall have due regard to the public interest and overall Government policy, as embodied in legislation.

At Section 19

The Commission shall have sole and exclusive authority to regulate all electricity entities that are subject to this Act and shall have full powers to regulate all licencee with regard to all economic and technical aspects of regulation in accordance with this Act especially with regard to the determination of tariff or electricity charges.

At Section 20

(1) The Commission shall, without limiting the generality of this section, have a duty to perform and exercise its functions and powers under this Act in the manner which it considers best calculated to:

(a) encourage the expansion of electricity supply in Dominica where this is economic and cost effective and in the public interest;

(b) encourage the operation and development of a safe, efficient and economic electricity sector in Dominica;

(d) facilitate the promotion of sustainable and fair competition in the electricity sector where it is efficient to do so;

(e) protect the interests of all classes of consumers of electricity as to the terms and conditions and price of supply;

(g) ensure that the financial viability of efficient regulated electricity undertakings is not undermined;

Firstly the Act gives the Commission full authority to act independently in the performance of its duties under the Act – specifically having regard to public interest considerations and government policy, as embodied in legislation. In providing for its functions the ESA (S20) mandates the Commission to act in a manner which it considers best calculated to achieve a number of policy objectives and in this regard clauses (a), (b), (d), (e) and (g) of S 20 reproduced above are instructive.

The Act provides a framework for the Commission to set and review the tariffs charged by a supplier of electricity on Dominica. The Act sets out the authority and procedure for tariff making in Sections 23 and 24. These are as follows:

Section 23. *(1) An electricity service provider shall not -*

(a) offer service unless it has, prior to offering such services, filed its proposed tariffs with the Commission and such tariffs rates and charges have come into effect pursuant to

(b) make changes on tariffs, or other terms of the service after proposed tariffs have been filed with the Commission, except as authorized under this section.

(2) An electricity service provider shall submit tariff proposals in conformity with this section in writing to the Commission with respect to the tariffs it intends to apply for the use of its systems, facilities and services.

(3) Proposed tariffs filed under subsection (2) shall contain all relevant information concerning rates and charges for services, including deposits, non-recurring charges and monthly charges as well as terms and conditions applicable to the provision of services, including disputes or claims over billing or provision of services.

(4) A Licencee shall make tariffs available to the public by publishing such tariffs in the Gazette and in two local newspapers.

(5) All proposed tariffs filed with the Commission shall be kept complete, accurate and up to date.

(6) After a proposed tariff has been filed with the Commission and has come into force and effect, no changes may be made in the rates, charges or other terms of service relating to all the services provided under the tariff, except upon the filing and review of tariffs as provided in this Act.

(7) Proposed Tariffs shall:

(a) be accompanied by all accounting and costing information as the Commission may require; and

(b) comply with all other requirements and conditions as shall be applicable to the licensee concerned.

Section 24. *(1) All tariffs proposed by a licensee shall conform with the principles and provisions governing tariff formulation established by the Commission pursuant to the legislation for the time being and shall be submitted to the Commission for review as to their conformity with such principles and provisions.*

(2) The Commission shall, within 60 days of the submission of a tariff proposed under subsection (1), make a determination to:

(a) approve the tariff without amendment;

(b) conditionally approve the tariff subject to amendments specifically proposed by the Commission being accepted by the licensee; or

(c) reject the tariff proposal outright, stating clearly in writing the reasons for such rejection, which reasons may include a determination that the tariff is not ripe for review.

(3) In the event the Commission makes a determination under subsection (2) (b) the licencee may submit a revised tariff within 30 days of the determination; and the Commission shall make a new determination in accordance with one of the three options specified in subsection (2) within 30 days of such submission.

(4) In the event of an outright rejection of the proposed tariff under subsection (2) (c), the Licencee may file a new tariff at any time; or may file a petition to the Commission for reconsideration of such rejection.

(5) A petition shall be filed within 30 days of the rejection and shall state the Licencee's basis for reconsideration, which may include a fundamental change in circumstances from the conditions that prevailed when the tariff was originally rejected by the Commission.

(6) In the event the Licencee files a petition for reconsideration under subsection (4), the Commission shall act upon such petition within 30 days and make a determination in accordance with one of the three options set forth in subsection (2).

(7) If the Commission fails to act on a tariff submission pursuant to this section within the timeframes for determination specified in subsections (2), (3) and (6), the tariff shall be deemed approved until such time as the Commission makes a determination.

Using the authority given it under Section 24 (1) the Commission promulgated Decision Document 2009/004/D "Tariff Regime For Dominica Electricity Services Ltd" which by Order of the Commission became effective on April 30, 2010. This document sets out in clear and unambiguous terms the governing principles for the development and setting of the tariff which the Dominica Electricity Services Ltd (DOMLEC) will use from time to time.

Further, in granting new licences to DOMLEC in October, 2013, the Commission ensured that the provisions of this Tariff Regime became firmly embedded in the Transmission, Distribution and Supply Licence through Condition 32 of the said licence, and forms part of the licence.

