# CONSULTATIVE DOCUMENT

## NOTICE OF PROPOSED RULE MAKING

DOCUMENT REFERENCE: 2015/002/NPRM-02

# DOMLEC'S INTEGRATED RESOURCE PLAN AND RELATED FIVE YEAR INVESTMENT PLAN

*Comments on Response Received*
*to*
*First Consultative Document*

*April 2015*

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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 time table for this consultation are:

**Document Ref No: 2015/002/NPRM-02**
**Document Title: DOMLEC 's Integrated Resource Plan and Related 5-year Investment Plan – Comments on Responses received to First Consultative Document**

| Event | Proposed Date |
|---|---|
| Publication of Document | March 6, 2015 |
| First Responses closed | March 23, 2015 |
| **Comments on first Responses and Second Issue** | April 2, 2015 |
| Second Responses Close | April 16, 2015 |
| Statement of Results and Commission's Decision | April 23, 2015 |

## Contents

## Introduction and Background

The Commission is engaging in a series of consultations with stakeholders in order to consider and decide on:

a. The proposed Integrated Resource Plan(s); and
b. The proposed 5-year investment(s) related to the same.

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 which completed the process for aligning the regulatory framework for DOMLEC with the principles and intent of Electricity Supply Act 10 of 2006 (ESA) 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 is 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:

- Determination of Weighted Average Cost of Capital (WACC)
- Approval of the Integrated Resource Plan
- Approval of related 5-year 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 Determination of WACC is the subject of an ongoing proceeding Document Ref No: 2015/001/NPRM-01: Weighted Average Cost of Capital for DOMLEC.

DOMLEC submitted its proposals for the Integrated Resource Plan, Least Cost Expansion Plan and related five year investment programme for the Commission's consideration dated June 13, 2014 and February 5, 2015 respectively and the Commission initiated the consultation with the issuance of the first document in this series Document Ref No: 2015/002/NPRM-01.

In this regard, the Commission issued its First Consultative Document on March 6, 2015 and held a public consultation on March 13, 2015. This document sets out the Commission's response to the feedback and comments received during the first round of consultations and sets out the Commission's Proposed Decisions as a result.

## Policy and Legal Framework

The Policy and Legal Framework is presented here again for ease of reference.

**Government Draft Policy**[1]

The Government has an Energy Policy under consideration. The Commission is of the view that the principles in that draft should guide its thinking with regard to the development of and approval of the IRP. The salient features of the policy (at Section 4) are highlighted below:

On **Electricity Supply**, the Government's policy objectives are : –

> *It is the Government's policy to foster a safe, efficient, affordable, and low-carbon national electricity supply that meets international quality standards by promoting the efficient use of imported fossils fuels, and the development of Dominica's domestic renewable energy resources. To achieve these policy goals it will be necessary for Government to:*
>
> - *Ensure that the energy resources available to the island are fully assessed in terms of their potential to economically contribute to the island's electricity supplies*
> - *Evaluate the effect of their exploitation for electricity production on the local environment and on the island's carbon footprint*
> - *Maintain an inventory of the available resources with potential to contribute to the country's electricity demand and update this inventory at regular intervals in line with changing economic conditions*
> - *Ensure the implementation of demand-side-management (DSM) programmes to reduce the long-term demand for increased generating capacity*
> - *Ensure that electricity supplies are generated and used as efficiently as possible and that losses are reduced to an economic minimum.*

Section 4.2 of the Policy which addresses "**Efficiency in Generation**" proffers:

*Government through the IRC will establish an overall heat rate target for diesel engine generation efficiency. This target will set overall efficiency targets for the portion of electricity that is generated by diesel fuel. It will also ensure that generating plants are dispatched in the most economical way to meet the system loads. This means using the available mix of hydropower, conventional generation, and new renewable energy sources to provide reliable power at least cost. Government will ensure that generation planning is such that it will use the principles of integrated resource planning to deliver the required generating capacity at least cost. The planning will take account of all the available energy resources – including geothermal, hydro, diesel, and other utility-scale renewable resources such as wind – as well as the most cost effective way to exploit those resources. If system generation expansion is not properly planned, fuel costs will not be optimized, and feasible fuel saving options (such as use of renewables, cogeneration, and efficiency improvement measures) may be overlooked. Effective capacity planning requires a good load forecast combined with appropriate use of computer-based capacity planning model*

[1] Draft Sustainable Energy Plan of the Commonwealth of Dominica, 15 April 2014

*programme such as the Wien Automated System Planning (WASP) computer model or the Super OLADE Power System Generation and Inter-Connection Planning Model which are used for multi-year electricity system planning studies, making it possible to simulate, and optimize hydro and thermal power system expansion plans. These models are used by several developing country utilities, including some in the Caribbean region, to determine the least costly expansion path that will adequately meet the demand for electric power, subject to user-defined constraints. Minimizing the total system costs of electricity also requires timely and efficient implementation of the selected capacity expansion path. Undue delays in planned implementation may result in the need to implement emergency additions which are more costly over the long-term and the excessive use of peaking units which are less efficient.*

The Policy further mandates the following of the Commission:

1. *The IRC will establish (and review on a regular basis) an overall heat rate target for diesel engines generation efficiency and ensure that generating plants are dispatched in the most economical way to meet the system loads. This means using the available mix of hydropower, conventional generation, and new renewable energy sources to provide reliable power at least cost. The system will be designed to ensure that any fuel usage which results from poor efficiency cannot be passed on to consumers in the fuel surcharge. However, it will remain a cost to DOMLEC. The heat rate target should be reasonable given system operating conditions, and may need to be updated as those conditions change.*

2. *Require DOMLEC to demonstrate that its expansion planning is least cost and based on best practices in expansion planning, as required by the DOMLEC's Transmission, Distribution and Supply Licence 2014.*

**Legal Framework**

The Commission's duties and functions with regard to tariff making are provided for pursuant to provisions in three principal instruments – the Act, the Licence and Commission's Determination "Tariff Regime For Dominica Electricity Services Ltd Document Ref: 2009/004/D9."

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;*

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.

Furthermore, Section 20. (1) (c) of the Act provides a duty for the Commission to "*ensure the security and efficiency of the supply of electricity in Dominica, through the conduct of an efficient long term planning process with due regard for future potential generation sources such as geothermal and wind energy.*"

At Section 20. (1) (e) "*protect the interests of all classes of consumers of electricity as to the terms and conditions and price of supply.*"

At Section 21. (1) (f) The Commission shall: "*regulate prices charged to consumers of electricity where this is not supplied on a competitive basis, and the methods by which they are to charged.*"

At Section 21.(1) (n) The Commission shall: "*review the development plans, expansion programmes and fuel costs efficiencies of licencees.*"

**DOMLEC's Licence and authorization**

The Transmission Distribution and Supply Licence issued to DOMLEC and which became effective on January 1, 2014 sets out the parameters under which DOMLEC operates and its responsibilities regarding the system development. "Condition 2: Scope of the Licence" provides:

1. *This Licence authorizes and gives the Licensee the exclusive right and privilege to transmit, distribute and supply electricity for sale to the public in the Service Territory and to operate, construct, reconstruct, modify or replace the transmission, distribution and supply facilities for these purposes subject to the ESA and the following:*

    a) *Developers of generating facilities that will interconnect with the System by virtue of a Power Purchase Agreement with the Licensee will, as a general rule, be required to provide interconnection to the System at the high voltage (HV) side of the generator step up transformer. Under specific circumstances, subject to the approval of and grant of a transmission licence by the Commission, the developer may build, own and operate the transmission interconnector to the System.*

    b) *Developers of energy resources that are primarily intended for cross border sale of electricity may, with the approval of and grant of a Transmission licence by the Commission build, own and operate the associated transmission system infrastructure to enable such cross border arrangements. If circumstances require and it is prudent to do so, the developer may be eligible for a transmission licence to build and operate the transmission lines to interconnect with the System.*

