

December 16, 2019

Doreen Friis
Regulatory Affairs Officer/Clerk
Nova Scotia Utility and Review Board
1601 Lower Water Street, 3rd Floor
P.O. Box 1692, Unit "M"
Halifax, NS B3J 3S3

Dear Ms. Friis:

Re: M08929, Integrated Resource Planning (IRP) Draft Terms of Reference

In its letter of October 25, 2018 in matter M08059, the Nova Scotia Utility and Review Board (Board) directed Nova Scotia Power Inc. (NS Power) to undertake an IRP process for completion by mid-2020.

NS Power has been working with Board staff and stakeholders since early 2019 to satisfy a number of Pre-IRP deliverables, and has held four technical conferences to provide updates and solicit input. On October 19, 2019, NS Power circulated its Pre-IRP Final Report to stakeholders (with amended version issued November 1, 2019), concluding the pre-IRP phase of work.

NS Power has worked with Board staff and consultants, Synapse Energy Economics and Bates White Economic Consulting, in the development of the draft Terms of Reference (TOR) for the 2020 IRP.

NS Power next circulated the draft TOR to stakeholders and requested comments and feedback. Comments were received from the following parties:

Stakeholder (and Consultant)	Comments Received	Attached as Appendix
SWEB Development	5-Dec-19	C
Efficiency One	6-Dec-19	D
Port Hawkesbury Paper	6-Dec-19	E
Small Business Advocate	6-Dec-19	F
Consumer Advocate	11-Dec-19	G
Ecology Action Centre	11-Dec-19	H
Alternative Resource Energy Authority	12-Dec-19	I
Halifax Regional Municipality	12-Dec-19	J
Natural Forces	Advised comments would be provided by end of December 2019	

Attached are the comments received from the stakeholders as of today's date and a matrix (Appendix B) setting out all comments by category and indicating NS Power's response.

Many of the comments received were with respect to specific considerations for scenario development, evaluation criteria, and modeling approach. The Terms of Reference document provides a framework for the IRP process, including objectives, a high-level overview of approach, and major milestones, but does not specify details that will be brought forward for stakeholder comment throughout the remaining IRP phases. NS Power appreciates these comments and will consider them as these phases are undertaken (e.g. Analysis Plan, Assumptions, and Modeling phases). NS Power has revised its TOR in response to some of the comments with this view and attaches a copy of the draft Terms of Reference (Appendix A) and schedule for the balance of 2019 and 2020.

NS Power respectfully requests approval of the draft Terms of Reference.

Yours truly,



Nicole Godbout
Director, Regulatory Affairs

c: 2020 IRP stakeholders



2020 Integrated Resource Plan Terms of Reference



INTRODUCTION

Today's Planning Environment

There is an increasingly dynamic and complex resource planning environment facing electric utilities today as the energy industry is undergoing a period of profound change and uncertainty driven by climate change, new technologies, regulatory and legal developments, and evolving customer expectations.

The global drive for carbon dioxide emissions reduction is expected to trigger increased electrification of fossil fuel-based sectors (e.g. heating and transportation) paired with further reductions in the emissions of the electricity sector. On October 30, 2019 the Province of Nova Scotia passed the Sustainable Development Goals Act, which established provincial greenhouse gas emission reduction goals of at least 10% below 1990 levels by 2020; at least 53% below 2005 levels by 2030; and “at net zero” by 2050.

A growing consensus of economy-wide studies is that electrification of vehicles and buildings will play an important role in a least-cost plan for decarbonization. Understanding how the electricity sector will contribute to mitigating climate change and supporting emerging commitments and/or policies at the global, federal, provincial and municipal levels (including both emission reduction and acceleration of fossil fuel unit retirements) will be a foundation of the 2020 Integrated Resource Plan (IRP) analysis. The ongoing evolution of environmental and energy policy will require us to evaluate the opportunities for the integration of more economic renewable energy in Nova Scotia, the replacement options for coal-fired units, and how we can leverage new and existing technologies to preserve or enhance reliability and modernize the electricity system to create a smarter, more resilient grid on a least-cost basis.

The Sustainable
Development Goals Act
established that
Nova Scotia
greenhouse gas emissions
must be reduced to
“net zero” by 2050.



While policy continues to direct decarbonization, innovative technologies have emerged in the energy sector that have the potential to transform the industry. Renewable resources are economically competitive today for energy production; these resources and other promising technologies, such as battery storage, are forecast to have further significant cost declines (although the exact timing of the realization of these declines is uncertain). While the understanding of the capability of many of these technologies is evolving, it is clear these resources provide multiple “value streams” which will provide benefits to customers.

In addition to the opportunities renewable generation and battery storage present at the utility level, there is an expected increase in the adoption of Distributed Energy Resources (DERs). The operation of DERs has the potential to introduce benefits and challenges to the electricity system. As more non-conventional generation is introduced to the grid, utilities will need to develop a plan for ensuring the essential grid services required for stability and reliability are in place. An important component of the long-term Strategy will be the evaluation of the existing transmission system capabilities and limitations, and how new transmission investments¹ and potential regional interconnections can enable further integration of renewable resources and complement a resource portfolio.

In 2018, the Federal Government amended the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations. This amendment required the closure of all coal-fired units in Canada by December 31, 2029. The Province of Nova Scotia has an agreement-in-principle with the Government of Canada to develop a new “equivalency agreement” providing Nova Scotia with the ability to continue to achieve meaningful GHG reductions through moving directly from fossil fuel generation to clean energy sources while enabling Nova Scotia's coal-fired plants to operate at some capacity from 2030 to 2040. This allows NS Power to use existing thermal generation resources less often overtime as we introduce new options for clean electricity, in the most affordable manner for customers.

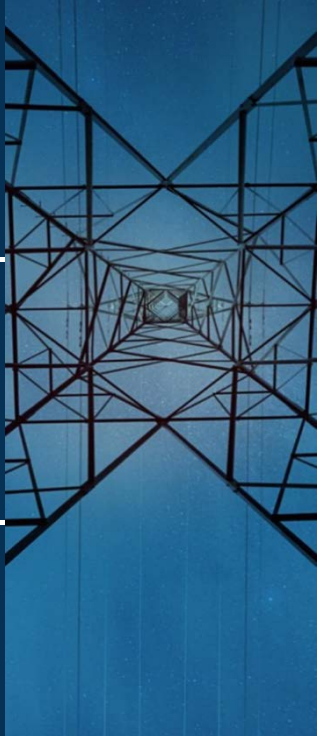
Given the interplay of these key areas, this IRP will establish evaluation criteria for ranking portfolios and assessing relative benefit and risk (e.g. long-term economics, greenhouse gas emission reductions, near-term affordability, reliability, exposure to risk, etc.). In addition, in order to address the substantial uncertainty underlying the analysis, a critical element of the IRP will be to identify signposts (i.e. items to monitor) which could trigger a material change in strategic direction and/or the optimal path forward.

In order to execute this undertaking in a manner which is consistent with industry-leading IRP practices, NS Power has engaged Energy and Environmental Economics Inc (E3) as its primary consultant for the IRP process.

¹ Transmission investments include “poles and wires” as well as stability resources such as synchronous condensers and static var compensators.