The Licence at Condition 32 addresses the Price Control Mechanism:

> *Tariff Principles*
> *The Commission shall determine the Licensee's rates for electric power pursuant to its powers under the ESA and on the principles set out in the Commission's Decision Document: Tariff Regime for Dominica Electricity Services Ltd.; Document Ref. 2009/004/D as amended from time to time.*

While the Determination sets out in detail the methodology and process for determining the tariff for DOMLEC.

The following sections of the Determination are particularly instructive.

> *Regulatory Policy objectives*
> *The Commission's regulatory policy is to establish a tariff which balances the interests of the consumers and investors alike where the investors have the opportunity to realize a fair return on investment while customers can expect an efficient, responsive and economical service in an environment where the rights of all stake holders are preserved. The Commission will not guarantee a rate of return to the investors but will seek to create a regulatory environment where the incentives are such that the company through efficient operational practices and continual efficiency improvements will have the opportunity to achieve the desired rate of return during any tariff period.*
>
> *Tariff Principles*
> *There are basically two models for a tariff structure which could apply in the Dominica situation.*
>
> 1. *A tariff which includes all the costs including the costs of fuel, based on a projected cost of fuel over the tariff period; or*
> 2. *A two part tariff comprising (i) a non fuel base rate and (ii) a fuel charge, which fully recovers the cost of fuel (subject to efficiency factors) and no more.*
>
> *Both methods use the same techniques and parameters for estimating revenue requirements the exception being that in the first case fuel is included in the revenue requirements while it is not in the second case. The options for treating with fuel costs are discussed separately. The Commission has accepted option No. 2 and will allow a 100% pass-through of fuel costs. The average tariff that will be in effect from time to time shall be consistent with the following:*

RR= OC +FC +GO
Where:
RR = Revenue Requirement
OC = Operating Cost
FC = Financing Cost
GO = A provision to recover or return the cost of Obligations imposed by government which were not known or anticipated at the tariff review.

The "Average Rate" then becomes the Revenue Requirement ($) divided by the forecast sales (kWh).

Average Rate = Revenue Requirement ($) / Sales (kWh)

Revenue Requirements

The Utility's revenue requirement is calculated as the sum of its estimated costs of providing service, where a fair return is included as one of those costs. These forecasted funding levels have to be sufficient to get the required work done without adversely impacting quality of service, or compromising reliability, customer service or safety: any disallowance resulting in deferral of projects or work activities must be carefully considered and weighed against these criteria.

The Revenue Requirement consists of the sum of Operating Costs and Financing Costs required for providing electricity service.

RR = Operating Costs + Financing Costs

Where RR = Revenue requirement
Operating Costs = Costs of labour, non-generation fuel, ***depreciation****, income taxes, deferred costs*
Financing Costs = Cost of capital which includes cost of debt and equity.

The critical exercise is to determine the forecast of the revenue requirements based on a sustainable and defensible estimate of the expenses for the base year. One approach is where the base year is the year for which the most recent published annual reports and audited financial statements are available and from which the Test Year (the forecasted year), representing a forecasted statement of expenses and costs that are known and measurable is derived.

In any event, in all cases, the expenses that are ultimately approved for inclusion will be those that are determined by the Commission to be prudent.

The non-fuel revenue requirement is developed based on a combination of demonstrated historic costs and forecast costs. The fuel revenue requirement is by definition a 100% pass-through of actual cost and will change monthly according to an agreed-to formula.

The revenue requirement for the Base Rate is then:

Base Rate RR = NFOC + FC + GO + RF
Where:

RR = Revenue Requirement
NFOC = Non-Fuel operating Costs (this includes non-generation fuel)
FC = Financing Costs
GO = Government Obligations, and
RF = Regulatory Fees

The WACC is a fundamental element of the revenue requirements and goes to the core of the principles for balancing the interests of the company and that of the consumer.

The Determination sets out the principles for determining the WACC:

Cost of Capital Rate

The Cost of Capital Rate is the weighted average of the cost of rates for the various items in the utility's capital structure, i.e. debt, preferred equity, and common equity.

This estimate is the rate of return investors will receive and it is applicable to the Rate Base. DOMLEC, in making its tariff submission, is required to make detailed proposals along with supporting analysis to the Commission on its derivation of the WACC to be applied in its revenue requirements determination.

Weighted Average Cost of Capital

The cost of capital is a weighted average of the cost of debt, preferred equity, and common equity, where the weights are the market-value percentages of debt, preferred equity, and common equity in a firm's capital structure. The overall cost of capital, which is called the firm's "weighted average cost of capital" (WACC), is specified by the following formula:

$$WACC = w_d k_d + w_c k_s + w_p k_p \quad (1)$$

where,

w_d = *the fraction of debt in capital structure,*
w_c = *the fraction of equity in capital structure,*
w_p = *the fraction of preferred stock in capital structure,*
k_d = *cost of debt,*
k_s = *cost of equity,*
k_p = *cost of preferred stock.*

To apply the formula, one must estimate the cost of debt, preferred stock and common equity using methodologies accepted by both financial economists and regulators. In addition, one must estimate the capital structure mix of debt, preferred stock, and common equity. With these inputs, the WACC can be calculated from the above equation.