2. *The Licensee has the exclusive right to supply for sale electricity to third parties for public and private purposes in the Service Territory for which the Licensee is entitled to bill consumers and customers for the electricity supplied at the rates and charges approved by the Commission.*

3. *Notwithstanding the provisions of Clause 2 of this Condition 2, the Commission may allow and issue licences for third party supply to any Development Areas, where there is to be no interconnection with the DOMLEC System and where it is demonstrated that for technical, commercial or other reasons the Licensee is unable or unwilling to extend the electricity supply system to those areas.*

4. *This Licence authorizes and gives the Licensee the right to purchase electricity in bulk from Independent Power Producers for transmission, distribution, supply and sale in the Service Territory.*

5. *For the purposes of satisfying the various references in the ESA, the Licensee is designated as the 'transmission system operator", the "distribution system operator" and the "system operator".*

DOMLEC's duties and responsibilities as "System Operator" are provided at Conditions 19 and 20 of the Licence.

*Condition 19: Duties as System Operator*

1. *The Licensee shall be responsible for dispatching sufficient generating capacity to meet System requirements in a prudent manner taking into consideration various operating considerations, including but not limited to least-cost, planned and forced generator maintenance schedules and operating reserves (both on-peak and off-peak) and subject to the terms and conditions of any PPAs.*

2. *The Licensee shall as far as is practicable and safe dispatch available generation in such a manner that the energy produced and dispatched is at the least cost to consumers.*

3. *The Licensee may purchase some or all of its energy and/or capacity requirements from Independent Power Producers pursuant to relevant PPAs.*

4. *The Licensee may purchase the electricity output from renewable or alternate energy sources on an energy only or capacity and energy basis as appropriate in accordance with the procedures agreed with or established by the Commission and subject to relevant PPAs.*

5. *The Licensee is responsible for the procurement of adequate generation supply, in terms of required energy, capacity and ancillary services to fully meet the needs of its consumers, subject to the procedure for addition of capacity established by the Commission in accordance with its policy document, "Regulatory Policy and Procedure - Adding Capacity to the Public Electricity Supply System 2008/002/D", as amended from time to time.*(Emphasis added)

6. *The Licensee must ensure that adequate reserve generating capacity, both spinning and cold standby, is available at all times to meet the guidelines promulgated by the Commission. The Licensee may provide such reserve capacity itself or may contract some or all of it to any base-load Independent Power Producer with whom a PPA has been signed.*(Emphasis added)

7. ……

*Condition 20: Duty to secure long term system security and reliability*

1. *The Licensee shall periodically prepare and update, in accordance with internationally accepted best industry practice, an Integrated Resource Plan and Least Cost Expansion Plan.* (Emphasis added)

2. *The Commission, when satisfied, after due consultation, that the plans represent the least economic cost for system expansion consistent with internationally accepted best industry practice, will approve the plans following which the Licensee shall implement the approved plan. (*Emphasis added)
3. ……..

## The Planning Process

There are basically two elements to the planning process - first the preparation of an Integrated Resource Plan (IRP) followed by a Least Cost Expansion Plan (LCEP). The first step in this process, however, is to agree on system planning parameters. These are critical as the decisions taken will influence system reliability and investment dollars which ultimately translates into the tariff. In its Decision Document Ref: 2008/002/NPRM-01: "Regulatory Policy and Procedure - Adding Capacity to the Public Electricity Supply System" the Commission describes its expectations and processes for the development of the IRP and consequential LCEP.

*(1) Integrated Resource Plan*

*The Integrated Resource Planning process will:*

- *provide energy forecast and demand forecast;*
- *identify the gap in base, intermediate and peaking capacity;*
- *identify the time in which new capacity is required;*
- *identify the schedule for retiring assets; and*
- *identify the performance and constraints of the transmission and distribution network.*

*Furthermore as provided under* "Condition 7: Reporting Obligations," Clauses 5 & 6 of the Transmission and Distribution Licence:

> "*5. The Licencee shall annually prepare and submit to the Commission a five year forecast of projected loads and generation requirem*ents."
>
> "6. *The Licencee shall, annually, provide the Commission with its capital investment plan and updated five year capital investment forecasts.*"

*The IRP will identify the specific projects required to fill any gap between forecasted demand and supply. It will not initially specify technology types, unit size, or similar details. If a competition is held inputs received from that process will establish, ex-post, the least cost options. If a competition is not held the Least Cost Expansion Plan will inform the decision making.*

*The IRC will review the IRP prepared by the utility to ensure the veracity of the techniques and associated data used to identify investment opportunities, as well as ensuring that the results faithfully reflect the outcomes of the utility's modeling.*

*(2) Least Cost Planning*

*While the IRP will identify the long run development needs for the system and investment opportunities for power producers the Least Cost Expansion Plan (LCEP) produces more granular results and selects the technology of the plant to be added in by modeling various scenarios and selecting the least cost options for the assumptions made. This process is important particularly if generation is to be added without the benefit of competition. It also serves as a useful barometer for analyzing the options that result from a competition.*

DOMLEC states that:

> Domlec uses a combination of historical data and market research to project demand. The long term growth rate is a significant indicator of where demand is projected. The average growth rate over the last five years is combined with current market conditions to estimate the potential market growth.
>
> Secondary data gathered from the relevant public sector agencies such as the Physical Planning Corporation, provides an indication of approved planning permits during the year and likely construction date and scope of operations. Invest Dominica Authority is a good source of information about government and private sector projects although the information is generally lacking in terms of energy consumption data. The national budget is also a critical source of information about government's development plans, especially in the areas of housing and industries.
>
> Private sector agencies such as the Dominica Hotel and Tourism Association and Dominica Association of Industry and Commerce are a good source of information about potential business expansion and new opportunities. The company also consults with several large customers across all customer classes to gather information about their investment plans.

Finally, Table 5-D from the Decision Document Integrated Resource Plan for Electricity – Demand Forecast, Ref: 2009/003/D-01 outlines the process.

| Step | Activity |
|---|---|
| 1 | IRC and DOMLEC agree on the system planning parameters; these are codified |
| 2 | IRC and DOMLEC agree on the assumptions to input into the IRP - Demand Forecast |
| 3 | DOMLEC submits its Demand Forecast to the IRC. The IRC reviews, consults and provides feedback to DOMLEC |
| 4 | DOMLEC prepares a draft IRP and submits to the IRC |
| 5 | IRC reviews plans but simultaneously makes public for a consultation |
| 6 | IRC reviews the results of the consultation incorporate these into feedback to the DOMLEC |
| 7 | DOMLEC adjusts the plan to reflect the feedback from the IRC and resubmits. |
| 8 | IRC approves and make public |

***Table 5-D - The Planning Procedure***

# Responses to Consultations

## Section I – Responses to Pertinent Questions Posed at the Public Meeting

In this section the pertinent issues that were raised at the consultation of March 13, 2015 will be iterated and addressed by the IRC. The Commission has to be guided by the ACT and DOMLEC's licences, any previous determinations and Government's policy as it relates to the matter at hand.