Objectives

The objectives of the 2020 Integrated Resource Plan (IRP) are:

- 1 Develop a robust,² risk-weighted least-cost long-term electricity strategy (“the Strategy”) that delivers energy in a safe and reliable manner, continues provincial decarbonization via non-emitting resources, where appropriate, and maintains affordability for customers across a range of foreseeable future scenarios.
 - 2 Develop an Action Plan and Roadmap describing the key tasks to be undertaken in the next five years to implement the Strategy and identify signposts to monitor and decision gates to be addressed in order to enable the appropriate triggering of changes to the Strategy, based on future changes in the planning environment.
 - 3 Develop a collaborative, transparent and evergreen electric utility resource planning process in Nova Scotia that reflects industry best practices in the area of resource planning and promotes understanding and consensus among interested parties.
- 

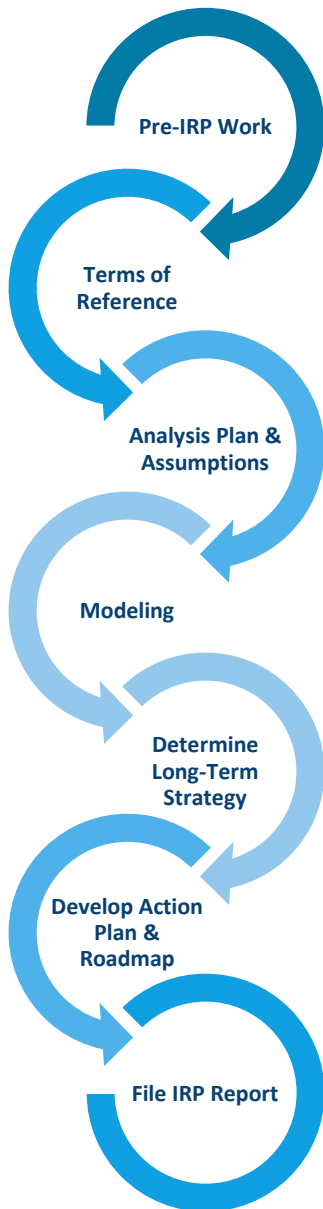
Purpose of the 2020 IRP

The IRP is a comprehensive public utility planning exercise that integrates resource options (both supply and demand-side) in order to develop a long-term electricity strategy for the Utility. The IRP provides a roadmap to guide the Utility’s strategy for meeting its resource needs over the planning horizon. It is directional, not prescriptive in nature. The IRP does not commit the Utility to certain courses of action or foreclose options determined to be in the interests of customers subsequent to completion of the process. Instead, the plan is meant to provide the Utility with flexibility to effectively accommodate a range of future uncertainties and opportunities.

² The term “robust” refers to the ability of a plan to withstand realistic potential changes to key assumptions.



APPROACH



Overview

The IRP will take into account the significant uncertainty facing the Utility by employing a modernized planning approach. NS Power’s consultant E3 will provide guidance to the Company on this approach throughout the IRP process. The Company will complete the IRP in collaboration with the Nova Scotia Utility and Review Board’s (UARB) staff and its consultants.

Stakeholder input is integral to the IRP process, which will establish the strategic direction for the electricity future for Nova Scotia. The Company will promote transparency with stakeholders throughout the IRP process through continued regular engagement sessions, the distribution of draft materials for stakeholder review and input throughout the IRP phases, and individual meetings to discuss feedback and address questions.

NS Power will consult with stakeholders throughout the IRP process; the Company will host workshops in addition to those listed in this document as the need may arise.

Confidential Information

NS Power will use publicly available information in the development of this IRP, where possible. With respect to non-public transmission information, NS Power will comply with the OATT Standards of Conduct.

Developing An Electricity Strategy for the Future

The IRP process will seek to identify the least-cost, least-risk portfolio. Traditionally, the primary decision criterion used for IRP modeling has been the minimization of the cumulative present value of the annual revenue requirements over the 25 year planning horizon (adjusted for end-effects).

NS Power will continue to use this primary metric to guide resource planning, and will also assess others of increasing importance, including:

- Magnitude and timing of electricity rate effects;
- Reliability requirements for supply adequacy;
- Provision of essential grid services for system stability and reliability;
- Plan robustness (the ability of a plan to withstand plausible potential changes to key assumptions);
- Reduction of greenhouse gas and/or other emissions; and,
- Flexibility (limitation of constraints on future decisions arising from the selection of a particular path).

An Analysis Plan will establish how these metrics will be used as the evaluation criteria for the IRP modeling. A range of plausible alternative scenarios reflecting the breadth of uncertainty facing the electricity industry will be developed and planning models employed by NS Power and its consultants will be used to evaluate these alternative scenarios. For each scenario, optimal capacity expansion modeling will produce least-cost portfolios in the form of a resource plan (including new generation, transmission, and demand-side options, as well as associated retirements of existing units). These portfolios will be evaluated for operational feasibility using appropriate electricity system modeling tools, and iterative analysis will be conducted as required.

Once specific plans are identified, they will be assessed against the evaluation criteria. For applicable scenarios of interest, models will be used to evaluate the impacts of “bookend” values of assumptions (e.g. “high” or “low” cases for key inputs) to test plan robustness and exposure to risk.

The results of the modeling will form a summary of findings, a long-term Strategy for electricity supply in Nova Scotia, and the development of a Roadmap and near-term Action Plan to implement the Strategy.

NS Power's Integrated Resource Plan will examine scenarios for replacement of all coal units by both **2030 and 2040, and earlier** as economic.

Key Questions for the 2020 IRP



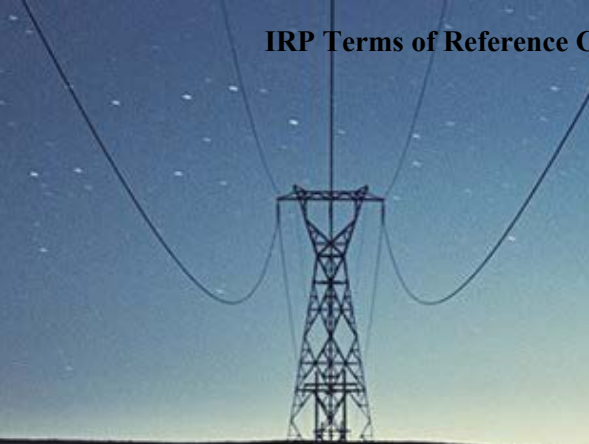
What is the outlook for provincial decarbonization and the utility's role in this?

What are the alternative environmental scenarios we should examine?

What is the outlook for electricity load in Nova Scotia over the next 25 years?

What are the viable demand-side and supply-side resources to meet the load and grid requirements?

What are the near-term actions we need to take?



PROCESS & DELIVERABLES

1

Establish Analysis Plan

The Analysis Plan will describe in detail the modeling and evaluation process to be undertaken for the IRP. It will include the portfolio evaluation criteria, scenarios and sensitivity analyses, and descriptions of the modeling approach and phases. It will include consideration of the modeling tools to be used and their application in the process, and identify specific treatment of modeling inputs, including supply-side and demand-side resources and transmission investment.

Deliverables: Draft & Final Analysis Plan

Develop Input Assumptions

The Input Assumptions will provide base cases and, where appropriate, bookend values or alternative scenarios or sensitivities for the following areas:

- Load forecast, reconciled with the effects of:
 - Energy efficiency programs;
 - Demand response programs;
 - Behind-the-meter solar resources;
 - Increases in load due to electrification;
- New supply-side options (both large scale and distributed), including:
 - Capital and operating costs;
 - Fuel costs;
 - Operating parameters;
 - Availability/expected lead time;
 - Capacity value and energy provision;
 - Provision of essential grid services;
- Demand-side resource options, if not considered as part of the load forecast;
- Existing supply-side options;
- Current and future potential environmental constraints;
- Financial assumptions.

The source of assumptions will be documented and, where possible, rely on independent and/or vetted publicly available information.

Deliverables: Draft & Final Input Assumptions

2

 **Evaluate Potential Resource Plans**

3

Using capacity expansion models and other models as identified in the Analysis Plan, NS Power and its consultants will compare the portfolios across the range of scenarios and rank them using the established evaluation criteria. These rankings and other insights gained from the modeling will be compiled.

Deliverable: Modeling Results

 **Develop Strategy, Roadmap and Action Plan**

4

The modeling results from Step 3 will be used to compile observations and findings in order to guide the development of a long-term electricity Strategy,³ the associated Roadmap and the short-term Action Plan, including consideration of “signposts” to monitor, future decision gates, and related triggers of changes to the Strategy.

