Regulating Electricity, Promoting Our Energy

CONSULTATIVE DOCUMENT

Document Reference: 2024/002/CD-02

Weighted Average Cost of Capital (WACC)

For

DOMINICA ELECTRICITY SERVICES (DOMLEC) LTD

Comments on First Response and Second Issue of Document

SEPTEMBER 2024

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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:

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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 timetable for this consultation are:

Document Ref No: **2024/002/CD-02**
Document Title: **Weighted Average Cost of Capital for DOMLEC**
- *(with Comments on First Response and Second Issue of Document)*

EVENT	PROPOSED DATE
Publication of First Issue of Document	July 5th, 2024
Responses closed	August 14th, 2024
Comments on First Response and Publication of Second Issue of Document	September 12th, 2024
Responses Close	September 27h, 2024
Statement of Results and Commission's Decision	October 11th, 2024

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WEIGHTED AVERAGE COST OF CAPITAL FOR DOMINICA ELECTRICITY SERVICES (DOMLEC) LTD

Introduction and Background

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 in considering certain critical parameters in separate proceedings leading up to the tariff review itself. These parameters, which are critical inputs to the tariff determination, are:

- Depreciation Policy (Completed – April 2024)
- Determination of Weighted Average Cost of Capital (WACC)
- Determination of Revenue Requirements and Regulated Asset Base (RAB)
- Approval of 5-Year Investment Programme
- The Cost-of-Service Study with Load Research
- The Rate Proposal

The Commission will, when requested by DOMLEC, conduct its review of and make determinations on these issues prior to the final submission of the rate proposal.

The Depreciation Policy was addressed and completed in April 2024, as per the Commission's Decision Document ***Ref: 2024/001/D - "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 calculated by applying the WACC to the asset base. Both the WACC and regulated asset base must be approved by the Commission.

The Commission and DOMLEC proceeded to work on the WACC, and each submitted their determination of which the lower amount, as derived by the Commission, was agreed with and by DOMLEC.

Upon completion, these should be submitted for public consultations prior to the filing.

Consequently, The Commission issued its first Consultative Document (CD) on July 5th, 2024, and held an in-person public consultation on August 14th, 2024. Consultation on that first CD ended on August 16th, 2024. This new document now sets out the Commission's response to the feedback and comments received during that first round of consultations and the Commission's proposed Decisions that flowed from these considerations. These proposed decisions will replace those, if and where appropriate, that were indicated in the previous consultative document.

The Commission's key 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 end of the tariff review process, to be conducted this year.**

Policy and Legal Framework:

The Commission's duties and functions regarding tariff making are provided for pursuant to provisions in three principal instruments:

(i) the Act,
(ii) the Licence and
(iii) Commission's Determination as per its "*Tariff Regime for Dominica Electricity Services Ltd Document Ref: 2009/004/D"* (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 policies 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 several 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 in 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 thirty (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 30th, 2010, and an Amendment to the *Tariff Regime Decision Document Ref: 2022/001/*D that was promulgated on August 1st, 2022. These Gazzetted Decision Documents set 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 for that purpose.

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 could realize a fair return on investment while customers can expect an efficient, responsive and economical service in an environment where the rights of all stakeholders 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 dealing 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 and 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:

$$\mathbf{WACC = w_d k_d + w_c k_s + w_p k_p (1)}$$

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, the cost of preferred stock and 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 a 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 June 2023, 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, 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.

The Commission has not received any adverse comments on the qualifications and/or expertise of Mr. Vinhage, and it therefore now confirms its initial conclusions on his competencies.

Summary of DOMLEC's Proposal

DOMLEC's conclusions are presented below:

1) The requested Return on Equity ("ROE") of 13.05% 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.
2) The Company's cost of debt is 5.%.
3) The 13 months average capital structure is 46.6% debt and 53.4% equity.
4) The Company proposed a Weighted Average Cost of Capital (WACC), the Post – Tax Nominal value be set at 9.30% and the Pre-Tax Nominal at 11.63%.

The Commission's Considerations:

Respondents' Comments at the Public Consultation

The Commission has noted the comments from stakeholders and has appropriately taken them into account in its deliberations that follow as per each of the consultation questions raised for each proposed decision by the Commission.