The mandate of the Commission in respect of the ACT and the licence is quite clear. However, duty of care must be exercised with respect to the Government's policy with regard to the National Energy and Sustainable Energy Plans of the Commonwealth of Dominica, though in draft must be guided by the same.

### Issue No. 1

The impact of the geothermal plant was an item of concern as well as the uncertainty surrounding the timing of its establishment and whether DOMLEC would be able to reinforce the network in time for the coming online of this station.

The Commission's response: The Commission is mindful of the uncertainty of the establishment of the geothermal plant and the peripheral issues related to the same, such as the possible impact on the tariff and the capital works that are required to accommodate this station and the associated additional capacity onto the network. The Commission is also mindful that the geothermal station will take at least two years to be completed and in that time, DOMLEC would have had enough time to start and complete any construction works in improving its network to accommodate the new plant. With no certainty as to when construction of the geothermal plant will begin, the Commission's view is that any investments by DOMLEC towards reinforcing the network should be delayed and programmed to reflect the timetable for introducing geothermal, once this is known.

**Issue No.2**

The development of the IRP by DOMLEC was brought into question and whether it is a DOMLEC document without input by the IRC.

The Commission's response: The IRC is mandated by the Act, Part III "Powers, Duties and Functions of the Commission, Sections 19 to 20 subsections (a) to (c) and specifically Section 21(1) subsection (n) which states: "*The Commission shall review the development plans, expansion programmes and fuel cost efficiencies of licencees.*"

The IRC has developed two decision papers that speak to the following:

1. Integrated Resource Plan for Electricity – Demand Forecast, Ref: 2009/003/D-01; and

2. Policy and Procedures for Adding Capacity to the Public Electricity Supply System: Document Ref: 2008/002/D.

As such, the plan to be followed is outlined in the Policy and Procedure for Adding Capacity to the Public Electricity Supply System Table D-5.0 which is stated earlier in this document under the heading " The Planning Process."

Once the IRP is interrogated and determinants are agreed on after the public consultation and the Commission issues its decision approving an IRP; then the IRP become an appoved national plan.

It is also built into DOMLEC's Transmission and Distribution Licence under Clause 7: "Reporting Obligations Conditions 5 and 6 refer:

> *"5. The Licencee shall annually prepare and submit to the Commission a five year forecast of projected loads and generation requirements."*
>
> *"6. The licencee shall, annually provide the Commission with its capital investment plan and updated five year capital investment plan."*

**Issue No. 6**

DOMLEC's insertion of 3.5 Meagawatts of solar capacity as a candidate option in its generation planning mix within the IRP drew attention from one stakeholder who argued that he was informed that a cap exists as to the quantity of intermittent renewable energy that can be put onto DOMLEC's grid. He posited that there is a conflict of interest, by DOMLEC advocating no more and yet planning to add more intermittent renewable to their grid.

The Commission's response: The fact of the matter remains that the IRP submitted by DOMLEC to the Commission, lists a number of candidate options for the proposed generation mix within the next 5 years. This is shown in the following Tables1 and 2:

| Technology Options Considered | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 |
|---|---|---|---|---|
| Geothermal (7MW by 2018) | √ | X | X | √ |
| Geothermal (7MW by 2021) | X | √ | X | X |
| Additional Geothermal capacity from | 2020 | 2023 | N/A | 2020 |
| Reciprocating Engines | √ | √ | √ | √ |
| Solar PV | √ | √ | √ | √ |
| Injection of 2MW demand in 2018 | X | X | X | √ |

Table 1 – Proposed Scenario for the Deployment of Candidate Options

| Year | Capacity Retired (MW) | Capacity Added (MW) | Capacity Added Type | Total Installed Capacity (MW) | Peak Demand (MWgross) | Reserve Margin % | N-2 Contingency (MW) |
|---|---|---|---|---|---|---|---|
| 2014 | 0.00 | 0.0 | | 26.7 | 16.6 | 45.3 | 3.2 |
| 2015 | 0.00 | 0.0 | | 26.7 | 16.8 | 43.5 | 3.0 |
| 2016 | 0.00 | 0.0 | | 26.7 | 17.0 | 41.8 | 2.8 |
| 2017 | 0.00 | 1.0 | Solar - 2x0.5MW | 27.7 | 17.2 | 40.1 | 2.6 |
| 2018 | 0.00 | 7.5 | Geothermal - 2x3.5MW<br>Solar - 1x0.5MW | 35.2 | 17.4 | 77.8 | 6.5 |

Table 2 – Recommended Build Schedule for 2014 to 2018

It must be stated that these options are only candidate options for the purpose of analysis. In the final analysis, it is the prerogative of the Commission to properly examine these options with due consideration to the projected demand, government policy and related capital expenditure, to decide whether to approve or disapprove of any specific candidate option that is listed. It is also a factor that the proposal put forward by DOMLEC is for utility grade PV solutions as opposed to Demand side interventions. The Commission would also advise stakeholders that the addition of capacity would, consistent with policy and DOMLEC's non-exclusive Generation Licence, be subject to competition.

Candidate options are defined as options that are used for modeling the generation mix to meet the forecasted demand.

# Section II– Responses to Consultation Questions

## Integrated Resource Plan

**Consultation Question No. 1:**

**Are stakeholders aware of developments which would impact the assumptions made in the forecast?**

**DOMLEC's answer to Question 1 above.**

*"In the preparation of the Integrated Resource Plan, qualitative assessment methods to derive the demand forecast were utilized. Additionally, DOMLEC consulted with key organizations which could provide information to assess the impact of any major proposed economic activity. Reference is made to section 2.3.1 on pages 7 and 8 of the IRP. DOMLEC is not aware of any other developments which will impact on the assumptions made in the forecast."*

### *The Commission's response:*

The Commission, after reviewing the specific information within the IRP proposal with respect to the methodology utilized by DOMLEC, cannot discern whether DOMLEC did the required market research. It would be minded that DOMLEC should provide the IRC with further information as proof that the market research was undertaken in support of its forecasts.

**(New) Consultation Question No. 1**

**Do stakeholders agree that DOMLEC followed the IRC's stipulation on how the demand forecast should be prepared?**

**Consultation Question No. 2:**

**Do stakeholders agree (subject to any comments in response to Consultation Question No 1) that the derived base, high and low projections for energy growth are reasonable? See Table 3 below.**

| Year | Scenarios (MWh) | | |
|---|---|---|---|
| | High Case | Base Case | Low Case |
| 2014 | 90,742 | 89,177 | 87,275 |
| 2020 | 106,192 | 96,621 | 86,145 |
| 2026 | 126,406 | 104,004 | 81,320 |
| 2033 | 156,479 | 114,456 | 76,044 |
| *Average Growth Rate (2014-2033)* | *2.8%* | *1.2%* | *-0.8%* |

*Table 3 - DOMLEC Sales Projections in 6 year period from 2014 to 2033.*

**DOMLEC states in its written response to Question 3:**

*"DOMLEC agrees because both the methodology and data which resulted in the derived projections are credible."*

## *The Commission's response:*

The Commission's position is derived from the responses to the first consultative question in the previous document. Thus, the Commission expected due consideration to be given by the participants to Table 3 depicting the various forecast scenarios submitted by DOMLEC. Accepting the methodology that DOMLEC used in its derivation of the forecasts would mean that a determination can be made in favor of the results derived by DOMLEC.