Deliverable: Draft Findings, Roadmap & Action Plan

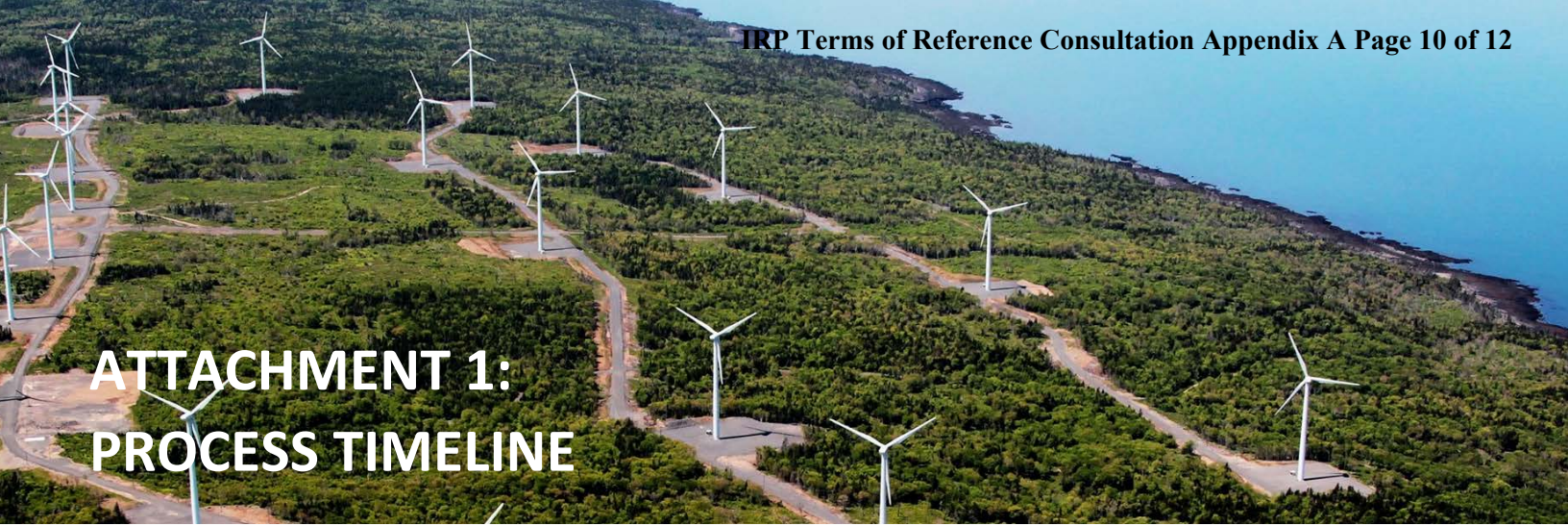
 **File the IRP Report**

5

The IRP will culminate in a report to the UARB which will provide the deliverables listed above, summarize the project, and lay out the long-term Strategy, Roadmap and Action Plan for the future of electricity supply in Nova Scotia.

Deliverables: Draft & Final IRP Report

³ A Reference Plan for use in the avoided cost calculations of energy and capacity from DSM will be included as a subset of the Strategy.



ATTACHMENT 1: PROCESS TIMELINE

Q2 2019

IRP Process teleconference with stakeholders	May 24 2019
Introduction to IRP stakeholder workshop	June 28 2019

Q3 2019

Pre-IRP Deliverables circulated to stakeholders	July 31 2019
Pre-IRP Deliverables Review stakeholder workshop	Aug 7 2019
Additional Pre-IRP Deliverables Review stakeholder workshop	Aug 27 2019

Q4 2019

Draft Terms of Reference circulated to stakeholders for comment	Nov 29 2019
Stakeholder comments on draft Terms of Reference	Dec 5 2019
Terms of Reference submitted to UARB for approval	Dec 16 2019
IRP kickoff stakeholder workshop)	Jan 2020

Q1 2020

Draft Analysis Plan circulated to stakeholders	Jan 20 2020
Draft Assumptions circulated to stakeholders	Jan 20 2020
Assumptions & Analysis Plan stakeholder workshop(s)	Feb 2020
Stakeholder comments on Draft Assumptions and Analysis Plan	Feb 14 2020
Final Assumptions & Analysis Plan issued	Mar 5 2020
Modeling phase begins	Mar 2020

Q2 2020

Interim Modeling Progress update and stakeholder workshop	Apr 2020
Stakeholder Comments on interim Modeling	April 30 2020
Final Modeling results circulated to stakeholders	June 5 2020
Final Modeling & Analysis stakeholder workshop	June 2020
Stakeholder comments on Modeling & Analysis	June 30 2020

Q3 2020

Draft Findings, Roadmap & Action Plan circulated to stakeholders	July 9 2020
Stakeholder comments on Draft Findings, Roadmap & Action Plan	July 23 2020
Draft IRP Report circulated to stakeholders	Aug 20 2020
IRP Findings stakeholder workshop	Aug 2020
Stakeholder comments on Draft IRP Report	Sept 10 2020
Final IRP Report filed with UARB	Sept 30 2020

IRP TERMS OF REFERENCE STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
E1	Objectives	It is encouraging to see NS Power's commitment to adapting the electricity system in coordination with climate change initiatives and decarbonization of the Nova Scotia system. The IRP process is also "supporting emerging commitments and/or policies at the global, federal, provincial and municipal levels" which EfficiencyOne is also supportive of.	No changes required
EAC	Objectives	In particular, I was pleased to see the language of the second and third objectives on page 3. We believe we need certainty, yet flexibility in the changing policy landscape in the next year. I believe that the second objective and the 'signposts' give some of that flexibility.	No changes required.
HRM	Objectives	As the IRP and HalifACT 2050 both move forward to adoption, I would like to explore ways to support our mutual priorities that will no doubt emerge. Decarbonization of the electric grid and electrification of the building and transportation sectors are critical to meeting national and provincial climate change objectives. The terms of reference should recognize shared priorities and explore ways to cooperate with municipalities to advance resiliency and emissions reduction.	No changes required.

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
HRM	Objectives	How will the IRP align with HalifACT 2050 objectives (e.g. evaluation criteria, risk weighting, risk assessment)?	NS Power welcomes HRM’s engagement throughout the IRP process to provide input on how NS Power’s IRP might be informed by the HalifACT initiative.
AREA	Objectives	The Objectives suggest a preference for “affordable” rates, but the Developing an Electricity Strategy for the Future section mentions least-cost. AREA supports the least-cost concept and suggests that it should be used in the Objectives replacing “affordable”.	Objective 1 on page 3 refers to a “robust, risk-weighted, least-cost, long-term electricity strategy”. Additionally, the primary metric identified on page 6 is minimization of the cumulative present value of the annual revenue requirements over the planning horizon.
EAC	Metrics	NS Power will incorporate this comment as part of the Analysis Plan. This item will be considered as part of the Process & Deliverables Step 1 – Establish Analysis Plan as described on page 7 of the TOR.	No changes required.
SBA	Metrics	NSP should establish a metric that is calculated with each case modeled that will show the actual rate impact each plan/scenario will create for each year of the first 10 years of a plan	NS Power will incorporate this comment as part of the Analysis Plan. This item will be considered as part of the Process & Deliverables Step 1 – Establish Analysis Plan as described on page 7 of the TOR.
E1	Metrics	NS Power should develop leading and lagging indicators relating to each “signpost”.	This is an item to be determined and will be addressed as part of Process & Deliverables Step 4 – Develop Strategy, Roadmap and Action Plan as noted on page 8 of the TOR and discussed with stakeholders.