The cost of debt, interest payment, and the cost of preferred stock, dividend payment, are fixed by a contract and therefore are relatively easy to measure. The measurement of the cost of common equity, on the other hand, is more involved since return to common equity is not fixed, and thus is not known with certainty.

Instead, return on equity must be estimated. The estimation of return on equity is based on the principle that rational investors will not invest in a particular investment opportunity if the expected return is less than the return expected from alternative investments of comparable risk. Therefore, return on equity is calculated by measuring the expected returns on alternative investments of comparable risk.

Estimating the return on equity may give rise to two types of errors. First, the use of any specific model may give rise to errors or biases unique to that model. To reduce errors that may result from the application of any one model, several financial models have been employed to estimate the cost of equity. The final cost of equity figure used in calculating an overall rate of return is the average of the results of the models applied. Second, the measurement of the cost of equity for any individual company may involve errors. To reduce errors that may result from the estimation of the cost of equity for a single company, the models are applied to a group of companies of similar risk.
Next, the selection of comparable companies for DOMLEC is explained.

Comparable Companies

The comparable group of companies is an important factor in both the Discounted Cash Flow (DCF) model and the Capital Asset Pricing Model (CAPM). To select a comparable group that provides reasonable risk proxies, analysts rely on companies' bond ratings and safety ranks. Bond ratings and safety ranks are viewed by investors as measures of investment risk. For the U.S., the Value Line Investment Survey provides bond ratings and safety ranks for large number of public companies in various industries. Value Line bond ratings and safety ranks are used to exclude companies that have a speculative bond rating. In the absence of similar information for Dominica, companies will have to be identified for which information is available.

Models for Estimating Cost of Equity Capital

There are two widely accepted models for estimating the cost of equity capital. The first, the Discounted Cash Flow (DCF) model assumes that the current market price of a company's stock is equal to the discounted value of all expected future dividends. There are various formulations of the DCF model based on different projections of future dividend growth. The version of the DCF typically applied is the constant growth or the Gordon Model.The second, the Capital Asset Pricing Model (CAPM) assumes that the cost of equity investment is equal to the risk-free rate of interest plus the risk premium on the market portfolio adjusted by the company-specific risk factor, beta.

An average of the costs of equity derived from the DCF and CAPM models could then be used as the appropriate value for Cost of Equity.

DOMLEC's Proposal

Filing requirements

The Determination provides at "*Schedule D*" the information requirements to be met by DOMLEC in submitting its proposals specific to the Cost of Capital determination. The Commission has **determined** that DOMLEC has satisfied the filing requirements in this regard.

Expert advice

In support of its request for a Determination on the WACC, DOMLEC relies on a study carried out by Mr. William Vinhage of Vinhage and Associates as the main piece of expert evidence. Mr. Vinhage's report "Determination on Equity (ROE) Range for Dominica Electricity Services Ltd", dated October 20, 2014, which was included with the submission, seeks to assist the utility to establish, using the methodology prescribed in the Determination, the ROE element of the WACC. The Commission has noted that Vinhage and Associates which is a Florida based company has a client list which includes Grenada Electricity Services Ltd (GRENLEC) from the Caribbean region and WRB Enterprises of Florida. Mr. Vinhage has over 20 years experience of consultancy services and professional experience in the following areas:

- Strategic Planning & Analysis
- Project/Program Process & Impact Evaluations and Financial Analysis
- Statistical and Econometric Analysis and Forecasting
- Development of Financial/Operational Measurement and Tracking Systems
- Financial Planning, Budgeting & Analysis
- Competitive Intelligence & Benchmarking
- Development of Utility Revenue Requirements, Cost of Service and Tariff Design
- Process Design, Coordination, Mapping & Analysis

He has also had utility experience with Progress Energy and Tampa Electric Company.

The Commission is of the view that Mr. William Vinhage has the competencies to carry out the expert work on behalf of DOMLEC.

Summary of DOMLEC's proposal

DOMLEC's conclusions are presented below:

- *The requested Return on Equity ("ROE") of 14.5% was guided by the Study undertaken by Vinhage & Associates. The Study evaluated the cost of capital for alternative equity investments with risks similar to those of the Company, and is based on the 2013 experience of major North American capital markets.*
- *The Company's cost of debt is 5.75%.*
- *The 13 months average capital structure is 33.1% debt and 66.9% equity.*
- *The Company is requesting approval from the IRC that its Weighted Average Cost of Capital (WACC) be set at 11.6%, including the weighted combination of the Company's cost rates for debt and a fair rate of return on equity.*

The Company continues that if the request is granted it will use the approved rate of return (WACC) as a component in its tariff review filing to calculate its revenue requirements for the 2014 Test Year.

Table 1 below which is reproduced from the Company's submission provided the detail that supports the request.