The Commission has further re-visited the forecasts for gross generation and sales over a six year period from 2015 to 2019 utilizing various mathematical forecasting techniques and though the figures show slight variances with DOMLEC, they are more in agreement with the base load scenario. See Tables 4 and 5 below.

*Table 4: The Commission's Forecasted Sales in Energy (kWh).*

| Sales Forecasting (kWh x 1000) | | | | | |
|---|---|---|---|---|---|
| Year | **2015** | **2016** | **2017** | **2018** | **2019** |
| Forecasts(+) High Case | 95,594 | 104,944 | 120,862 | 145,084 | 179,343 |
| Forecast(0) Base Case | 92,815 | 99,947 | 109,270 | 127,035 | 148,920 |
| Forecasts(-) Low Case | 88,310 | 85,172 | 80,799 | 75,190 | 68,345 |

*Table 5: IRC Forecasted Gross Generation in MWh*

| **Annual Generation - MWh** | | | | | |
|---|---|---|---|---|---|
| Year: | **2015** | **2016** | **2017** | **2018** | **2019** |
| Forecast (+) High Case | 105,812 | 108,721 | 111,711 | 114,783 | 117,940 |
| Forecast (-) Low Case | 102,902 | 104,704 | 107,584 | 110,542 | 113,582 |

*Table 6: DOMLEC Growth scenarios*

| | Scenarios (MWh) | | |
|---|---|---|---|
| Year | High Case | Base Case | Low Case |
| 2014 | 98,956 | **97,248** | 95,174 |
| 2020 | 116,823 | **106,294** | 94,769 |
| 2026 | 139,061 | **114,415** | 89,461 |
| 2033 | 172,144 | **125,914** | 83,657 |
| *Average Growth Rate (2014-2033)* | *2.9%* | ***1.3%*** | *-0.8%* |

Based on these findings the Commission is now of the view that there is enough evidence to support the "***Base Case***".

**(New) Consultation Question No. 2:**

**Do Stakeholders agree with the IRC's and DOMLEC's position in accepting the "*Base Case*" in growth demand?**

**Consultation Question No. 3:**

**Do respondents agree that the prudent choice at this time would be the low demand growth scenario?**

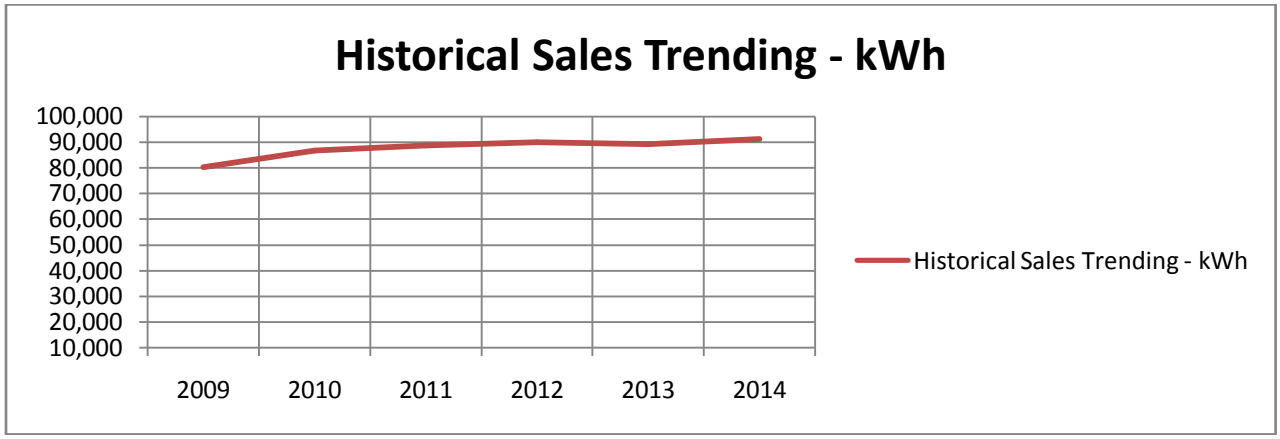
**DOMLEC states in its written response to Question 3:**

*"DOMLEC wishes to point out that 2014 actual demand data shows a growth rate of 2%. Table 7 and the accompanying graph illustrate the year to date growth up to February 2015 of 5.96%. The data below supports the base case scenario for average growth rate as indicated in the IRP."*

| | FEBRUARY | | | | YEAR TO DATE - FEBRUARY | | | |
|---|---|---|---|---|---|---|---|---|
| | | | VARIANCE | | | | VARIANCE | |
| | Actual | Prior Yr | FAV/(UNFAV | % | ACTUAL | Prior Yr | FAV/(UNFAV | % |
| KWHs | | | | | | | | |
| Domestic | 3,161,218 | 2,970,547 | 190,671 | 6.42% | 6,639,502 | 6,300,548 | 338,954 | 5.38% |
| Commercial | 2,868,169 | 2,697,498 | 170,670 | 6.33% | 5,883,178 | 5,527,924 | 355,255 | 6.43% |
| Industrial | 672,973 | 642,128 | 30,845 | 4.80% | 1,337,270 | 1,252,235 | 85,035 | 6.79% |
| Hotel | 97,155 | 88,117 | 9,038 | 10.26% | 201,288 | 195,670 | 5,618 | 2.87% |
| Street Lights | 164,212 | 151,536 | 12,676 | 8.37% | 328,107 | 302,973 | 25,134 | 8.30% |
| Total Sales | 6,963,726 | 6,549,826 | 413,900 | 6.32% | 14,389,345 | 13,579,350 | 809,995 | 5.96% |

*Table 7: DOMLEC's Table 1. Year-to-Date 2015 Sales.*

The Commission originally supported the "*low case*" scenario based on a flat lining of the growth in sales from historical data as depicted below in Figure 3 for the period 2009 to 2014.




| Historical Sales Trending | | | | | | |
|---|---|---|---|---|---|---|
| Year | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** |
| Sales - kWh x 1000 | 80,308 | 86,775 | 88,842 | 90,113 | 89,339 | 91,158 |
| Percentage (Increase/Decrease) over previous year | | 0.081 | 0.024 | 0.014 | -0.009 | 0.020 |

*Table 8 – DOMLEC's Historical Sales*

**Consultation Question No. 4:**

**Do respondents agree that as there may be no choice as to when geothermal becomes available? This being the case, it would be prudent to examine the options in the low demand scenario of geothermal being available in 2017 or 2018.**

**DOMLEC states in its written response Question 4:**

*"For transmission and distribution expansion based on load, the design would only consider the load to be served. For transmission and distribution expansion to accommodate additional generating capacity, the design must be based on the capacity requirements and the lowest cycle costs.*

*DOMLEC wishes to emphasize that the IRP is a resource plan and must focus on generating capacity. The costs associated with this effort will occur regardless of the level of growth. Therefore, the transmission and distribution expansion must encompass future generating capacity with a lesser focus on load growth.*

*Planning for future generating capacity necessitates planning for line design and construction. In the geothermal scenario where the T & D line must be in readiness to accommodate increased capacity, provision must be made in the period 2015 to 2017 to undertake the necessary capital works to facilitate timely interconnection with the geothermal plant. It must be noted that in determining the degree of transmission and distribution expansion required, due care and attention must be given to ensuring that the current levels of reliability and power quality are not compromised. In seeking to achieve these objectives, the least cost scenario for expansion was selected."*

## *The Commission's Response:*

The Commission insists that there is currently too much uncertainty as to the timing for the implementation of the geothermal generating plant at Laudat.