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
E1	Metrics	<p>The draft TOR specifies that the Analysis Plan will establish how six secondary metrics will be used as evaluation criteria for the IRP modelling, in addition to the “primary metric” of cumulative present value of the annual revenue requirements over the planning horizon. It is important to note that the primary metric is readily quantifiable and easily understood, while the other six are not. For example, measuring and comparing the “flexibility” and “robustness” of different resource plans will be difficult and possibly contentious, as will determining the appropriate weighting of these six metrics against each other and against the primary metric.</p> <p>EfficiencyOne recommends that if NS Power intends to use these six metrics in addition to the primary metric, it objectively define exactly how it will do so in the TOR. Not making this decision now leaves the door open for stakeholders to put inconsistent emphases on a subset of these metrics down the road, or to abandon them entirely.</p>	<p>This is an item which will be addressed as part of the Analysis Plan. This item will be considered as part of the Process & Deliverables Step 1 – Establish Analysis Plan as described on page 7 of the TOR.</p> <p>Stakeholders will have the opportunity to provide comments on the Assumptions and the Analysis Plan, as set out in the Q1 2020 Schedule in the TOR.</p>
SBA	Constraints / Assumptions	<p>NSP should include in the ‘road map’ illustrative examples of what would change in the resource plan when signposts introduce major departures from the plan assumptions</p>	<p>NS Power agrees with this comment. Such examples will be included in the final IRP Report. NS Power will engage with stakeholders during the IRP process with respect to determination of the relevant signposts.</p>

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
E1	Constraints / Assumptions	<p>EfficiencyOne’s understanding of the Sustainable Development Goals Act1 (SDGA) is that the Province of Nova Scotia will achieve net zero greenhouse gas emissions by 2050, but that the specific targets for the electricity sector have not yet been determined. EfficiencyOne notes that the electricity system may need to reach net zero before 2050, in order to allow time for electrification of other emitting end-uses such as transportation.</p> <p>The TOR should indicate how the IRP will consider the goals in the Sustainable Development Goals Act and whether or not all IRP scenarios will be subject to emissions caps stemming from the SDGA.</p>	<p>NS Power agrees that the SDGA goals will be critical in developing the scenarios for the IRP. This comment will be addressed as part of the Process & Deliverables Step 1 – Establish Analysis Plan and Step 2 – Develop Input Assumptions. Any current and future potential environmental constraints (including those mandated by legislation) will be included as part of the Input Assumptions and the Analysis Plan and discussed with stakeholders.</p>
E1	Constraints / Assumptions	<p>The TOR should indicate if and how the Atlantic Clean Energy Initiative and the Clean Power Roadmap for Atlantic Canada will be considered in the IRP.</p>	<p>NS Power will address this comment in its Assumptions and Analysis Plan.</p>
E1	Constraints / Assumptions	<p>The TOR should explain how the cost of carbon (e.g. the market price of carbon reductions) will be captured in the modelling process. Will revenues from the sale of carbon credits be accounted for in the revenue requirement calculation for each scenario?</p>	<p>This is covered as part of the Process & Deliverables Step 1 – Establish Analysis Plan and Step 2 – Develop Input Assumptions. Any current and future potential environmental constraints and how they will be accounted for, will be included as part of the Input Assumptions and the Analysis Plan and discussed with stakeholders.</p>
E1	Constraints / Assumptions	<p>The TOR should indicate whether NS Power plans to do any stochastics and if so, on which variables.</p>	<p>This is covered as part of the Process & Deliverables Step 1 – Establish Analysis Plan and Step 2 – Develop Input Assumptions. NS Power is considering stochastics in its Analysis Plan development but has not determined whether it will be necessary for this exercise.</p>

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
E1	Constraints / Assumptions	The TOR should indicate whether Short Term runs will be performed at the hourly or five-minute interval.	This is an item which will be addressed as part of the Analysis Plan. This item will be considered as part of the Process & Deliverables Step 1 – Establish Analysis Plan as described on page 7 of the TOR.
E1	Constraints / Assumptions	The TOR should explain if and to what degree the transmission and distribution systems will be considered in the IRP.	This is an item which will be addressed as part of the Analysis Plan. This item will be considered as part of the Process & Deliverables Step 1 – Establish Analysis Plan as described on page 7 of the TOR and discussed with stakeholders.
CA	Constraints / Assumptions	We appreciate the goal of “a robust, risk-weighted least-cost long-term electricity strategy.” We note that an IRP faces two types of risk: events that can be accommodated in the future by altering the later parts of the plan (e.g., rising gas prices through the 2020s, or steep decline in storage cost, both of which will change choices of capacity additions in 2030) and those that change the economics of choices after they have been made (e.g., widespread adoption of solar and storage behind the meter in the 2030s, stranding capacity added in the 2020s). The IRP needs to weight the latter sort of risks, while recognizing the differences among supply plans in terms of accommodating changes of the first type.	This is covered as part of the Process & Deliverables Step 1 – Establish Analysis Plan and Step 2 – Develop Input Assumptions. Current and future potential cost or availability constraints will be included as part of the Input Assumptions and the Analysis Plan and discussed with stakeholders.

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
CA	Constraints / Assumptions	The TOR does not emphasize reliability analysis, which will be important in determining the capacity benefit of renewables, storage, and the Maritime Link, and thus the amount of back-up peakers or storage needed to maintain a reliable system. In particular, NSP needs to be careful to state reliability contribution on a consistent basis (e.g., either load-carrying capability or contribution equivalent to 150-MW steam units that require a 20% reserve), rather than a mix of approaches.	NS Power agrees with this comment. It will be addressed as part of the Process & Deliverables Step 1 – Establish Analysis Plan and Step 2 – Develop Input Assumptions and discussed with stakeholders.
HRM	Constraints / Assumptions	Will NSP validate its key assumptions? If so, will it compare them to metrics generated by significant customers and key stakeholders such as the Halifax Regional Municipality?	NS Power will validate the IRP’s key assumptions. This is covered as part of the Process & Deliverables Step 1 – Establish Analysis Plan and Step 2 – Develop Input Assumptions, as well as the respective stakeholder engagement planned for each of these phases.
HRM	Constraints / Assumptions / Scope	Will the IRP address access to equitable energy for all stakeholders as technologies develop?	As with the issue of ownership, the IRP does not detail issues of access to energy; it sets out the anticipated lowest-cost strategy which complies with all legislated and environmental requirements. This is an area that might be appropriate for Action Plan consideration at the conclusion of the IRP.

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
AREA	Constraints / Assumptions / Scope	The Developing an Electricity Strategy for the Future section indicates that NSPI has, and will continue to rely upon minimizing cumulative present value of the annual revenue requirements, but this suggests continued NSPI ownership of assets. This assumption is no longer aligned with the pursuit of least-cost scenarios as noted in our submission 13 September 2019. The minimization exercise should be on cost to rate payers, not revenue requirement.	NS Power’s IRP provides a roadmap to guide NS Power’s strategy for meeting its resource needs over the planning horizon. As discussed during technical conferences, the IRP is ownership agnostic. The IRP looks at the resources required to meet electricity needs over a long-term span; it does not address who owns the assets required to produce the energy.
AREA	Constraints / Assumptions / Scope	Given that it has been shown that NSPI is no longer the least-cost financing entity for clean energy assets, there will likely be contention during this process. However, there is no time allotted for this healthy debate.	NS Power’s IRP will assess the least-cost options for meeting its resource needs over the planning horizons. The IRP looks at the resources required to meet electricity needs over a long-term span; it does not address who owns the assets required to produce the energy. NS Power will consider how to robustly model various capital cost and financing alternatives.
EAC	Scenarios	...we were pleased to see direct language about modelling efforts to explore a complete coal phase-out by 2030, and other dates where economic.	No changes required.
E1	Scenarios	The TOR should indicate that all modeled scenarios will comply with applicable regulations, or confirm that all scenarios will have embedded in them a requirement to be compliant with all applicable regulations.	This is covered as part of the Process & Deliverables Step 2 – Develop Input Assumptions. Any current and future potential environmental constraints will be included as part of the Input Assumptions.
SBA	Scenarios	NSP should model a scenario where Canada, including Nova Scotia, eliminates CO ₂ emissions from the economy.	NS Power agrees with this comment and will include it in the scenario development during the Analysis Plan stage.