The Commission also accepted other concerns expressed by the respondents during stakeholders' engagements.

Respondents encouraged the Commission to scrutinize related parties' transactions and any risk of gold plating that may negatively impact on the utility's financial performance. The Commission should ensure efficiency and proper controls within the utility, to include the execution of timely and competent audits.

Respondents raised concerns on the aspects of self-insurance that no less than $5 million be set aside on an annual basis towards the cost of catastrophic events such as major hurricanes.

Expert Resources

The onus is on the regulator to engage with a reputable and reliable agency to provide expert assistance with the tariff review.

Mrs. Lamis Aljounaidi, Regulatory Consultant from Paris Infrastructure Advisory (PIA), is a

recognized expert in energy economics, tariff setting and financing. She has sixteen years of experience in energy infrastructure development and economics focused on renewables and networks. The Regulatory Consultant supported over 50 projects through different development and financing stages including regulation, WACC calculations, pricing, market design for investment incentives. She has experience working in Dominica, to support the regulator through the development of a geothermal IPP (2018-2020) during which she evaluated the DOMLEC-DGDC PPA, did Electricity Demand Forecasts, and review of the Project's Financial Model.

The Commission advised participants that the Regulatory Consultant has the professional competence and expertise to assist the IRC in conducting a comprehensive review and analysis of DOMLEC's WACC Study.

The Commission also relied on published works of Professor Aswath Damodaran and datasets contained from Reuter, Dimson, Staunton and March (DSM Global Investment Return). In addition to numerous publications in academic journals he has authored several highly regarded and widely used academic texts on Valuation, Corporate Finance, and Investment management. He is also the recipient of several awards in the field of Finance.

Additionally, the findings of other regulators in the region including Office of Utility Regulations (OUR) Jamaica and Fair-Trading Commission Barbados were reviewed for this undertaking.

Regulatory Policy Objectives

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 three issues to be settled in order to derive WACC, namely:

a) Determination on an appropriate capital structure for DOMLEC

b) Determination on the cost of long-term debt

c) Determination on the cost of equity

DOMLEC's proposed gearing of 46.6% is in sync with some utilities in the region including that of Jamaica Public service and Caribbean Utilities Company but out of sync for GRENLEC and Bermuda Electric.

The Commission's Proposed Decisions

PROPOSED DECISION 1:
DOMLEC's capital structure shall be 46.6% debt and 53.4% equity for the tariff period.

Consultation Question No 1:
Do respondents have any views regarding the proposed capital structure for DOMLEC that it should be set at 46.6% debt, 53.4% equity? If note. Please explain why not?

Capital Structure

The intent of this question is to enable stakeholders to evaluate whether the Commission followed due process in evaluating the financial leverage that will maximize value to DOMLEC and further allow respondents to access whether the business risk of DOMLEC is comparable to that of other power companies.

The Determination does not explicitly provide guidance as to an appropriate capital structure for an electric utility such as DOMLEC but there are benchmarks that are available for that purpose, and which guided 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 are (i) the tax benefit that the company receives in terms of income tax relief on interest payments to lenders, whereas this is not usually the case on dividends payable to equity holders; and (ii) 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, hence making debt less risky than equity and therefore the return to equity holders is generally higher than that to debt holders. Because of this it is important to derive a prudent mix of debt and equity to optimize the value to consumers.

DOMLEC informed stakeholders that in reviewing its capital structure, the values were benchmarked against that of other comparable companies in the region, as well as data available from DOMLEC's audited financial report balances of the years 2021 and 2022.

According to DOMLEC, its capital structure at this point comprises of both debt and equity. The 'economic 101 level' states that the cost of capital is the opportunity costs of an investment that comprise of both capital and debt. The economic reality is that investors can sell their investments to attract better returns for investments with similar risk. The company will set a cost of capital to be able to attract capital investments opportunity to operate, maintain and expand its electricity system, in safe and reliable manners.

Stakeholders were informed that the year 2022 was used in these studies, reflecting a Capital structure of 46.6% debt and 53.4% as depicted in *Table 1.* below:

Table 1.