The Commission has taken note of the following representations made by DOMLEC:

<u>Caribbean Utility Comparisons</u>
Few Caribbean utilities are subject to independent regulation and a wide sample of 'approved' rates of return is generally not available. The following references do provide some guidance in terms of the levels of return on rate base that have been authorised or recommended for the named Caribbean utilities:
a) The Government of the Cayman Islands, under Condition 25 of the license dated April 3, 2008 granted to the Caribbean Utility Company Limited, established a Rate Cap and Adjustment Mechanism in which the base range of Return on Rate Base Values was set at between 11% and 13%.
b) The Electricity Supply Act of St. Lucia as amended in 2006 sets the Allowable Rate of Return for St. Lucia Electricity Services Limited (LUCELEC) as "an annual return on average contributed capital based upon a spread of two percentage points and seven percentage points above the cost of the most recent Government of Saint Lucia long term bonds issued on the Regional Government Securities Market (RGSM) of the Eastern Caribbean Central Bank, with the proviso that the minimum rate of return on average contributed capital so calculated shall be ten percentage points."
c) The Office of Utilities Regulation (OUR) in Jamaica in its decision of 2009 determined that the Jamaica Public Service Company Limited (JPS) cost of equity was 16% and WACC of 11.6% with a capital structure that includes 48% debt.
d) The Fair Trading Commission (FTC) in Barbados, in its decision of 2010, approved a WACC of 10% and a capital structure that included 35% debt for The Barbados Light & Power Company. This equated to a Return on Equity of 12.75%.

<u>Realized Return on Rate Base for 2012 and 2013</u>
The Rate of Return on Rate Base realized by the Company under existing rates for 2012 was 10.2% and for 2013 was 10.6%.

Table 1
RATE OF RETURN ON RATE BASE/ WEIGHTED AVERAGE COST OF CAPITAL

13 months average projected for December 31, 2014 WEIGHTED AVERAGE COST OF CAPITAL: CONVENTIONAL CAPITAL STRUCTURE, POLICY BASED (PROJECTED)				
Capital Component	***Implied Balance ($EC)***	***Capitalization Shares***	***Cost Rates***	***Weighted Cost Rates***
Long Term Debt *Short Term Debt*	*38,773,805*	*33.1%*	*5.75%*	*1.9%*
Common Equity *Preference Shares*	*78,354,957*	*66.9%*	*14.5%*	*9.7%*
Total	***117,128,762***	***100%***		***11.6%***

The Commission's Considerations

The Determination sets out the overriding principles that guide the Commission's philosophy and approach to tariff making. For emphasis this is repeated below:

> *Regulatory Policy objectives*
> *The Commission's regulatory policy is to establish a tariff which balances the interests of the consumers and investors alike where the investors have the opportunity to realize a fair return on investment while customers can expect an efficient, responsive and economical service in an environment where the rights of all stake holders are preserved. The Commission will not guarantee a rate of return to the investors but will seek to create a regulatory environment where the incentives are such that the company through efficient operational practices and continual efficiency improvements will have the opportunity to achieve the desired rate of return during any tariff period.*

The challenge in the determination of the rate of return is to identify a mechanism which satisfies the reasonable expectations of customers and investors alike.
The Commission is minded that there are a three issues to be settled in order to derive WACC:

1) Determination on an appropriate capital structure for DOMLEC
2) Determination on the cost of long term debt
3) Determination on the cost of equity

Capital Structure
The Determination does not explicitly provide guidance as to an appropriate capital structure for an electric utility such as DOMLEC but there are bench marks that can and will guide the Commission's approach to determining whether the proposals on capital structure requested by DOMLEC are reasonable.

Generally the cost of debt is cheaper than that of shareholders' equity; the factors that tend to influence the cost of debt is that usually there is a tax benefit in that the company will get income tax relief on the interest payments to lenders while this is not usually the case on dividends payable to equity holders; also debt holders face less risk than equity holders in that the former have first claim on the company's assets in the event of bankruptcy or default. This makes debt less risky than equity and therefore the return to equity holders are generally higher than that to debt holders. Because of this it is important to derive a prudent mix of debt and equity in order to optimise the value to consumers.

DOMLEC has requested a capital structure of 33.1% debt and 66.9% equity based on its 13 month average from December 2013 to December 2014 of which December 2013 – August 2014 is actual and the remainder of the period projected. The company points out, using the CARILEC Benchmark Study of 2012 as its reference, that the average debt amongst Caribbean utilities is 38%.

The Commission does not believe that the proposed capital structure of 33.1% debt is equitable for consumers and would opine that at 33.1%, DOMLEC would be at the low end of the Caribbean utilities, in the context of a 38% average. The Jamaica Office of Utilities Regulation

determined a capital structure for the Jamaica Public Service Company Ltd of 48% debt: 52% equity at its 2009 Tariff Review Determination[1] and 50% debt 50% equity at its 2015 Tariff Review Determination[2]. It is instructive that at the 2009 review, the OUR, in fixing the gearing at 48% did so in circumstances where the company's actual gearing was 38%. Comparisons with electric utilities in the Cayman Islands (CUC), Barbados (BLP), Grenada (GRENLEC) and St Lucia (LUCELEC) are shown in Table 2.

Table 2
Gearing of some Caribbean Utilities

Country	Utility	Gearing
The Cayman Islands	CUC	56%
Barbados	Barbados Light and Power[3]	35%
Grenada	GRENLEC[4]	38.43%
St Lucia	LUCELEC[5]	47.77%

DOMLEC's proposed gearing is not only out of sync with regional companies in the main but the Commission is of the view that consumers, for the reasons outlined earlier, will be disadvantaged at the requested capital structure of 33.1% debt 66.9% equity. DOMLEC's actual 2013 gearing using data from its 2013 Annual Report is provided at Table 3.