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
SBA	Scenarios	NSP should include, within scenarios or sensitivity, significant potential breakthroughs in terms of cost or performance, which will act as a type of robust ‘what if’ testing.	NS Power agrees with this comment. This is covered as part of the Process & Deliverables Step 1 – Establish Analysis Plan and Step 2 – Develop Input Assumptions and will be discussed with stakeholders.
E1	Scenarios	The TOR should describe the process by which NS Power will engage with stakeholders to develop Candidate Resource Plans, and how NS Power will construct specific scenarios based on stakeholder feedback. Will stakeholders have the opportunity to propose Candidate Resource Plans outside of those constructed by NS Power and have them modelled and compete on the same grounds as NS Power’s scenarios?	NS Power has not yet determined the modeling plan and whether a “Candidate Resource Plan” methodology will be proposed for the IRP modeling process. This is an item which will be addressed as part of the Analysis Plan. This item will be considered as part of the Process & Deliverables Step 1 – Establish Analysis Plan as described on page 7 of the TOR and discussed with stakeholders. Stakeholder engagement is contemplated in the Q1 2020 Schedule in the TOR regardless of the modeling methodology to be employed.
E1	Modeling	Greater clarity should be added to the TOR regarding how modelling results will inform the development of the IRP Strategy, Roadmap and Draft Report. EfficiencyOne is concerned that a lack of objective linkage may allow for excessive subjectivity in the interpretation of modelling results.	This is an item which will be addressed as part of the Analysis Plan, particularly through the establishment of the evaluation criteria. This item will be considered as part of the Process & Deliverables Step 1 – Establish Analysis Plan as described on page 7 of the TOR and discussed with stakeholders.

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
E1	Outputs	The TOR should specify that avoided costs of capacity and energy due to DSM will be outputs of the IRP, and that these values will be determined based on a Difference-in-Revenue-Requirements method.	NS Power agrees that the IRP modeling results will be used to calculate the avoided costs of capacity and energy due to DSM and has updated the TOR on page 8 to indicate this. At this point NS Power agrees that the Difference-in-Revenue-Requirements method is the leading method, but is open to consideration of other methods that may be raised during the stakeholder consultation process.
E1	Outputs	The TOR should specify whether avoided costs of transmission and distribution due to DSM will be an input to the IRP or an output from the IRP. In either case, the TOR should specify how and when they will be developed.	The methodology for calculating the avoided costs of transmission and distribution due to DSM will be discussed during the IRP process, but NS Power expects the output of this calculation will be outside of the IRP model.
E1	Outputs	The TOR should specify whether avoided costs of environmental compliance due to DSM will be outputs of the IRP, and if so, how they will be developed.	The cost of environmental compliance is inherent to IRP model optimization given the environmental constraints; therefore, the Company expects the calculation of avoided cost of capacity and energy due to DSM will inherently include this component.
SWEB Development	Miscellaneous [Legislation]	With the Federal Government announcing a tentative RFP for renewable energy generation in Cape Breton, how does NSPI and the UARB envision changing legislation for an energy offtake deal to take place outside of the extremely restrictive and cost prohibitive Renewable to Retail market? Is a special program being considered so that the Federal Government may buy this energy at a fixed PPA price?	Changes to legislation are within the purview of the Nova Scotia government. NS Power and the UARB work within the requirements mandated under applicable provincial and federal legislation. These types of initiatives have planning implications and NS Power will be considering them as part of the IRP.

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
SWEB Development	Miscellaneous [Legislation]	Also, is NSPI considering any other renewable energy procurements in the future, or implementing legislation to enable generators to more freely sell their energy to load customers?	The IRP will assess further renewable energy opportunities.
PHP	Process / Engagement	PHP is appreciative of NS Power’s efforts to draft a comprehensive Terms of Reference that incorporates significant opportunity for stakeholder review and comment.	No changes required.
SBA	Process / Engagement	NSP should incorporate as much pre-release information from the DSM [Potential] Study as possible by having high level and active engagement of E1 in the process and working in a highly collaborative manner.	NS Power has been engaging with E1 throughout this process to date and will continue to do so. The DSM Potential Study, along with NS Power’s pre-IRP deliverables, will inform the assumptions for the IRP.
E1	Process / Engagement	The TOR should indicate the planning horizon of the IRP, which we believe and recommend to be 25 years.	NS Power agrees with this comment and has edited the TOR accordingly.
E1	Process / Engagement	Greater clarity should be added to the TOR regarding the differences between the IRP Strategy, Roadmap, and Action Plan.	NS Power does not believe this is necessary as the TOR describes each of those components. However, NS Power will discuss these deliverables further with stakeholders throughout the IRP engagement process to enable understanding of these deliverables.
E1	Process / Engagement	The TOR should be modified to indicate that NS Power will select a Preferred Resource Plan and on what basis that decision will be made (i.e. interaction between objective functions). Selection of a Preferred Resource Plan is required for the development of Avoided Costs due to DSM, which are required for DSM planning and monitoring of rate and bill impacts due to DSM.	As described in the TOR NS Power plans to use a modernized approach to articulate its strategy in order to address the significant uncertainty facing the utility. NS Power will have a Reference Plan to use for calculation of avoided costs due to DSM and has updated page 8 of the TOR accordingly.

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
EAC	Process / Engagement	<p>Our major practical concern is the absence of formal participant status or key stakeholder funding. This has historically been key for enabling our involvement in UARB processes. Without the possibility of stakeholder cost recovery, we and other stakeholders are not able to afford engaging a consultant. This greatly reduces the EAC’s overall ability to engage in the process, and we feel limits the entire exercise by favouring engagement from established stakeholders with significant independent resources. For us, this is an issue to be discussed with UARB as well as yourselves, but it’s a major barrier in involvement from stakeholders.</p>	<p>NS Power will follow up with directly with the EAC to discuss this issue.</p>
AREA	Process / Engagement	<p>The Purpose states that this exercise is for the Utility, but we believe this exercise is for the Province’s ratepayers. This is a small but very important distinction and we recommend this change be made.</p>	<p>NS Power’s IRP provides a roadmap to guide NS Power’s strategy for meeting its resource needs over the planning horizon.</p>
PHP	Process / Schedule	<p>While the schedule in Attachment 1 does provide several opportunities for stakeholder comment, there is no provision for comment following the Interim Modeling Progress stakeholder workshop scheduled for March 2020. PHP believes that it might be productive to add an opportunity in the schedule for stakeholders to submit written comments following that workshop for consideration by NS Power’s team and the Board’s staff and consultants.</p>	<p>NS Power agrees and has revised the TOR accordingly.</p>

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
E1	Schedule	The “IRP kickoff stakeholder workshop” planned for Dec 2019/Jan 2020 should be scheduled as soon as possible, have the date(s) known to stakeholders as soon as possible and that the agenda be circulated in advance.	NS Power agrees with this comment and will schedule the workshop shortly and will circulate the agenda in advance.
E1	Schedule	At least two additional weeks should be added to the schedule for review of the Draft Analysis Plan and Draft Assumptions. This review period also includes “Assumptions & Analysis Plan stakeholder workshop(s)”. Review of these documents is a critical step in the IRP process, and there will be a large volume of material to review and discuss. Expediting this step may have material consequences on the outcome of the IRP, as it could result in potentially-optimal scenarios not being modelled. With approximately three months planned for modelling exercises, the time spent to better define these two components could assist in higher quality outcomes and more effective modelling runs.	NS Power agrees with this comment and has updated the proposed Schedule accordingly. Please refer to the updated TOR.
E1	Schedule	EfficiencyOne anticipates that NS Power will receive extensive and meaningful feedback from stakeholders on the Draft Assumptions and Analysis Plan and recommends that NS Power plan to take more than one week to digest and incorporate this feedback before issuing the Final Assumptions and Analysis Plan.	NS Power agrees with this comment and has updated the proposed Schedule accordingly. Please refer to the updated TOR.