Unadjusted Capital Structure – 2022 Year End

(Millions of EC Dollars)

Capital Structure	2022 Per Books
Equity ($)	$ 90.7
Debt/Prefs ($)	$ 79.0
Total $	$ 169.7
Equity %	53.4%
Debt %	46.6%
Total $	100.0%

The Commission considers that the proposed capital structure of 46.6% debt and equity of 53.4% is equitable for consumers and falls in line with that of the Power Companies in the region as shown below in Tables 2 and 3.

Table 2.

Equity Percent of Traditional Capital Structure
Based on Most Recently Available Balances

Company	Equity Percent of Capital Structure
DOMLEC (2022)	53.4%
Bermuda Electric (2019)	65.6%
Jamaica Public Service (2020)	51.1%
GRENLEC (2020)	70.3%
Caribbean Utilites Company (2021)	50.4%
Average	**58.2%**

Table 3.
Gearing of some power utilities in the Caribbean

Country	Utility	Gearing
Bermuda	Bermuda Electric (2019)	34.4%
Jamaica	Jamaica Public Service (2020)	48.9%
Grenada	GRENLEC (2020)	29.7%
Grand Cayman	Caribbean Utilities Company (2021)	49.6%
Average		**40.65%**

PROPOSED DECISION 2:
DOMLEC's cost of debt shall be fixed at 5%.

Consultation Question No 2:
Do respondents agree to use as the cost of debt, the proposed interest rate of 5% based on DOMLEC'S long-term debt? If not, please explain?

Cost of Debt

The basis for this question stems from the fact that debt financing can be used for a wide variety of business opportunities to include capital investment in physical assets to meet daily business operation. However, debt financing represents a significant threat to the company's existence if interest and principal are not paid as agreed upon.

DOMLEC maintained that the debt cost is relatively straightforward. DOMLEC takes loans from commercial banks for capital investment expansion and pays both principal and interest payment as these loans attracts interest; that the trend indicates that interest rates are expected to rise in the future but there is the hope that it may fall as well; and that the current trend shows that the cost of debt is more than 5%.

The cost of debt used in the determination of WACC is shown in *Table 4* below:

Table 4
Outstanding Debt and Associated Interest Rates

Loan	Dec 21 Balances EC $ Millions	Dec 22 Balances EC $ Millions	Average Balances	Interest Rate
National Bank of Dominca (2022)	$ 2.3	$ -	$ 1.1	5.00%
National Bank of Dominca (2026)	$ 24.9	$ 28.7	$ 26.8	5.00%
Caribbean Development Bank (2035 EIB)	$ 21.0	$ 21.0	$ 21.0	4.90%
Caribbean Development Bank (2035 SEF)	$ 21.6	$ 21.6	$ 21.6	4.90%
Overdraft Facility	$ 7.2	$ 8.8	$ 8.0	5.00%
(less CDB Loan Fee Adjustment)	$ (0.9)	$ (0.9)	$ (0.9)	0.00%
Total	$ 76.1	$ 79.3	$ 77.7	5.00%

The Commission is of the view that the cost of debt is quite simple to determine if the actual costs of the debt on the company's books are used. The Commission noted that DOMLEC in its submission utilized a cost of debt of 5% based on the Company's outstanding long-term debt as reported in Note 10 of the company's 2022 audited financial statements and as shown in *Table 4* above. This rate is derived from the projected interest on the Company's 13-month average long-term debt, which on December 31st, 2022, was EC$77,536,460.00"

The Commission accepts this proposal and determines that the Company's Cost of Debt be fixed at 5%.

Cost of Equity

An established characteristic of the cost of equity is 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.

DOMLEC maintained that the Weighted Average Cost of Capital (WACC) is the regulatory requirement, and a key element used in the determination of the Revenue Requirement, indicating how much revenue the company needs to operate efficiently to cover key elements of costs including operating and maintenance cost, fuel expenses, IPP expenses and depreciation expenses and the pre-tax WACC that will be applied to the Rate base. The key component of the rate base includes the physical assets of the company such as generation assets, transmission and distribution assets among others. The difference between the WACC pre-Tax and post-Tax signifies DOMEC's tax payment to the Inland Revenue Division on the equity returns.