Table 3
Extract from DOMLEC 2013 Annual Report[6]
Financial Statements - Note 10 - Borrowings

	2013	2012
Total borrowings	$41,025,375	$46,397,839
Total equity	$75,019,297	$68,260,396
Gearing	35.4%	40.5%

The Commission will accept the data provided in the audited financial statements at the onset.

In order to balance the stakeholder interests the Commission is of the view that the gearing should approach 50% and accordingly, the Commission proposes that for this rate case the capital structure will be maintained at 38% debt and 62% equity to reflect, at this stage, the

1 OUR Determination Notice – JPSCo Tariff 2009 – 2014 Document No. Ele 2009/04 : Det/03 Sept 18, 2009
2 OUR Determination Notice Document No. 2014/ELE/008/DET.004 January 7, 2015
3 FTC Decision and Order No 0002/09 effective Oct 1, 2009
4 Derived from data in GRENLEC Annual Report 2013
5 LUCELEC Annual Report 2013
6 DOMLEC Annual Report 2013

average amongst the regional utilities but DOMLEC must take steps to realize a gearing of 42% by the end of the tariff period. In the succeeding tariff period commencing 2018 the Commission will be seeking to establish the gearing in the region of 48% - 50%.

PROPOSED DECISION 1

DOMLEC's capital structure shall be 38% debt and 62% equity for the tariff period.

Consultation Question No 1:

Do respondents agree with the Commission's proposed capital structure of DOMLEC i.e. 38% debt 62% equity? If not, please explain why not?

Cost of Debt

The cost of debt is quite simple to determine if the actual cost of the debt on the company's books is used. In this regard DOMLEC's request is as follows:

> *Company's Cost of Debt*
>
> 20. *The Company's application is based on a cost of 5.75% for the Company's outstanding long-term debt as reported in Note 10 of the company's 2013 audited financial statements which are included as Appendix B. This cost rate is derived from the projected interest on the Company's 13 month average long-term debt, which at December 31, 2014 is projected at EC$ 38,773,805."*

The Commission accepts this proposal and will determine that the Company's cost of debt be fixed at 5.75%.

PROPOSED DECISION 2

DOMLEC's cost of debt shall be fixed at 5.75%.

Cost of Equity

As has been advanced by DOMLEC and consistent with received wisdom the characteristics of the cost of equity are such that it must be estimated. The Determination recognizes this and in so doing advances the following as guidance:

> *The measurement of the cost of common equity, on the other hand, is more involved, since return to common equity is not fixed, and thus is not known with certainty.*
>
> *Instead, return on equity must be estimated. The estimation of return on equity is based on the principle that rational investors will not invest in a particular investment opportunity if the expected return is less than the return expected from alternative investments of comparable risk. Therefore, return on equity is calculated by measuring the expected returns on alternative investments of comparable risk.*
>
> *Estimating the return on equity may give rise to two types of errors. First, the use of any specific model may give rise to errors or biases unique to that model. To reduce errors that may result*

from the application of any one model, several financial models have been employed to estimate the cost of equity. The final cost of equity figure used in calculating an overall rate of return is the average of the results of the models applied. Second, the measurement of the cost of equity for any individual company may involve errors. To reduce errors that may result from the estimation of the cost of equity for a single company, the models are applied to a group of companies of similar risk.
Next, the selection of comparable companies for DOMLEC is explained.

Comparable Companies

The comparable group of companies is an important factor in both the Discounted Cash Flow (DCF) model and the Capital Asset Pricing Model (CAPM). To select a comparable group that provides reasonable risk proxies, analysts rely on companies' bond ratings and safety ranks. Bond ratings and safety ranks are viewed by investors as measures of investment risk. For the U.S., the Value Line Investment Survey provides bond ratings and safety ranks for large number of public companies in various industries. Value Line bond ratings and safety ranks are used to exclude companies that have a speculative bond rating. In the absence of similar information for Dominica, companies will have to be identified for which information is available.

Models for Estimating Cost of Equity Capital

There are two widely accepted models for estimating the cost of equity capital. The first, the Discounted Cash Flow (DCF) model assumes that the current market price of a company's stock is equal to the discounted value of all expected future dividends. There are various formulations of the DCF model based on different projections of future dividend growth. The version of the DCF typically applied is the constant growth or the Gordon Model.The second, the Capital Asset Pricing Model (CAPM) assumes that the cost of equity investment is equal to the risk-free rate of interest plus the risk premium on the market portfolio adjusted by the company-specific risk factor, beta.

An average of the costs of equity derived from the DCF and CAPM models could then be used as the appropriate value for Cost of Equity (**emphasis added**).

The cost of equity proposed by DOMLEC was estimated with the use of the Discounted Cash Flow (DCF) and Capital Asset Pricing Model (CAPM) methodologies. These are widely used and accepted by regulators worldwide as well as in the region for deriving the cost of equity. In computing the cost of equity and in making its case, DOMLEC has relied, as indicated earlier, on the study carried out by Mr. William Vinhage of Vinhage and Associates as the main piece of expert evidence.