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
E1	Schedule	<p>The TOR should clearly indicate exactly when in the process stakeholders will be involved in the preparation of Candidate Resource Plans to be modelled in the IRP.</p>	<p>NS Power has not yet determined the modeling plan and whether a “Candidate Resource Plan” methodology will be proposed for the IRP modeling process. This is an item which will be addressed as part of the Analysis Plan. This item will be considered as part of the Process & Deliverables Step 1 – Establish Analysis Plan as described on page 7 of the TOR and discussed with stakeholders.</p>
CA	Schedule	<p>The TOR proposes the following schedule for Comments on modeling results:</p> <ul style="list-style-type: none"> • Final Modeling results circulated to stakeholders June 4, 2020 • Final Modeling & Analysis stakeholder workshop June 2020 • Stakeholder comments on Modeling & Analysis June 18, 2020 <p>If the modeling is really final, it is not clear how useful stakeholder comments will be. If interim results are available in April or May, NSP may get more useful feedback by sharing even partial results earlier.</p> <p>If NSP expects meaningful feedback on the modeling, or even on how the model results should be taken into account in the Draft Plan, the stakeholders may need more than 2 weeks (and only ~1 week after their opportunity to ask questions in the workshop).</p> <p>Some of the other turn-around periods are tight, but none are as troublesome as the Final Modeling review.</p>	<p>NS Power acknowledges comments about the report being “final” before stakeholder comment and has adjusted the language. NS Power has revised the Schedule to allow more time for review by stakeholders as well as comments on early results in April. Please refer to the revised Schedule in the TOR.</p>

IRP TERMS OF REFERENCE – STAKEHOLDER COMMENTS

Stakeholder	Issue Category	Stakeholder Comments	NS Power Response
AREA	Schedule	We notice that stakeholders have, at various intervals in the schedule, a maximum of two weeks to receive NSPI’s work, contemplate its meaning, potentially hire a consultant to challenge NSPI’s work, review that 3rd party’s results and then formulate a position. It is unreasonable to expect all of that stakeholder work can be completed within two weeks.	NS Power has revised the Schedule to accommodate suggestions by stakeholders to allow for more time for review and response.

From: Mason Baker <mason.baker@swebdevelopment.ca>
Sent: Monday, December 9, 2019 1:20 PM
To: Musgrave, Lindsay <LINDSAY.MUSGRAVE@nspower.ca>
Cc: Rory Cantwell <rory.cantwell@swebdevelopment.ca>; Jason Parisé <jason.parise@sweb.energy>
Subject: RE: 2020 IRP - Draft Terms of Reference

****This is an external email - exercise caution****

Hi Lindsay,

I've re-read my email and see I noted Montreal for the location of a tentative federal government RFP. Not sure how I made that mistake, but that should read Cape Breton. For context, here is the news release regarding this potential RFP:

<https://www.cbc.ca/news/canada/nova-scotia/nova-scotia-ottawa-federal-government-renewable-power-nova-scotia-power-1.5231944>

Thanks,

Mason Baker
Project Developer, Electrical EIT

mason.baker@swebdevelopment.ca | www.swebdevelopment.ca
Phone: +1 902 431 0564-259 | Mobile: +1 902 4976357

SWEB Development LP
6080 Young Street, Suite 106, Halifax, NS, B3K5L2 | Canada

Follow us on:
twitter.com/swebrenewables
linkedin.com/company/sweb-development-inc/

From: Mason Baker
Sent: Thursday, December 5, 2019 2:49 PM
To: Musgrave, Lindsay <LINDSAY.MUSGRAVE@nspower.ca>
Cc: Rory Cantwell <rory.cantwell@swebdevelopment.ca>; Jason Parisé <jason.parise@sweb.energy>
Subject: RE: 2020 IRP - Draft Terms of Reference

Hi Lindsay,

With the Federal Government announcing a tentative RFP for renewable energy generation in Montreal, how does NSPI and the UARB envision changing legislation for an energy offtake deal to take place outside of the extremely restrictive and cost prohibitive Renewable to Retail market? Is a special program being considered so that the Federal Government may buy this energy at a fixed PPA price?

Also, is NSPI considering any other renewable energy procurements in the future, or implementing legislation to enable generators to more freely sell their energy to load customers?

Thanks,

Mason Baker
Project Developer, Electrical EIT

mason.baker@swebdevelopment.ca | www.swebdevelopment.ca
Phone: +1 902 431 0564-259 | Mobile: +1 902 4976357

SWEB Development LP

6080 Young Street, Suite 106, Halifax, NS, B3K5L2 | Canada

Follow us on:

twitter.com/swebrenewables

linkedin.com/company/sweb-development-inc/

**MEMORANDUM**

To: Lindsay Musgrave, Paralegal, Nova Scotia Power, and 2020 Integrated Resource Plan Stakeholders

From: Mark Robertson, Regulatory Technical Lead, EfficiencyOne

Date: December 6, 2019

Re: NS Power Integrated Resource Plan (IRP): EfficiencyOne Comments on NS Power's Draft 2020 IRP Terms of Reference

EfficiencyOne appreciates the opportunity to provide comments on NS Power's draft 2020 Integrated Resource Plan (IRP) Terms of Reference (ToR). It is encouraging to see NS Power's commitment to adapting the electricity system in coordination with climate change initiatives and decarbonization of the Nova Scotia system. The IRP process is also "supporting emerging commitments and/or policies at the global, federal, provincial and municipal levels" which EfficiencyOne is also supportive of. The ToR commits to the inclusion of energy efficiency programs, demand-side resources, Distributed energy Resources, demand response programs as well as technologies that support reliability and emissions reductions, all of which are important features of the upcoming IRP modelling process.

EfficiencyOne respectfully submits the following comments, questions and recommendations, which have been prepared with input from our consultant Energy Futures Group:

Process Recommendations

1. The ToR should indicate the planning horizon of the IRP, which we believe and recommend to be 25 years.
2. Greater clarity should be added to the ToR regarding the differences between the IRP Strategy, Roadmap, and Action Plan.
3. Greater clarity should be added to the ToR regarding how modelling results will inform the development of the IRP Strategy, Roadmap and Draft Report. EfficiencyOne is concerned that a lack of objective linkage may allow for excessive subjectivity in the interpretation of modelling results.
4. The ToR should be modified to indicate that NS Power will select a Preferred Resource Plan and on what basis that decision will be made (i.e. interaction between objective



MEMORANDUM

functions). Selection of a Preferred Resource Plan is required for the development of Avoided Costs due to DSM, which are required for DSM planning and monitoring of rate and bill impacts due to DSM.

5. NS Power should develop leading and lagging indicators relating to each “signpost”.
6. The ToR should explain if and to what degree the transmission and distribution systems will be considered in the IRP.
7. The ToR should indicate that all modeled scenarios will comply with applicable regulations, or confirm that all scenarios will have embedded in them a requirement to be compliant with all applicable regulations.

Schedule Recommendations

8. The “IRP kickoff stakeholder workshop” planned for Dec 2019/Jan 2020 should be scheduled as soon as possible, have the date(s) known to stakeholders as soon as possible and that the agenda be circulated in advance.
9. At least two additional weeks should be added to the schedule for review of the Draft Analysis Plan and Draft Assumptions. This review period also includes “Assumptions & Analysis Plan stakeholder workshop(s)”. Review of these documents is a critical step in the IRP process, and there will be a large volume of material to review and discuss. Expediting this step may have material consequences on the outcome of the IRP, as it could result in potentially-optimal scenarios not being modelled. With approximately three months planned for modelling exercises, the time spent to better define these two components could assist in higher quality outcomes and more effective modelling runs.
10. EfficiencyOne anticipates that NS Power will receive extensive and meaningful feedback from stakeholders on the Draft Assumptions and Analysis Plan and recommends that NS Power plan to take more than one week to digest and incorporate this feedback before issuing the Final Assumptions and Analysis Plan.
11. The ToR should clearly indicate exactly when in the process stakeholders will be involved in the preparation of Candidate Resource Plans to be modelled in the IRP.