DOMLEC alluded to stakeholders that 'the WACC should not be set too high as this could allow for higher electricity prices than necessary as this could have an adverse impact on consumers and the economy and that if the WACC is set too low, this could result in insufficient electricity price to adequately fund investments, maintenance and operation the electricity systems and this could result to poor reliability of service. A WACC that is set too low, could result in insufficient cash flow to pay dividend to investors such as DOMLEC, Dominica Social Security and Private Investors. This can also result in the inability to access debt and additional equity investment at competitive rates. Of critical importance is the event of future disaster such as Hurricane Maria in 2017 which impacted on reliability, and this had an adverse effect on the Economy. Accordingly, it is important to strike a balance to allow for an equitable return on investment, hence one of the reasons for the role of the regulators in this sector.'

DOMLEC's stated *"that the CAPM looks at the variability of stock price for selected companies against the variability of stock market overall. It was noted that in the model the less risk the company is assigned the lower the return and the higher the risk the higher the return."*

The CAPM is derived as follows:

The CAPM is summarized using the follow equation:

$$COE_s = R_{rf} + \beta_s \, x \, (R_{S\&P\ 500} - R_{rf})$$

where:

$COE_s = Cost\ of\ Equity, the\ return\ expected\ by\ investors\ for\ stock\ s$

$R_{rf} = Risk\ free\ rate\ of\ return, ususally\ \ the\ yield\ on\ a\ government\ bond$

$\beta_s = Measure\ of\ the\ volatility\ of\ the\ price\ stock\ s\ to\ the\ overall\ market$

$R_{S\&P\ 500} = The\ expected\ annual\ return\ of\ the\ overall\ market\ (i.e.\ the\ S\&P\ 500)$

β is an indicator of risk adjusted returns, *vis a vis* the overall market, expected by investors. A stock with a β of one has price volatility and market risk equal to the overall market. A stock with a β greater than one has price volatility and market risk greater than the overall market. Conversely, a stock with a β of less than one has price volatility and market risk less than the overall market.

β is calculated using the following formula:

$$\beta_s = \frac{Covariance\ (r_s, r_{S\&P\ 500})}{Variance\ (r_{S\&P\ 500})}$$

where:

$r_s = market\ return\ for\ stock\ of\ company\ s$

$r_{s\&p\ 500} = Return\ for\ the\ Total\ Market\ (i.e.\ S\&P\ 500)$

The Discounted Cashflow approach states that the current price of a company is equal to the discounted future cash flow from dividend for that company.

$$P = \sum_{n=0}^{\infty} \frac{D_n}{(1+k)^n}$$

where:

$P = current\ stock\ price$

$n = index\ for\ the\ year, where\ n = 0\ is\ the\ current\ year$

$D_n = expected\ dividend\ in\ year\ n$

$k = Cost\ of\ Equity\ (COE)$

DOMLEC informed respondents to determine the cost of equity, one must find a group of companies that are traded on an active stock exchange and filter the data in the model to derive the values. In the Caribbean region, there are not many investor-owned utility that is actively trading on a stock exchange to credibly complete the analysis. DOMLEC is a hybrid utility with 52% of shares owned by Government of Dominica and 48% from private investors.

Other power companies in the region include:

- Grand Bahamas Power Company,
- Grand Cayman Power Company,
- Jamaica Power Company,
- Barbados Light and Power Holding (BLPH)
- Grenada Electricity Company GRENLEC

GRENLEC is also a hybrid utility as the Government of Grenada has acquired majority of the shareholdings. The other issue is that the companies are part of a bigger company that is not comparable to DOMLEC. It was noted that Barbados Light & Power Holding and Grand Cayman Power Company are owed by a large Canadian owned Utility EMERA. This shows that the region has a small number of investors who own utilities.

It was further noted that the trading in the region is too few and infrequent and as such there is not sufficient data available to conduct the analysis. DOMLEC stated *"the approach that is available is to use peered group of companies that are trading on mature and active stock market such as Europe, Canada and US stock markets and filter the data as possible to maximize comparability to the situation in the Caribbean. Typically, the adjustment to the made include Country risk premium that caters for eventually such as Hurricane Maria 2017 and Small Company size."*

PROPOSED DECISION 3:
The risk-free rate to be the average of the US 10-Year Treasury Bill rate as of July 2023 – that is 3.75%.