Risk adjustments
The first and perhaps most critical issue when considering the cost of equity (particularly in circumstances where foreign investors are involved) is to settle on the risk free rate and the risk premium associated with the investment.

The Risk-free rate is the interest rate that can be obtained by investing in financial instruments with no default risks – the choice of this rate for an international investor, who has the option of investing in other countries, could be considered as the current rate attributable to US Treasury

bills as these could be considered as "safe/risk free" investments. The appropriate applicable rate, could be considered as either the date of DOMLEC's application or the date of the Commission's analysis. In this regard, given the nature of DOMLEC's investments, the Commission is of the view that 10 Year US Treasury bond is the appropriate measure of long term risk free rate and notes that DOMLEC has itself used this measure. In its recent January 2015 Tariff Review[7] of the Jamaica Public Service Co Ltd the Office of Utilities Regulation spent some time discussing the merits of an average "historical rate" or a "point in time" rate. It argues that as the CAPM is a prospective forward-looking technique the variable chosen should generally be prospective.

The Commission has been minded to introduce into these proceedings the principle that instruments issued under the auspices of the Eastern Caribbean Securities Exchange (ECSE) should be used as the basis for benchmarking risk in the OECS countries. While, from an international perspective, it has been argued that the OECS markets may be immature the fact is that the Eastern Caribbean Dollar is not only stable, but it has maintained it parity since it was pegged to the US$ on July 1, 1976. The currency itself has existed since 1965. The ECCB's 2013/2014 Annual Report makes the following commentary

> *"The prevailing economic circumstances did not compromise the domestic currency, which remains adequately backed with foreign reserves. The backing ratio averaged 94.98 per cent during 2013, significantly above the statutory limit of 60.0 per cent and the prudential operating limit of 80.0 per cent. Additionally, inflationary pressures were contained as the inflation rate fell to 0.8 per cent at end-December 2013 from 2.9 per cent at end-December 2012."*[8]

There can be no debate that the ECCB's record of management of the currency and its economic management of the economies of the OECS monetary space has not only resulted in one of the most stable currencies in the world but also in manageable inflation over the long term. While the Commission is aware of the preference of international investors, when investing in developing countries, to use as the risk free rate the US 10 Year Treasury Bill rate, the Commission believes that the particular advantageous circumstances afforded by the Eastern Caribbean Currency Union and the ECCB itself makes the use of the long term bonds issued by the ECSE an appropriate instrument to inform the risk free rate within the OECS countries.

Although there are have been no active bond issues for Dominica in recent times, the Eastern Caribbean Securities Exchange provides data on current bond activity for three of its countries, St Lucia, Antigua and Barbuda and St Vincent and the Grenadines. DOMLEC suggests that the similarity of the economies of these countries where there is a common currency and "*the amount of public debt as a percentage of Gross Domestic Product of Dominica compared to other nations in the suggests that the debt costs of this group are a reasonable proxy …….*".

[7] OUR Determination Notice Document No. 2014/ELE/008/DET.004 January 7, 2015 – Chapter 5

[8] Eastern Caribbean Central Bank, Annual Report 2013/2014

The percent of public debt related to Gross Domestic Product for 2014 in these countries are documented in Table 4.

Table 4
Debt / GDP[9]

Country	Debt/GDP
Antigua & Barbuda	94
St Lucia	75
St Vincent & the Grenadines	78
Dominica	76

The Commission is of the view that in the absence of any data for Dominica, an average of the bond issues for these countries should serve as a reasonable proxy. These are summarized in Table 5.

Table 5
Eastern Caribbean Securities Exchange[10]
Listing of Rates 10 year Treasury Bills
At September 2014

Country	Rate %
Antigua & Barbuda	7.750
St Lucia	7.3648
St Vincent & the Grenadines	7.4047
Average	7.51

The Commission feels that it is reasonable and practical to use the average rate as the risk free rate and therefore proposes to determine the risk free rate to be 7.51%.

PROPOSED DECISION 3

The risk free rate to be the average of the ECSE 10 Year Treasury Bill rate at September 2014 – that is 7.51%.

Consultation Question No 2:

Do respondents have any views on the proposed use of the ECSE 10 year Treasury Bill rate as the basis for fixing the risk free rate?

[9] Caribbean Development Bank: 2014 Caribbean Economic Review & 2015 Outlook
[10] Source: http://eccb-centralbank.org/Currency/country_intrates.asp#table2

DOMLEC has proposed that there is needed to provide for size in the makeup of the risk arguing that there is need to "*to reflect the increased risk associated with DOMLEC being a very small island utility with limited opportunity for diversification of resources, customers, et cetera to mitigate a host of risks*" and proposed a 140 basis points provision for this. The Commission is of the view, however, that size adjustment is not appropriate for Dominica and DOMLEC for three particular considerations:

(1) The use of a regional composite of risks to derive the risk premium would be a factor to compensate for any perception of risk at the country level due to size.
(2) Dominica Social Security is a major institutional shareholder with 21% of the ordinary shares in DOMLEC
(3) With the issuance of two 25 year licenses and the attendant safeguards (including renewal options) that are inbuilt to protect the investor and with no real prospect for competition, any riskiness associated with size is fully mitigated.