MEMORANDUM

Scenarios Recommendation

12. The ToR should describe the process by which NS Power will engage with stakeholders to develop Candidate Resource Plans, and how NS Power will construct specific scenarios based on stakeholder feedback. Will stakeholders have the opportunity to propose Candidate Resource Plans outside of those constructed by NS Power and have them modelled and compete on the same grounds as NS Power's scenarios?

Constraints/Assumptions Recommendations

13. EfficiencyOne's understanding of the *Sustainable Development Goals Act*¹ (SDGA) is that the Province of Nova Scotia will achieve net zero greenhouse gas emissions by 2050, but that the specific targets for the electricity sector have not yet been determined. EfficiencyOne notes that the electricity system may need to reach net zero before 2050, in order to allow time for electrification of other emitting end-uses such as transportation.

The ToR should indicate how the IRP will consider the goals in the *Sustainable Development Goals Act* and whether or not all IRP scenarios will be subject to emissions caps stemming from the SDGA.

14. The ToR should indicate if and how the *Atlantic Clean Energy Initiative* and the *Clean Power Roadmap for Atlantic Canada* will be considered in the IRP.
15. The ToR should explain how the cost of carbon (e.g. the market price of carbon reductions) will be captured in the modelling process. Will revenues from the sale of carbon credits be accounted for in the revenue requirement calculation for each scenario?
16. The ToR should indicate whether NS Power plans to do any stochastics and if so, on which variables.
17. The ToR should indicate whether Short Term runs will be performed at the hourly or five-minute interval.

¹ Bill 213, *Sustainable Development Goals Act: An Act to Achieve Environmental Goals and Sustainable Prosperity*, 2nd Session, 63rd General Assembly, Nova Scotia (assented to October 30, 2019).



MEMORANDUM

Metrics Recommendations

18. The draft ToR specifies that the Analysis Plan will establish how six secondary metrics will be used as evaluation criteria for the IRP modelling, in addition to the “primary metric” of cumulative present value of the annual revenue requirements over the planning horizon. It is important to note that the primary metric is readily quantifiable and easily understood, while the other six are not. For example, measuring and comparing the “flexibility” and “robustness” of different resource plans will be difficult and possibly contentious, as will determining the appropriate weighting of these six metrics against each other and against the primary metric.

EfficiencyOne recommends that if NS Power intends to use these six metrics in addition to the primary metric, it objectively define exactly how it will do so in the ToR. Not making this decision now leaves the door open for stakeholders to put inconsistent emphases on a subset of these metrics down the road, or to abandon them entirely.

Outputs Recommendation

19. The ToR should specify that avoided costs of capacity and energy due to DSM will be outputs of the IRP, and that these values will be determined based on a Difference-in-Revenue-Requirements method.

20. The ToR should specify whether avoided costs of transmission and distribution due to DSM will be an input to the IRP or an output from the IRP. In either case, the ToR should specify how and when they will be developed.

21. The ToR should specify whether avoided costs of environmental compliance due to DSM will be outputs of the IRP, and if so, how they will be developed.

EfficiencyOne thanks NS Power for the opportunity to comment on the ToR and looks forward to working with NS Power and stakeholders to craft the assumptions that will be used in the IRP.



James A. MacDuff
Direct +1 (902) 444 8619
james.macduff@mcinnescooper.com

Purdy's Wharf Tower II
1300-1969 Upper Water Street
PO Box 730
Halifax NS
Canada B3J 2V1
Tel +1 (902) 425 6500 | Fax +1 (902) 425 6350

Our File: 179164
December 6, 2019

Ms. Nicole Godbout
Director, Regulatory Affairs
Nova Scotia Power
1223 Lower Water Street
Halifax, NS B3J 3S8

Dear Ms. Godbout:

Re: Integrated Resource Plan (IRP) 2020 – Terms of Reference

Thank you for circulating the draft Terms of Reference for the IRP process on December 2, 2019, in advance of filing with the Nova Scotia Utility and Review Board (the "Board"). Please accept the following brief comment on behalf of Port Hawkesbury Paper LP ("PHP").

PHP is supportive of the draft Terms of Reference as prepared by NS Power and has only one suggestion. While the schedule in Attachment 1 does provide several opportunities for stakeholder comment, there is no provision for comment following the Interim Modeling Progress stakeholder workshop scheduled for March 2020. PHP believes that it might be productive to add an opportunity in the schedule for stakeholders to submit written comments following that workshop for consideration by NS Power's team and the Board's staff and consultants.

PHP is appreciative of NS Power's efforts to draft a comprehensive Terms of Reference that incorporates significant opportunity for stakeholder review and comment. PHP looks forward to the opportunity to participate fully as a stakeholder in this process.

Yours truly,

A handwritten signature in black ink, appearing to read 'James MacDuff'.

James MacDuff

cc: Interested Parties



Blackburn Law

VIA EMAIL

December 6, 2019

Nicole Godbout
Nova Scotia Power

Dear Ms. Godbout:

Re: M08929 – Comments on Terms of Reference for IRP


The Small Business Advocate (SBA) has reviewed the draft Terms of Reference document that was circulated on December 2, 2019, and has the following recommendations for your consideration:

1. NSPI should establish a metric that is calculated with each case modeled that will show the actual rate impact each plan/scenario will create for each year of the first 10 years of a plan.
2. NSPI should incorporate as much pre-release information from the DSM Study as possible by having high level and active engagement of EOne in the process and working in a highly collaborative manner.
3. NSPI should include in the ‘road map’ illustrative examples of what would change in the resource plan when sign posts introduce major departures from the plan assumptions.
4. NSPI should model a scenario where Canada, including Nova Scotia, eliminates CO2 emissions from the economy.
5. NSPI should include, within scenarios or sensitivity, significant potential technological breakthroughs in terms of cost or performance, which will act as a type of robust ‘what if’ testing.

Please let me know if you have any questions with respect to our recommendations.

Yours truly,

BLACKBURN LAW


E.A. Nelson Blackburn, Q.C.
Small Business Advocate

From: Paul Chernick <pchernick@resourceinsight.com>
Sent: Wednesday, December 11, 2019 2:41 PM
To: Curry, Brian <Brian.Curry@nspower.ca>
Cc: bill@mjswm.com; Emily Mason <emily@mjswm.com>; John Wilson <jwilson@resourceinsight.com>
Subject: RE: Draft IRP Terms of Reference

****This is an external email - exercise caution****

My apologies. John and I drafted some notes, but I never got around to sending them.
So here's a quick summary of our thoughts:

Scope Issues:

1. We appreciate the goal of “a robust, risk-weighted least-cost long-term electricity strategy.” We note that an IRP faces two types of risk: events that can be accommodated in the future by altering the later parts of the plan (e.g., rising gas prices through the 2020s, or steep decline in storage cost, both of which will change choices of capacity additions in 2030) and those that change the economics of choices after they have been made (e.g., widespread adoption of solar and storage behind the meter in the 2030s, stranding capacity added in the 2020s). The IRP needs to weight the latter sort of risks, while recognizing the differences among supply plans in terms of accommodating changes of the first type.
2. The ToR does not emphasize reliability analysis, which will be important in determining the capacity benefit of renewables, storage, and the Maritime Link, and thus the amount of back-up peakers or storage needed to maintain a reliable system. In particular, NSP needs to be careful to state reliability contribution on a consistent basis (e.g., either load-carrying capability or contribution equivalent to 150-MW steam units that require a 20% reserve), rather than a mix of approaches.

Schedule Issues:

The ToR proposes the following schedule for Comments on modeling results:

Final Modeling results circulated to stakeholders June 4 2020
Final Modeling & Analysis stakeholder workshop June 2020
Stakeholder comments on Modeling & Analysis June 18 2020

If the modeling is really final, it is not clear how useful stakeholder comments will be. If interim results are available in April or May, NSP may get more useful feedback by sharing even partial results earlier.

If NSP expects meaningful feedback on the modeling, or even on how the model results should be taken into account in the Draft Plan, the stakeholders may need more than 2 weeks (and only ~1 week after their opportunity to ask questions in the workshop).