Consultation Question No 3:
Do respondents have any views on the proposed decision of the US 10-year Treasury Bond as of July 2023 of 3.75% be used as the basis for fixing the risk-free rate for DOMLEC? If not, please explain.

Risk-Free Rate

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 proposed a risk-free rate of 3.74% which is the average value of the monthly yields on 30-Year US Treasury Bonds for the six months ended May 2023 of 3.74%, as reported by the Federal Reserve Bank.

The Commission noted DOMLEC's indication that the risk-free rate as of August 2nd was 4.11%.

Considering DOMLEC's comments in respect of the inadequacy of data from the Eastern Caribbean Securities Exchange, as proffered by the Commission earlier as a suitable market for analysis for the purpose of this rate review, it was necessary for the Commission to reconsider its position and adopt the US as the mature market.

The main reasons for using a 10-Year US Treasury bond as opposed to a 30-Year US Treasury bond are advanced by Professor Damodaran of Stern School of Business NYU, that it is easier estimating equity risk premiums and default spreads against the 10-Year bond than the 30-Year bond. According to Professor Damodaran *"It is much easier to find issues of the 10-Year T-bond."*

The Commission noted that DOMLEC has stated that there is need to provide for size in the makeup of the risk profile arguing that there is need "*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 as such, **proposed a 140-basis points provision for small company size of 0.79%.**

The Commission remains unconvinced, however, that size adjustment is appropriate for Dominica in the current circumstances and allows the adjustment for country risk premium.

PROPOSED DECISION 4:
The Commission proposes that <u>ALL</u> US Power Utilities be used as proxy utility for DOMLEC.

<u>Consultation Question No 4:</u>
Do respondents agree to use <u>ALL</u> US Power Companies as the proxy utilities as proposed by IRC or the 13 US Power Utilities recommended by DOMLEC? Please provide reasons.

Comparable Utility Companies:

In this WACC study, DOMLEC commenced with a group of 40 publicity traded investors-owned companies classified as electric utilities and attempted to make these companies as comparable as possible, by filtering the data to maximize comparability. DOMLEC further excluded a few companies for the following reasons:

- Companies that were not primarily electric Companies that were either not vertically integrated or fully regulated.
- The largest of the large or Goliath firms, with Market capitalization of > US$20Billion Urban Companies that only served one compact city

DOMLEC settled on a selection of 13 US companies as their comparable companies against which it should be compared for the purposes of calculating Beta (β). DOMLEC stated that the company is small in size with a 16MW peak and has a different risk profile compared to other companies.

In the final analysis the 13 US companies selected by DOMLEC as comparable are shown below.

- ✓ Allete, Inc (ALE)
- ✓ Alliant Energy Corporation (LNT)
- ✓ Avista Corporation (AVA)
- ✓ Black Hills Corporation (BKH)
- ✓ CMS Energy Corporation (CMS)
- ✓ Hawaiian Electric (HE)
- ✓ IDACORP, Inc. (IDA)
- ✓ OGE Energy Corporation (OGE)
- ✓ Otter Tail Power Corporation (OTTR)
- ✓ Pinnacle West Capital Corp (PNW)
- ✓ PNM Resources (PNM)
- ✓ Portland General Electric Co (POR)
- ✓ WEC Energy Group (WEC)

Based on the comprehensive analysis and research conducted by the Commission in reviewing DOMLEC's WACC study, the Commission noted the concerns expressed by DOMLEC that the Caribbean region's stock market is immature and lack sufficient data to better perform the analysis.

It also noted that some respondents were of the view that DOMLEC and LUCELEC traded their stock on the ECSE market, and it would have been marginally acceptable to use information from this market. The Commission is minded not to use this in any extensive way as data from this market is immature and noted that regulators in the region such as OUR of Jamaica and Fair-Trading Commission of Barbados used the widely accepted approach using a mature market to conduct their analysis.

The Commission considers the dataset published by Professor Damodaran for all US electric power companies to be used as a proxy to DOMLEC as there are no US Power Companies that is single-handedly comparable to DOMLEC in size and market capitalization.

PROPOSED DECISION 5:
The Commission proposes a country risk premium of 3.08% be factored in the calculation on the cost of equity and excludes small company size in the computation.