The Commission is therefore not minded to make any specific provision for risk associated with size.

Utility Comparable Companies

In a document originating from Stern Business School of New York University, the response to the question "What is a comparable firm?" was "*A comparable firm is one with cash flows, growth potential, and risk similar to the firm being valued*". In addition to these, most analysts have concluded that comparable companies must be in the same business or line of businesses.

DOMLEC has proposed a selection of 15 US companies as that the comparable companies against which it should be compared for the purposes of calculating β. In fact, on describing the composition of the sample DOMLEC says "*The size of electric utility companies in the US is massive in comparison to DOMLEC; the companies chosen for inclusion were selected to have a market capitalization of less than $8 Billion US which is very small by US standards. In addition the sample was chosen to reflect utilities that are somewhat vertically integrated. With the liberalization of electricity supply in recent years in the US there are unlikely to be any purely vertically integrated utilities, but this sample does reflect companies that still have a significant portion of their supply vertically integrated in the regulated business*".

The Commission is of the view that this sample is not appropriate as comparators to DOMLEC and it believes that although the sample is small the characteristics are so close (both in terms of the macroeconomic and microeconomic variables), that St Lucia (LUCELEC) and St Vincent and the Grenadines (VINLEC) may serve as representative of DOMLEC. In fact the Commission was of the view that this issue was settled in the 2009 consultation on the Tariff regime, which culminated in the Determination. At that time, DOMLEC in its comments of September 18th 2009 suggested the concept of the use of American companies as comparable companies; this concept was not accepted and nothing has developed since to warrant a change of this decision. The Commission has therefore concluded that GRENLEC and LUCELEC fits the criteria as outlined for comparable companies. The reasons are:

- They are in the same line of business
- Faces similar risks (both are on the ECSE)
- Similar in size in terms of assets
- These companies are investor owned
- Similar economies

VINLEC was ruled out because it is government owned.

Table 6 shows the relevant comparisons.

Table 6
Comparisons between DOMLEC and the proxy utilities

Company	Size	Value
DOMLEC	ASSETS	$160,968,049.00
	EQUITY	$75,019,297.00
GRENLEC	ASSETS	$183,032,440.00
	EQUITY	$83,474,398.00
LUCELEC	ASSETS	$485,145,892.00
	EQUITY	$227,529,492.00

PROPOSED DECISION 4
The Commission proposes to use LUCELEC and GRENLEC as the proxy utilities.

Consultation Question No 3:

Do respondents agree with the use of LUCELEC and GRENLEC as the proxy utilities? Pleases provide reasons?

The equity beta (β)
The beta of a stock is the relevant measure of risk for well diversified investors. This systematic risk is inherent in the respective stock and it is this risk that cannot be diversified.
For the United States, analysts typically rely on the estimates of beta from the Value Line Investment survey. The Value Line derives beta estimates through a regression analysis of the relationship between weekly percentage changes in the price of a stock and the weekly percentage changes in the New York Stock Exchange Index over a period of five years. There are no prepared analysts' estimate of beta for DOMLEC or DOMLEC's comparable group of companies, therefore the estimates for this report had to rely on the information obtained from the ECSE. This stock market is still relatively young when compared to those in the United States. Stocks are thinly traded.

To estimate the beta for Dominica Electricity Services Ltd (DOMLEC), Grenada Electricity Services Ltd (GRENLEC) and St. Lucia Electricity Services Ltd (LUCELEC) regression of the weekly percentage changes in the price of the stock against the weekly percentage changes for the Eastern Caribbean Security Exchange (ECSE) index, over the period from January 2009 to December 2013 was used.
The estimates for beta (β) are as follows at Table 7.

Table 7
Estimates of β

DOMLEC	**0.035**
GRENLEC	0.233
LUCELEC	0.88

CAPM

The cost of equity using the CAPM method is given as $k = R_f + \beta(Rm)$

Where	R_f	the risk-free rate
	Rm	the market return
	β	this is beta which is the measure of systematic risk

The corresponding results from the calculations to determine the cost of equity in the scenario discussed is as follows:

Table 8(a)
Derivation of average Cost of Equity (CAPM) - DOMLEC

Company	β	k inputs	k
DOMLEC	0.035	7.5+0.035(5.9)	7.71
Average cost of equity (CAPM)-DOMLEC			7.71

Table 8(b)
Derivation of average Cost of Equity (CAPM) - Proxy Companies

Company	β	k inputs	k
GRENLEC	0.233	7.5+0.233(5.9)	8.87
LUCELEC	0.88	7.5+0.88(5.9)	12.69
Average cost of equity (CAPM)-Proxy group			10.78

DCF

The DCF model assumes that the current market price of a company's stock is equal to the discounted value of all expected future dividends. Although there are different projections of future dividend growth used in this model, the one which is being proposed is the constant growth or the Gordon Model.