Quoting from the Consultative Document Ref:2015/001/NPRM-01 – "*The Commission believes that there are a number of issues occurring at the national level which will have a direct bearing on the system development and that it would be prudent to have due regard to these in its consideration of this IRP. The impact will be on the capital investment profile and equally important the timing for the addition of new facilities. The Commission therefore believes that in order to conclude this proceeding it must have a full understanding of and a high degree of certainty on the status of negotiations at the Government level on:*

- *Negotiations for and the timing and configuration of the geothermal plant development; and ……..."*

*"At the date of writing, the Commission has not been able to secure responses with sufficient certainty to enable it to consider the implications for the medium and long term development of the public electricity*

*supply system operated by DOMLEC. The challenge is that the IRP informs the development of DOMLEC's investment programme which finds its way as impacts on the company's rate base and therefore becomes important considerations at the tariff review.*

*The Commission is mindful that there is an expectation that much of the uncertainties will be clarified by the end of April 2015. If this is the case there will be time to consider any impacts of these clarifications in the tariff review which is scheduled to commence on May 1, 2015. If the situation is such that the Commission will not be able to conclude on the investment plan during the Tariff review it may decide to make a tariff determination without these impacts and commit to reopening the tariff subsequently when there is sufficient clarity.*

*The Commission is of the view that the following issues have to be resolved*:

*Generation*

- *Configuration and size of the geothermal plant – from a system perspective 2.5MW units may be ideal but this has to be balanced by the economies associated with larger plant e.g. 3.5 MW units.*
- *Timing for the first plant.*
- *Details (Term Sheets) of the Power Purchase Agreements.*

*Transmission and Distribution*

- *Definitive commitments on the proposal for the government to secure financing for the Fond Cole – Sugar Loaf 33kV interconnection.*
- *Based on the above the timing for the funding to be available for project implementation.*
- *Details of the terms under which the facility would be made available to DOMLEC to operate."*

The Commission, for the avoidance of doubt, reiterates its commitment to ensuring consideration of the geothermal development, once there is more certainty by reproducing, hereunder, the relevant extract from the previous issue of this NPRM.

"Notwithstanding the issues raised above the Commission is mindful of the importance for DOMLEC to have some certainty for its long term planning development and therefore in deciding on this IRP the Commission will make definitive decision on the plan, although there may be conditions attached. It will, however be sufficiently definitive to enable DOMLEC to take short and medium term decisions regarding project implementation."

**(New) Consultation Question No. 3:**

**Do Stakeholders agree with the Commission's position as to the uncertainty surrounding the timing of the implementation of the geothermal plant.**

**Consultation Question No. 5:**

**Do respondents agree with the Commission's strategy to examine the options for reinforcing the electricity supply system in the North?**

**DOMLEC states in its written response to Question 5:**

*"DOMLEC is in agreement to examine the options for the reinforcement of the electricity supply in the North. This is supported by the fact that all of the generation expansion scenarios in the IRP include the maintenance of the Sugar Loaf units in cold standby mode in the short term. Reference is made to section 5.3 on pages 28 and 29 in the IRP.*

*DOMLEC has also provided its analyses of the additional options requested by the IRC in the document entitled 'Additional Analysis on the Integrated Resource Plan and Five Year Investment Plan' - Appendix A hereto. However, we are not in support of any option which shows Sugar Loaf in cold standby mode without any additional generating capacity elsewhere. To do so would violate our mandate to maintain the N-2 Reserve Margin."*

## *The Commission's Response:*

The uncertainty surrounding the Government's plan for the establishment of the geothermal station at Laudat significantly influences the Commission's position on these developments. Though the Commission is mindful of the fact that the network would require upgrading, the timing of these pertinent upgrades is of significance.

It is stated in the NPRM that – page 25. *"The Commission has reviewed proposals for the Transmission and Distribution system development that must occur in tandem with the addition of generating capacity and growth in system demand, and has formed the view that DOMLEC's recommendation is a sensible evolution of the system over time. It does not necessarily agree that the development must take place in a single spate of investment, as this would have significant implications for tariffs but that, once the outstanding concerns regarding the generation development are resolved the Transmission and Distribution system can be planned to keep pace and reflect the system implications of those developments.*

*The Commission is, however concerned about the economics of operation in the North of Dominica. It has been noted that the Sugar Loaf Power Station is operated, primarily for quality of supply purposes in the north. While it is also likely that Sugar Loaf also provides load support in that area the Commission believes that the system must be reinforced in the near to medium term. The Commission also believes that there are other options which should be considered and has requested that additional analyses be carried out……..."*

**Results of the analyses that DOMLEC performed considering various options are included in Section III following**.

The Commission is well aware of the system and production constraints that limit the degrees of freedom that DOMLEC has in distributing capacity and energy throughout the island and based on operational prudence the Commission is sympathetic to DOMLEC's position on this matter and commits as indicated earlier to keeping this matter under close and continual review.

## Investment Plan – Comments on Responses

**Consultation Question No. 6:**

**Do respondents agree with the Commission's approach to the determination of DOMLEC's capital investment programme for the period 2015 – 2017?**

**DOMLEC states in its written response to Question 6:**

"*Correction to Table 17*

*DOMLEC wishes to point out that Table 17 "DOMLEC's Historic Capital Investment" in the NPRM document reference 2015/002/NPRM-02 does not accurately reflect the company's capital investment for the period 2009 to 2013."*

Consequently, Table 15, titled "DOMLEC's Reported and amending Historic Capital Investment" is reproduced below as Table 9.

Based on the preceding, DOMLEC sought clarification pertaining to the source of the data included in Table 17 in the previous issue of this NPRM. Table 17 is now superseded by Table 9 below which is the correct version.

| DOMLEC'S Historical Capital Expenditure | | | | | |
|---|---|---|---|---|---|
| | 2009 | 2010 | 2011 | 2012 | 2013 |
| | EC$ | EC$ | EC$ | EC$ | EC$ |
| Land and Buildings | 494,519 | 172,740 | 1,738,030 | 256,607 | 802,196 |
| Generation, T&D | 28,909,370 | 16,426,478 | 12,438,156 | 12,912,877 | 8,778,861 |
| Motor Vehicles | 346,527 | 297,233 | 1,062,062 | 374,195 | 228,000 |
| Furniture & Fittings | 610,615 | 847,902 | 889,349 | 622,150 | 499,103 |
| TOTALS | 30,361,031 | 17,744,353 | 16,127,597 | 14,165,829 | 10,308,160 |

***Table 9: DOMLEC's Reported and Amended Historic Capital Investment***

The Commission notes that the capital expenditure in 2009 was higher than normal because of the generation capacity that was added in that year.

DOMLEC agrees in part with the Commission's approach to the determination of DOMLEC's capital investment programme for the period 2015 to 2017. This agreement covers the expenditures in the Generation, Commercial, Finance, Information Technology, and Administration Departments and Engineering section.

However, DOMLEC is not in support of the removal of the expenditure pertaining to geothermal from the Transmission & Distribution Department asserting that it has credible information which indicates that substantial costs will have to be incurred in support of the geothermal project from 2015 and notes the following:

- *Production well with known power plant capabilities has been established.*
- *Technical discussions regarding the geothermal plant design, configuration and sizing determination are in the final stages.*
- *Negotiations on the Power Purchase Agreement have commenced.*

Given the preceding, DOMLEC has made the necessary budgetary provision in its Transmission and Distribution financial plan. It is to be noted also that the construction period for the 33kV network expansion is estimated at two years. Therefore, the associated costs must be factored into the tariff period if the network expansion is to be ready for the 2017 projected commencement data for the geothermal power plant operations."