Consultation Question No 5:
Do respondents agree that the small company size be excluded in the computation of cost of equity for DOMLEC, but rather the country risk premium of 3.08% be factored in the calculation as well as equity risk premium of 5.06% be factored in the calculation instead of 8.27%?

Country Risk Premium (CRP)

The background to the question raised concerns on the risk of disastrous catastrophic events such as Hurricane Maria in 2017 which had an adverse impact on DOMLEC's Transmission and Distribution. The Commission noted that this concern was further reiterated by DOMLEC during the Public Consultation. The Commission is of the view that any risk associated with small company size can be factored in the country's risk premium. The country's risk premium is an additional risk associated with investing in a company on the international market rather than the domestic market. Investing in an emerging country has higher risks than investing in a more developed country like the United States. This is an adjustment made to the risk premium to compensate the investor for investing in other markets, particularly the developing markets. The principle of higher return for higher risks holds that investors expect to attract a higher premium to invest in a country that attracts higher risks.

DOMLEC held that a key component of the cost of equity is the determination of the equity risk premium. It is derived as the difference between the expected market return and the risk-free rate based on historical return data gathered from active market. For this study dataset was gathered from S&P 500 and this resulted in equity risk premium of 8.27%. To allow for further comparability of DOMLEC this study considered a country risk premium of 3.08% and small company size adjustment of 0.79% was factored in the computation.
Damodaran (2003)1 proposed a calculation of the cost of equity for a firm investing in a market with country risk as follows:

$$E(R) = Rf + \beta (ERP\ m) + CRP$$

There are several stated ways in which country risk premium can be estimated. Among these, there are two most widely used methods, the "synthetic spread" and the 'sovereign bond spread'. Professor Damodaran has developed a typical default spread for each sovereign credit rating as expressed by Moody's.

[1] Naumoski, Aleksandar. Estimating the Country Risk Premium in Emerging Markets: The Case of the Republic of Macedonia.

DOMLEC maintained that Caribbean Information and Credit Rating Service (CariCRIS) is not an active credit rating body and is not comparable to those in the US to determine the default spread to factor for small company size.

Mature Market Risk Premium (MMRP)

The mature market risk premium is the expected extra return over and above the risk-free rate that well-diversified investors require to invest in risky assets in mature markets. It represent the difference between the expected market return and the risk-free rate. In the WACC study the expected market return of 12.01% based on S&P 500 dataset from 1926 through 2022 and risk-free rate of 3.74% from which a Market Risk Premium of 8.27% was determined.

The Commission expressed the view that most regulators including the Office of Utility Regulation (OUR) of Jamaica and Fair-Trading Commission of Barbados, utilize dataset from Dimson, Staunton and March (DSM Global Investment Return) and dataset from Aswath Damodaran.

Based on the benchmark set by Regulators in the Caribbean and information published by Aswath Damodaran which illustrates Country Risk Premium relative to bond (1973 to 2022 as of August 1st, 2023), 3.08% was proposed as the reasonable Country Risk Premium to be applied in the determination of the cost of equity for DOMLEC.

PROPOSED DECISION 6:
The Commission proposes to use a Beta value of 0.44 based on <u>ALL</u> US Power Utilities to be used as proxy beta value for DOMLEC.

<u>Consultation Question No 6:</u>
Do respondents agree with the Commission's proposed Beta (β) of 0.44 for <u>ALL</u> US Power Utilities rather than DOMLEC's proposed Beta (β) of 0.658 to be used as proxy beta value for DOMLEC? Please 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.

The theory behind beta is that it is a financial term used for measuring the volatility or systematic risk associated with investing in a diversified portfolio of assets relative to the market. This additional risk is measured as a covariance between the risk of the investment and the risk of the market.

Economic theory states *"There can be different beta calculations for the same assets as it is a relative measure that depends on the time period, the reference date, the interval of the closing price and the market index used as reference*".

DOMLEC informed as follow:

> ***"Beta = 1 means that the investment has a similar behavior to the market***
> ***Beta > 1 means the investment has a higher risk versus the market.***
> ***Beta < 1 means the investment is below the market risk.***
> ***Beta = 0 represents a riskless investment"***

DOMLEC estimated its beta by gathering beta values from the 13 US Power Company based on the daily market data from the US Stock Exchange for the 10-year ended December 2022.