The cost of equity using the DCF method is $k = Do(1+g)/Po + g$

Where k	is the cost of equity
Do	is the present dividend
g	is the constant growth
Po	is the current market price

In arriving at the growth, g, the average growth in Earnings per share and Dividend per share will be averaged. The current market price per share can be obtained either through the company's financial statements or the relevant stock market.

By obtaining the current dividend being paid which is Do, then the cost of equity can be found.

Table 9 provides the supporting data and derivation of the cost of equity for the proxy group using the DCF methodology

Table 9 (a)
DOMLEC
Dividend and Earning Per Share Growth Rates[11]

Company	Ticker	DPS	EPS	Average
DOMLEC	DES	7.10%	7.20%	7.15%

Table 9 (b)
DOMLEC
Dividend Valuation Method Estimate of Cost of Equity

Company	Ticker	Market price	Annual Dividend ($)	Average growth (%)		Cost of Equity (%)
DOMLEC	DES	4.00	0.20	7.15		12.35

Table 9 (c)
Proxy Group of Comparable Companies
Dividend and Earning Per Share Growth Rates

Company	Ticker	DPS	EPS	Average
GRENLEC	GESL	0%	37.7%	18.85%
LUCELEC	SLES	-28.5%	0.03%	

Table 9 (d)
Proxy Group of Comparable Companies
DCF Model Estimates of Cost of Equity

Company	Ticker	Market Price	Annual Dividend ($)	Average growth (%)		Cost of Equity (%)
GRENLEC	GESL	11.00	0.18	18.85		14.8
LUCELEC	SLES	25.00	0.35	-		-

[11]Source – DOMLEC Annual Report 2013

Derivation of Cost of Equity

The cost of equity is calculated by averaging the results obtained from the CAPM and the DCF methodologies. This is demonstrated below at Table 10,

Table 10 (a)
Derived Cost of Equity
DOMLEC

Models	
DCF	12.35%
CAPM	7.71%
Average	10.03%

Table 10 (b)
Derived Cost of Equity
Proxy Group

Models	Proxy Group
DCF	14.8%
CAPM	10.81%
Average	12.79%

The Commission is of the view that it would be appropriate to consider the average of the costs of equity for DOMLEC and that of the proxy group to be a reasonable value to assign as DOMLEC's cost of equity for this tariff review. In the instant case the average is 11.41%.

The Commission would therefore conclude that a reasonable expectation for the cost of equity by investors in DOMLEC would be 11.4%.

PROPOSED DECISION 5

The Commission proposes that, based on the results of the application of the DCF and CAPM methodologies, DOMLEC's cost of equity for the tariff period shall be 11.4%.

WACC

Arising from the foregoing the WACC for DOMLEC would be derived from the following inputs (Table 10)

Table 10
Derivation of DOMLEC's WACC

Capital structure	**38/62**
Cost of Debt	5.75
Cost of Equity	11.4
WACC	9.25%

The Commission therefore proposes that DOMLEC's WACC shall be fixed at 9.25%.

PROPOSED DECISION 6

The Commission proposes that the WACC to be applied to DOMLEC's regulatory asset base shall be 9.25%.

Conclusions

DOMLEC points out in its submission that, by and large, rate cases awards for return on equity in the United States have been trending down. In fact the resource used to illustrate the point is data obtained from the Edison Electric Institute which shows a steady decline over the period Q4 2000 to Q44 2012 from about 12% to 10%. It should therefore be anticipated that the international market would follow the US and that the returns on equity would also trend downwards. The proposal on the value of DOMLEC's WACC is not inconsistent with this trend.

The Commission is of the view that for the reasons and arguments made in this consultative document a WACC of 9.25% reasonably balances the interests of the company and consumers and is consistent with the regulatory principles enunciated in the Determination. It also believes that it exercised its duty consistent with Section 21 of the Act and acted in accordance with Section 22 of the said Act.

Summary of Proposed Decisions

- **PROPOSED DECISION 1**
  DOMLEC's capital structure shall be 38% debt and 62% equity for the tariff period.

- **PROPOSED DECISION 2**
  DOMLEC's cost of debt shall be fixed at 5.75%.

- **PROPOSED DECISION 3**
  The risk free rate to be the average of the ECSE 10 Year Treasury Bill rate at September 2014 – that is 7.51%.

- **PROPOSED DECISION 4**
  The Commission proposes to use LUCELEC and GRENLEC as the proxy utilities.

- **PROPOSED DECISION 5**
  The Commission proposes that, based on the results of the application of the DCF and CAPM methodologies, DOMLEC's cost of equity for the tariff period shall be 11.4%.

- **PROPOSED DECISION 6**
  The Commission proposes that the WACC to be applied to DOMLEC's regulatory asset base shall be 9.25%.

Summary of Consultation Questions

Consultation Question No 1:
Do respondents agree with the Commission's proposed capital structure of DOMLEC i.e. 38% debt 62% equity? If not, please explain why not?

Consultation Question No 2:
Do respondents have any views on the proposed use of the ECSE 10 year Treasury Bill rate as the basis for fixing the risk free rate?

Consultation Question No 3:
Do respondents agree with the use of LUCELEC and GRENLEC as the proxy utilities? Please provide reasons?