## *The Commission's response*

The position of the Commission as quoted from the NPRM remains – page 28:

"As has been indicated in the previous section, the IRP and LCEP are the drivers for determining the company's investment programmes on a rolling basis. It is therefore important that the IRP/LCEP is reviewed at periodic mile stones to assess whether the driving assumptions remain relevant or were in fact realized. This will result in a necessary regular "tweaking" of the investment plans on an on-going basis. The Commission cannot be unmindful of the implications that the approvals of investment plan have on the rate base and the tariff, where on the one hand shortfalls in investment to meet demand or replacement of facilities can impact on the quality of supply while on the other hand over or ill-timed investment can result in excessive rates and less than efficient utilization of capital invested. So while the Commission will tend to be conservative in its consideration of the investment plan it

remains conscious of the importance of balancing the two consequences in the consumers' interest.

In the companion consultation on the IRP, the Commission has raised a number of questions and has also asked DOMLEC to analyse a number of scenarios, the results of which could affect decisions on the Investment Plan. Any conclusions represented in this document will therefore be ultimately conditioned by the outcome of the feedback from the consultation as well as the results of the analyses requested of DOMLEC.

In this regard the Commission's consideration of projects will be two fold (i) those projects or capital sums that will be brought into the rate base during the tariff period and (ii) those projects which although started during the tariff period will be completed and brought into the rate base in the subsequent period."

Furthermore,

"*The Commission continues to have concerns that on a system as small as that of DOMLEC the capitalisation of major, but necessary projects can translate to significant impact on the tariff and while the Commission seeks to minimise these impacts it is faced with the conundrum where system integrity can be compromised if it resiles from timely approval of necessary projects. In this regard, the Commission has been notified by the appropriate authorities that the Government will undertake to provide grant funding for the construction of a 33kV interconnector to facilitate the geothermal plant. Although at the time of writing the details are to be confirmed, the Commission will include the construction of this line in the expansion plan, but notes that as it will be funded, otherwise it will not form part of the investment capital requirements of DOMLEC. The Commission also anticipates that the arrangements for construction of this line will be concluded so as to enable implementation to meet the system requirements for the addition of geothermal capacity.*"

First, in addressing the inconsistency of the historic expenditures quoted in the NPRM Document Ref:2015/002/NPRM-02, Table 17. These figures were derived from DOMLEC's Annual Reports for the period. The Commission was of the view that the figures were correct, however they turned out to be wrong. The Commission thanks DOMLEC for pointing out this discrepancy.

Furthermore, the argument can be put forward that the geothermal plant cannot be established overnight. Construction of the plant will take at least two years to complete and commissioned into commercial operations. This fact cannot be disputed and therefore, if construction of the transmission system upgrade to accommodate the geothermal plant were to begin at the same time, then it would be completed in time for the online commissioning of the plant.

All factors being considered, the uncertainty surrounding the timing of the establishment of the geothermal plant significantly influences the timing of the works associated with the same as well as the funding considerations.

The Commission, though minded of DOMLEC's arguments, is of the view that the amounts that are allocated for the reinforcement of the T&D network should be delayed until a higher degree of certainty is obtained from the government on the timing of the establishment of the geothermal plant.

Re-iterating the Commission's argument: "*The Commission believes that there are a number of issues occurring at the national level which will have a direct bearing on the system development and that it would be prudent to have due regard to these in its consideration of this IRP. The impact will be on the capital investment profile and equally important the timing for the addition of new facilities. The Commission therefore believes that in order to conclude this proceeding it must have a full understanding of and a high degree of certainty on the status of negotiations at the Government level on:*

- *Negotiations for and the timing and configuration of the geothermal plant development*
- *Commitments by the Government to fund the construction of transmission line infrastructure with particular reference to the Fond Cole – Sugar Loaf 33kV interconnection.*

*At the date of writing the Commission has not been able to secure responses with sufficient certainty to enable it to consider the implications for the medium and long term development of the public electricity supply system operated by DOMLEC. The challenge is that the IRP informs the development of DOMLEC's investment programme which finds its way as impacts on the company's rate base and therefore becomes important considerations at the tariff review."*

*The Commission remains of the view that as the proposed capital expenditure (see Tables below), excluding the transmission and distribution infrastructure to support the geothermal plant, is in line with the historic capital expenditure it will approve these amounts and the associated projects without further comment."*

***Table 10***
***DOMLEC – Proposed Investment Programme (excluding T&D Additions for Geothermal)***

| | 2015 (EC$) | 2016 | 2017 | 2018 – 2019 (EC$) | Total (EC$) |
|---|---|---|---|---|---|
| **Generation** | 2,917,923 | 1,605,000 | 1,505,000 | 10,796,276 | 16,824,199 |
| **Commercial** | 1,890,277 | 1,997,158 | 1,868,216 | 3,051,829 | 8,807,480 |
| **Transmission and Distribution** | 2,511,993 | 2,589,712 | 2,665,111 | 5,601,915 | 13,368,731 |
| **Engineering** | 797,572 | 193,297 | 299,490 | 1,020,000 | 2,310,359 |
| **Administration** | 496,350 | 646,800 | 580,900 | 1,005,900 | 2,729,950 |
| **Finance** | 450,000 | 450,000 | 450,000 | 900,000 | 2,250,000 |
| **Information Technology** | 479,805 | 601,520 | 649,075 | 905,000 | 2,635,400 |
| **Total** | 9,543,920 | 8,083,487 | 8,017,792 | 23,280,920 | 48,926,119 |
| **Average per annum (2015-2017)** | | | **8,548,400** | | |

The Commission again re-iterates its argument from the NPRM Ref: 2015/002/NPRM-02:

*"The Commission continues to have concerns that on a system as small as that of DOMLEC the capitalisation of major but necessary projects can translate to significant impact on the tariff and while the Commission seeks to minimise these impacts it is faced with the conundrum where system integrity can be compromised if it resiles from timely approval of necessary projects. In this regard, the Commission has been notified by the appropriate authorities that the Government will undertake to provide grant funding for the construction of a 33kV interconnector to facilitate the geothermal plant. Although at the time of writing the details are to be confirmed, the Commission will include the construction of this line in the expansion plan but notes that as it will be funded otherwise it will not form part of the investment capital requirements of DOMLEC. The Commission also anticipates that the arrangements for construction of this line will be concluded so as to enable implementation to meet the system requirements for the addition of geothermal capacity."*

**(New) Consultation Question No. 4**

**Do Stakeholders agree with the deferring of investment in reinforcing the network until there is more certainty from the Government on the timing of the establishment of the geothermal plant and therefore the Commission's determination of DOMLEC's capital investment for the period 2015 to 2017?**

**Consultation Question No 7**

**Do respondents agree with the Commission's plan to provide for the interconnection arrangements to the geothermal plant when there is certainty as to the timing and the expected contribution by the government to the capital works, noting the Commission's commitment to conclude this matter as part of this proceeding?**

**DOMLEC states in its written response to Question 7:**

*"DOMLEC's position on the IRC's treatment of the capital investment related to geothermal, as articulated under our response to Consultation question 6, are restated here. The IRC's assertion related to the Government's involvement in the investment of the 33kV interconnection has not been confirmed and ought not to be used to justify its decision to exclude the construction of the 33kV interconnection from the investment capital requirements of DOMLEC.*

*The IRC, at the public consultation of March 13th 2015, indicated that they were considering the possibility of re-opening the tariff to enable DOMLEC to apply for authorization of the associated capital investment works and expenditure related to geothermal once the interconnection scenario has been agreed. However neither the Tariff Regime Decision Document Ref: 2009/004/D nor the Electricity Supply Act of 2006 provides a mechanism by which the Company can apply for a re-adjustment of its rates before the end of the tariff period.*

*DOMLEC is interested in being assured of the process by which the IRC proposes to authorize these capital works and expenditure during the tariff period, as well as the parameters, conditions and time*

*schedules within which it would do so. The latter is particularly important because, as has been stressed before, the construction period for the 33kV network expansion is estimated at two years."*

### *The Commission's response*

Under the circumstances due consideration must be given to the requirements of section 20 of the Act, more particularly subsection 20 (c), and section 22 (c) as stated in the Policy and Legal Framework section of this document.