From this beta value for the comparable group of companies, an average of 0.66% was determined as shown in *Table 5* below.

Table 5
Comparison Group β Values
Calculated using Daily Data from January 2012 to December 2022

Symbol	Company	β
ALE	Allete, Inc.	0.72
LNT	Alliant Energy Corporation	0.58
AVA	Avista Corporation	0.63
BKH	Black Hills Corporation	0.79
CMS	CMS Energy Corporation	0.54
HE	Hawaiian Electric	0.58
IDA	IDACORP, Inc.	0.63
OGE	OGE Energy Corporation	0.71
OTTR	Otter Tail Power Corporation	0.88
PNW	Pinnacle West Capital Corporation	0.63
PNM	PNM Resources, Inc. (Holding Co.)	0.65
POR	Portland General Electric Company	0.67
WEC	WEC Energy Group, Inc.	0.52
	Average	0.66

The Commission is of the view that the Beta value of 0.66 for DOMLEC is too high. Accordingly, the Commission adjusted the Beta to determine the average of the unlevered beta based on all US Power Companies published by Professor Damodaran as of July 2023. The Commission informed that the unlevered beta removes the impact of debt from the Capital structure and is a more accurate measure to determine how much equity contributed to the overall risk profile, and to determine the performance of the company relative to the overall market.

The published data by professor Damodaran determines an unlevered beta of 0.44 to be used as proxy for DOMLEC.

Cost of Equity (K_{ec}) = 3.75+ 0.44 (5.06) + 3.08) = 10.33%

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, the one which is being proposed is the constant growth or the Gordon Model[3].

The equity quoted for DCF for the proxy companies by Professor Damodaran is 9.41%.

Derivation of Cost of Equity (K_e)

DOMLEC' informed that the cost of equity using this model is the discount rate calculation which states that the future cash flow is equal to the current stock price. Both approaches have their own pros and cons, but the results are generally consistent.

In the WACC studies, the cost of equity utilizing both the CAPM and DCF methodology yield similar results as shown in *Table 6* below:

Table 6

Unadjusted Cost of Equity Results

Summary and Recommended Weighted Average

Estimatation Method	Capital Asset Pricing Model	Two Stage DCF Model	Weighted Average
Min	8.05%	4.85%	6.45%
1st Quartile	8.55%	8.30%	8.42%
Average	**9.17%**	**9.19%**	**9.18%**
3rd Quartile	9.62%	10.82%	10.22%
Max	11.05%	12.64%	11.85%
Weight	50.00%	50.00%	100.00%

The Commission noted the view expressed by DOMLEC that both approaches form part of the guidelines as stipulated in the IRC's Tariff Regime Decision Document.

PROPOSED DECISION 7:
The Commission proposes that the WACC to be applied to DOMLEC's regulatory asset base shall be WACC post-Tax of 7.90% and WACC pre-Tax of 9.72%

Consultation Question No 7:
Do respondents agree to use the Commission's proposed WACC post tax of 7.90% and WACC Pre-tax of 9.82% rather than DOMLEC's WACC post-Tax of 9.30% and pre-Tax of 11.63%? Please provide reasons.

WACC – Weight Average Cost of Capital

DOMLEC informed stakeholders that the study on the Weighted Average Cost of Capital (WACC) was filed in 2023 and for several months both parties deliberated on the approach that would yield to a reasonable WACC for DOMLEC.

In the final analysis both DOMLLE and the IRC converged on a middle ground that would result in an acceptable WACC that will allow DOMLEC to attract capital investments.

The Commission informed stakeholders that based on the comprehensive review and research undertaken it is of the firm belief that WACC post-Tax of 7.90% and WACC pre-Tax of 9.82% to be applied to DOMLEC's regulatory asset base is considered reasonable and fair and that if WACC is set too high this will result in higher electricity prices for consumers.

Arising from the foregoing, the WACC for DOMLEC would be derived from the following inputs as illustrated in *Table 7* below.