The concerns and arguments presented by the Commission were already addressed in the response to Consultation Question No. 6 above.

## Section III – Additional Network Studies

The Commission requested that additional studies considering a range of scenarios were to be done and from the NPRM these studies included:

1) Generation:
    a. Analyses of the economics and timing of the alternatives to reinforce the system conditions in the North taking into account scenario such as; (a) the geothermal addition is delayed; and (b) constructing the North - South 33 kV interconnection. Thus, analyses to be performed for the following scenarios:

        i. keeping existing Sugar Loaf on cold standby;
        ii. relocating plant from Fond Cole to Sugar Loaf;
        iii. installing new more efficient plant at Sugar Loaf;
        iv. doing nothing.

    b. For the low demand case, conduct analysis where generation is constrained by the addition of 7.0MW of geothermal in (i) 2017 or (ii) 2018. This could be further refined by considering the introduction of 3.5 MW in 2017 and 3.5MW in 2018.

    c. The impact of the Padu expansion on the investment plan, should geothermal be delayed.

2) Transmission:
    a. T&D Options for evacuating the power from the geothermal at 11 kV as a first step in the build out of the transmission infrastructure (does this make economic sense?)

    b. The reconfiguration of the Trafalgar to Fond Cole interconnector (I) by extending it to the Laudat geothermal station (ii) bundling the conductors on that

interconnector thus increasing the capacity (iii) upgrading Padu - Fond cole interconnector utilizing the same approach.

c. The construction of a 33KV interconnector between the geothermal plant (Laudat) with Sugar Loaf and associated options for interconnection with Fond Cole.

**DOMLEC's Response to Additional Analysis on the IRP and Related Five Year Investment Plan**

***BACKGROUND***

*The Independent Regulatory Commission (IRC) has requested that Dominica Electricity Services Limited (DOMLEC) perform additional technical and economic analysis pertaining to the Integrated Resource Plan (IRP) and the Five Year Investment Plan (IP). In its request, the IRC intimated a preference for receipt of DOMLEC's response prior to a public consultation on the IRP and IP to be held on March 13th, 2015. Based on the preceding, the IRC's review of our submission should take into consideration the time constraint.*

*The IRC has categorized its request into a Generation section and a Transmission section. Consequently, for ease of reference, DOMLEC has followed that categorization.*

***GENERATION***

*These analysis of the scenarios listed below are being undertaken in order to determine the effect, (if any), of these scenarios on the Investment Plan (IP). It is important to note that the two key assumptions of the 2015-2019 Investment Plan are as follows:*

*1. Geothermal electricity production via the domestic plant will be available in the beginning of 2017.*

*2. The 33 kV transmission line to the North is built and operational by the end of 2016.*

***SCENARIO A - DELAY OF GEOTHERMAL AND THE CONSTRUCTION OF THE 33 KV TRANSMISSION LINE TO THE NORTH***

***A1. Keeping Existing Sugar Loaf Power Plant on Cold Standby (See IRC Scenario A1 in Appendix 1)***

***a. Assumptions:***

- *Geothermal is delayed beyond 2019; hence 33 kV line from Laudat is delayed beyond 2019.*
- *Northern 33 kV line is built by end of 2016.*
- *Hydro pipeline investment delayed beyond 2019.*

***b. Discussion:***

- *Based on the above assumptions, it will not be possible between now (2015) and the end of 2016 to operate Sugar Loaf in cold standby. Cold standby possibility will only be available from 2017*

*and beyond, and hence would not have any material effect on the current investment plan. This is because the major maintenance activities for Sugar Loaf (SL4 and SL7 major overhaul) are scheduled for 2016, and the capital costs associated with these major overhauls would therefore be realized in that year.*

- *The only other capital expenditures slated for Sugar Loaf is not sensitive to the operating schedules of the units, but is key for the safety and security of personnel and the physical assets. It is also a relatively minor expenditure and will have very little effect on our analysis.*

*In order to affect the plan, we would have had to build and commission the transmission line before the end of 2016 to facilitate cold standby and eliminate the need for the major maintenance expenditure.*

***c. Conclusions:***

- *The effect of the cold standby operations at Sugar Loaf will not have any notable impact on the IP as per the reasons given above.*
- *The following would have the greatest impact on the IP: • The Hydro pipeline/Padu upgrade would have to be deferred beyond 2019 for system capacity/security issues – EC$10.20M.*
- *Deduct Engineering costs - EC$1M.*
- *Deduct the construction costs re the Laudat to Fond Cole 33 kV line -EC$14.24M*
- *Increase major maintenance - EC$3.3M*
- ***Total estimated net impact - EC$22.1Million (reduction)***

***A2. Relocating Plant from Fond Cole to Sugar Loaf (See IRC Scenario A2 in Appendix 1)***
***a. Assumptions:***

- *Geothermal delayed beyond 2019*
- *Northern 33 kV line delayed beyond 2019*
- *Hydro pipeline upgrade delayed beyond 2019*

***b. Discussion:***

- *The cost of relocating generating units can only be justified if there were significant delays in the construction and commissioning of the northern transmission line. This is due to the following factors:*
- *Significant costs/logistics required to successfully relocate units.*
- *Significant effect on the operations and possibly the major maintenance scheduling etc.*
- *Based on the required planning cycle, it would be difficult to commence/complete the relocation activities in 2015. Hence, the analysis is only considering the effects on operation/maintenance and the IP from 2016 and beyond.*
- *The obvious choice of units for relocation would be the MAN generating units. This is because of their efficiency advantage coupled with the easier logistical challenges when compared to other efficient units. However, it will be difficult to relocate all three units due to physical space, infrastructure and configuration of the plant. Hence, only two would be considered for relocation.*
- *To minimize the effects on operation, the relocation would have to be spread over an entire year.*

- *The relocation of the MAN unit will require the reorganization/relocation of facility/units at Sugar Loaf. This may even result in the retirement/decommissioning of SL3 to facilitate the infrastructural adjustments required to receive the MAN units.*
- *This scenario would have a negative impact on the generating system reliability, as in the event of a generation issue in the South, there would be constraints in supplying the larger load center from the North via the Portsmouth Feeder (PMF).*
- *Relocation cost is estimated to be over EC$2.7M.*

***c. Conclusions:***

- *Though costly and having a negative impact on reliability, this scenario for the aforementioned reasons would have a significant effect on the IP as the costs of the northern transmission line (except for the MAN units' relocation costs) will be eliminated.*
- *All 33kV line deferred - EC$44.97M*
- *MAN relocation cost - EC$2.7M*
- *Increased major maintenance - EC$3.3M*
- *Hydro pipeline deferred – EC$10.2M*
- *Engineering costs deferred - EC$1M*
- ***Total estimated net impact – EC$50.1Million (Reduction)***

***A3. New and More Efficient Plants at Sugar Loaf (See IRC Scenario A3 in Appendix 1)***
***a. Assumptions:***

- *No 33kV upgrade*
- *Geothermal delayed beyond 2019*
- *Hydro pipeline upgrade delayed beyond 2019*

***b. Discussion:***

- *Utilizing similar principles as per the relocation scenario, it is assumed that if investments are to be made in new generating units, then the northern transmission line would not have been built.*
- *As per the IRP, the suggested candidate diesel plants were either 1.8MW or 3.45MW MAN units. The 1.8MW units are preferred because of system stability/security issues associated with the larger option.*
- *The installed cost was estimated to be EC$5,574/kW, hence EC$10M/unit*
- *Three 1.8MW units are recommended for a total of 5.4MW. This would facilitate the retirement of SL3.*
- *Total Cost - EC$30M*

***c. Conclusions:***

- *New units - EC$30M (addition)*
- *Major maintenance increase - EC$3.3M*
- *No 33kV upgrade - EC$44.97M (reduction)*

- *No Hydro upgrade - EC$10.2M (reduction)*
- *Hydro engineering - EC$1M (reduction)*
- ***Total estimated net impact - EC$22.8 Million (reduction)***

***A4. Do Nothing (See IRC Scenario A4 in Appendix 1)***
***a. Assumptions:***

- *Geothermal delayed beyond 2019*
- *No 33kV upgrades*
- *Operate units as per current dispatch principle*
- *Major/minor maintenance as per current principle*

***b. Discussion:***

*Contrary to the 2015-2019 IP, this scenario will not contemplate any reduction in diesel unit operation post 2017 as a result of the introduction of geothermal energy in 2017. Hence the level of major maintenance activity will be commensurate with the continued operations as per the pre-2017 period.*

***c. Conclusions:***

- *Remove Padu pipeline upgrade - EC$10.2M*
- *Remove Engineering for Padu - EC$1M*
- *Remove all 33kV upgrades - EC$44.97M*

*Projections show major maintenance activities for the following units in the corresponding years, resulting in a total increase of EC$4M*

*• 2017- EC$1.21M (FC5, FC12, SL6, SL5)*
*• 2018 – EC$1.35M (FC10, FC6, FC11)*
*• 2019 – EC$1.44M (FC12, SL7, SL4, FC8)*

***Total estimated net impact due to the combination of no upgrades and the additional major maintenance costs – EC$52.1Million (reduction)***

***SCENARIO B – ADDITION OF GEOTHERMAL (See IRC Scenario B in Appendix 1)***

*1. Low demand forecast with the introduction of geothermal in 2017. This is already covered in our IP and IRP.*

*2. Staggered introduction of geothermal*

***a. 3.5MW in 2017 and 3.5MW in 2018 •***
*Assumptions/Conclusions*
*• All 33kV lines built - EC$44.97M*
*a. Laudat to Fond Cole built in 2016*

b. *Fond Cole to Sugar Loaf built in 2017*

- *Commence Padu upgrade in 2019 (including engineering) - EC$5.6M*
- *Major maintenance - EC$1.2M*

- ***Total estimated net impact - EC $4.4M (reduction)***

### *SCENARIO C - THE EFFECT OF A GEOTHERMAL DELAY ON THE PADU UPGRADE*

*The proposed upgrade to the Padu pipeline would have to be delayed post 2019.*

### *TRANSMISSION*

*An addendum to the Geothermal Interconnection Study of November 2013 has been prepared in response to the IRC's request for additional information pertaining to Transmission. The addendum is included as Appendix 2 and is dated March 2015.*

***DOMLEC's Response to the IRC on the question of Wind Energy as a Candidate Option:***

***Response to Specific comments on the Least Cost Expansion Planning Process***

*On page 24 of the Consultative document, the Commission indicated its interest in hearing DOMLEC's reasons for the exclusion of wind technology. DOMLEC's reasons are as follows:*

1. *The initial capital outlay to undertake solar PV development is less costly than that for wind energy development. Additionally, the average cost of installing a wind turbine would be significantly increased due to Dominica's terrain.*

2. *Peak generation for wind is during the off peak period, i.e. at night. This fact will result in the following:*

    a. *This limits one's ability to maximize the use of the resource .*

    b. *Excess capacity would have to be stored increasing the overall capital and maintenance costs.*

    c. *Given DOMLEC's current generation configuration, utility scale wind turbines pose a threat to system reliability and stability during off peak .*

## *The Commission's response:*

The analyses confirm the Commission's view that the investments in infrastructure to enable evacuation of the energy from the geothermal plant can be delayed and implemented in concert with the development of the domestic geothermal plant.

## Proposed Decisions

### Integrated Resource Plan (IRP)

The Commission will approve the IRP submitted by DOMLEC subject to the addition of new capacity by means of competition, in accordance with Policy and DOMLEC's non – exclusive Generation Licence.

**(New) Consultation Question No. 5:**

**Do the stakeholders agree with the Commission's decision on the IRP?**

### Least Cost Expansion Plan (LCEP)

The Commission proposes that that the investments in infrastructure to enable evacuation of the energy from the geothermal plant can be delayed and implemented in concert with the development of the domestic geothermal plant.

### Capital Investment Plan(CIP)

The Commission will approve DOMLEC's Capital Investment Plan 2015 – 2018 in accordance with Table 11 below.

| | 2015 (EC$) | 2016 | 2017 | 2018 (EC$) | Total (EC$) |
|---|---|---|---|---|---|
| **Generation** | 2,917,923 | 1,605,000 | 1,505,000 | 5,353,138 | 11,381,061 |
| **Commercial** | 1,890,277 | 1,997,158 | 1,868,216 | 1,663,100 | 7,418,751 |
| **Transmission and Distribution** | 2,511,993 | 2,589,712 | 2,665,111 | 2,751,677 | 10,548,493 |
| **Engineering** | 797,572 | 193,297 | 299,490 | 500,000 | 1,790,359 |
| **Administration** | 496,350 | 646,800 | 580,900 | 497,300 | 2,221,350 |
| **Finance** | 450,000 | 450,000 | 450,000 | 450,000 | 1,800,000 |
| **Information Technology** | 479,805 | 601,520 | 649,075 | 460,000 | 2,175,400 |
| **Total** | 9,543,920 | 8,083,487 | 8,017,792 | 11,675,215 | 37,335,414 |
| **Average per annum (2015-2017)** | | | **8,548,400** | | |

*Table 11 – DOMLEC Proposed Investment Programme to 2018 (Excluding T&D Additions for Geothermal)*

## Concluding Comments

The Commission thanks DOMLEC for its written responses to the specific questions posed in the previous consultative document. Although this comprised the only written responses received, several issues and comments were raised at the public hearing, held on March 13, 2015, as part of this consultation. The Commission also thanks those who attended and participated.

The Commission agreed to additional time by granting another consultation to allow participants to review the consultative documents in detail and be able to meaningfully contribute at the next consultative hearing. Some of the positions on certain pertinent matters have been revisited and the Commission has reviewed its position on the same.

It is hoped that at this final consultation, discussions will be centered around the issues and in the final analysis, all comments will be considered in the Commission reaching its decision.