Table 7
Derivation of DOMLEC's WACC

Capital structure	**46.6%/53.4%**
Cost of Debt	5.
Cost of Equity post-Tax **Cost of Equity pre-Tax**	10.51% 14.02%
WACC post-Tax **WACC pre-Tax**	**7.90%%** **9.82%**

The Commission took note of the concerns that were raised; however, the ultimate proposed decision outweighed the same and was accepted by the stakeholders.

The Commission therefore proposes that DOMLEC's WACC pre-Tax should be fixed at 9.82% and WACC post-Tax 7.90%.

Conclusions

DOMLEC highlighted that return on equity has risen globally. The Commission concurs with this view based on the movement in the trend in stock markets and the financial dataset gathered from Professor Damodaran, Reuters and DSM Global Investment Returns. However, the Commission firmly believes that return on equity will trend downwards sooner than anticipated.

The Commission noted that if WACC pre-Tax and WACC post-Tax are set higher than IRC's proposed rates this will likely result in a spike in electricity rates and will have a negative impact on the economy.

The Commission is convinced that WACC post-Tax of 7.90% and WACC pre-Tax of 9.82% to be applied to DOMLEC's regulated asset base is reasonable.

Finally, the Commission acknowledged respondents for the comments, questions, suggestions raised during the stakeholders' engagements on the first consultative document of this critical input which forms a significant part of the tariff rate review process. Stakeholders supported the Commission's by providing their full acceptance of all of IRC's proposed decisions for this WACC study.

This Consultative Document Reference:2024/002/CD-02 hereby serves as the second issuance of the Commission's consultation with stakeholders on the Weighted Average Cost of Capital for DOMLEC with comments on first responses received in August 2024.

Summary of the IRC's Proposed Decisions

- **PROPOSED DECISION 1:**
  DOMLEC's capital structure shall be 46.6% debt and 53.4% equity for the tariff period.

- **PROPOSED DECISION 2**
  DOMLEC's cost of debt shall be fixed at 5.%.

- **PROPOSED DECISION 3**
  The risk-free rate to be the average of the US 10 Year Treasury Bill rate as of July 2023– that is 3.75%.

- **PROPOSED DECISION 4**
  The Commission proposes to use Professor Damodaran ALL US Power Electric Company as the proxy utilities.

- **PROPOSED DECISION 5**
  The Commission proposes a country risk premium of 3.08% be factored in the calculated on the cost of equity and excludes small company size in the computation.

- **PROPOSED DECISION 6**
  *The Commission proposes to use a Beta value of 0.44 based on **ALL** US Power Utilities to be used as proxy beta value for DOMLEC.*

- **PROPOSED DECISION 7**
  *The Commission proposes that the WACC to be applied to DOMLEC's regulatory asset base shall be: **WACC post-Tax of 7.90%***

Summary of Consultation Questions

Consultation Question No 1:
Do respondents have any view regarding the proposed capital structure for DOMLEC should be set at 46.6% debt 53.4% equity? If not, please explain why not?

Consultation Question No 2:
Do respondents agree to use as the cost of debt, the proposed interest rate of 5% based on DOMLEC's long term debt? If not, please explain?

Consultation Question No 3:
Do respondents have any views on the proposed use of the US 10-year Treasury Bond as of July 2023 of 3.75% be used as the basis for fixing the risk-free rate for DOMLEC? If not, please explain.

Consultation Question No 4:
Do respondents agree to use **all** US Power Companies as the proxy utilities proposed by IRC, or the 13 US Power Utilities recommended by DOMLEC? Please provide reasons.

Consultation Question No 5
Do respondents agree that the small company size be excluded in the computation of cost of equity for DOMLEC, but rather the country risk premium of 3.08% be factored in the calculation as well as equity risk premium of 5:06% to be factored in the calculation, instead of 8.27%?

Consultation Question No 6:
Do respondents agree with the Commission proposed Beta (β) of 0.44 for **all** US Power Utilities rather than DOMLEC's proposed Beta (β) of 0.658 to be used as proxy beta value for DOMLEC? Please provide reasons.

Consultation Question No 7:
Do respondents agree to use the Commission proposed WACC post tax of 7.90% and WACC Pre-tax of 9.82%? rather than DOMLEC's proposed WACC post tax of 9.30% and WACC pre-tax of 11.63% Please provide reasons.

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