Some of the other turn-around periods are tight, but none are as troublesome as the Final Modeling review.

I hope that's helpful.

Paul

Paul Chernick
President
Resource Insight, Inc.
5 Water Street, Arlington MA 02476
781-646-1505 x 207
617-680-5810 (cell)
ResourceInsight.com

----- Forwarded message -----

From: **Curry, Brian** <Brian.Curry@nspower.ca>

Date: Wed, Dec 11, 2019 at 12:10 PM

Subject: Draft IRP Terms of Reference

To: William L. Mahody <bill@mjswm.com>, Emily Mason <emily@mjswm.com>

Bill/Emily:

Nicole Godbout mentioned to me that we did not receive comments from the CA (or Paul Chernick) on the draft IRP Terms of Reference. I just wanted to follow up with you to see if there were comments you wanted NSPI to consider. I believe we are intending to file the draft Terms of Reference with the UARB on Friday, so if you do have something it would be helpful to get those comments as soon as possible.

If there are questions or you want to discuss, please let me know.

Brian

From: Stephen Thomas <stephen@ecologyaction.ca>
Sent: Wednesday, December 11, 2019 2:17 PM
To: Godbout, Nicole <NICOLE.GODBOUT@nspower.ca>
Cc: Lefler, Linda <Linda.Lefler@nspower.ca>; Emma Norton <efficiency@ecologyaction.ca>
Subject: RE: IRP draft Terms of Reference

****This is an external email - exercise caution****

Hi Nicole,

Thanks for reaching out and for the opportunity to provide feedback after Friday.

Overall, we're generally in support of the Terms of Reference. In particular, I was pleased to see the language of the second and third objectives on page 3. We believe we need certainly, yet flexibility in the changing policy landscape in the next year. I believe that the second objective and the 'signposts' give some of that flexibility.

Similarly, as you'd expect, we were pleased to see direct language about modelling efforts to explore a complete coal phase-out by 2030, and other dates where economic. The Pre-IRP studies set things up in what we feel can be a good process, and we look forward to what's next in 2020. The broader metrics proposed on Pages 6, 7 and 8 leave room for good discussion and process.

Our major practical concern is the absence of formal participant status or key stakeholder funding. This has historically been key for enabling our involvement in UARB processes. Without the possibility of stakeholder cost recovery, we and other stakeholders are not able to afford engaging a consultant. This greatly reduces the EAC's overall ability to engage in the process, and we feel limits the entire exercise by favouring engagement from established stakeholders with significant independent resources. For us, this is an issue to be discussed with UARB as well as yourselves, but it's a major barrier in involvement from stakeholders.

The overall level of transparency and stakeholder engagement that is planned is encouraging, but without participant support the barriers remain significant to meaningfully participate in this important process.

Thanks so much, and talk soon,

Stephen Thomas,
Energy Campaign Coordinator

K'ijipuktuk, Unceded Mi'kmaw Territory
2705 Fern Lane, Halifax, NS, B3K 4L3
t. 902.442.0199 c. 902.441.7136
🐦 [@StephenJWT](https://twitter.com/StephenJWT) | ecologyaction.ca



Alternative

RESOURCE ENERGY AUTHORITY

Mila Milojevic
Manager System Planning
Nova Scotia Power Inc
Delivered via email to mila.milojevic@nspower.ca

13 December 2019

Re: Letter of Comment Regarding Current IRP's Draft Terms of Reference

Dear Mila,

The Alternative Resource Energy Authority (AREA) would like to thank NSPI for soliciting feedback on its draft terms of reference for the integrated resource plan (IRP). AREA received the draft after requesting such on 2 December 2019. NSPI stated a deadline of 10 December 2019 but relaxed that slightly given that AREA was not included in NSPI's original email list. AREA thanks NSPI for providing some additional time but believes it is unreasonable for NSPI to expect official written feedback from stakeholders on a timeline more aggressive than what NSPI could itself commit. Regardless of the exact timing of NSPI's filing of the terms of reference (TOR) with the Nova Scotia Utility and Review Board (UARB), AREA submits the below comments so that NSPI is aware of AREA's position. We remain open to discussing such at NSPI's earliest convenience so that AREA and NSPI can resolve the issues before the IRP's official start to ensure a more streamlined process.

- The Purpose states that this exercise is for the Utility, but we believe this exercise is for the Province's ratepayers. This is a small but very important distinction and we recommend this change be made.
- The Objectives suggest a preference for "affordable" rates, but the Developing An Electricity Strategy for the Future section mentions least-cost. AREA supports the least-cost concept and suggests that it should be used in the Objectives replacing "affordable".
- The Developing An Electricity Strategy for the Future section indicates that NSPI has, and will continue to rely upon minimizing cumulative present value of the annual revenue requirements, but this suggests continued NSPI ownership of assets. This assumption is no longer aligned with the pursuit of least-cost scenarios as noted in our submission 13 September 2019. The minimization exercise should be on cost to rate payers, not revenue requirement.
- Given that it has been shown that NSPI is no longer the least-cost financing entity for clean energy assets, there will likely be contention during this process. However, there is no time allotted for this healthy debate.
- We notice that stakeholders have, at various intervals in the schedule, a maximum of two weeks to receive NSPI's work, contemplate its meaning, potentially hire a consultant to challenge NSPI's work, review that 3rd party's results and then formulate a position. It is unreasonable to expect all of that stakeholder work can be completed within two weeks.

Alternative

RESOURCE ENERGY AUTHORITY

We are reserving our comments on the pre-IRP report until our staff can perform a deeper dive on the document. We will send those directly to you instead of the web interface.

Thank you for considering our input, and we look forward to scheduling a time to resolve these issues.

Regards,



Aaron Long
Director of Business Services

Cc:

Lia MacDonald, Senior Director Enterprise Asset Management, NSPI

Nicole Godbout, Director of Regulatory Affairs, NSPI

Jeffrey Lawrence, Chief Administrative Officer, Town of Antigonish; Secretary, AREA, jlawrence@townofantigonish.ca

Mike Payne, Chief Administrative Officer, Town of Berwick, mpayne@berwick.ca

Dylan Heide, Chief Administrative Officer, Town of Mahone Bay, Dylan.heide@townofmahonebay.ca

Lindsay Basinger, Acting Dir. of Corp. Services, Town of Antigonish; Ac. Treasurer, AREA, lbasinger@townofantigonish.ca

Don Regan, Manager Town of Berwick Electric Commission, dregan@berwick.ca

Nova Scotia Power
1223 Lower Water Street | Halifax, NS B3J 3S8
Attn: Lindsay Musgrave

December 12, 2019

Ms. Musgrave and the Nova Scotia Power IRP Team,
Re: Comments on IRP Draft Terms of Reference

Thank you for the opportunity to participate in the review of the 2020 Integrated Resource Plan Terms of Reference. We appreciate your partnership and commitment in the development of HalifACT 2050, our renewed climate strategy out to year 2050 that will be presented to Regional Council for their consideration in spring 2020, and we are pleased to have the opportunity to be an involved stakeholder in your IRP process. We recognize that as the provincial power utility, you are a key player in the movement towards clean energy generation through decarbonization and electrification. As you have indicated through your involvement in the HalifACT 2050 stakeholder team, you support and believe that a collective ambitious target of carbon neutral by 2050 is an achievable and necessary goal.

As the IRP and HalifACT 2050 both move forward to adoption, I would like to explore ways to support our mutual priorities that will no doubt emerge. Decarbonization of the electric grid and electrification of the building and transportation sectors are critical to meeting national and provincial climate change objectives. The terms of reference should recognize shared priorities and explore ways to cooperate with municipalities to advance resiliency and emissions reduction.

In reviewing the evaluation criteria and process, I offer the following questions for your consideration:

- Will the IRP address access to equitable energy for all stakeholders as technologies develop?
- How will the IRP align with HalifACT 2050 objectives (e.g. evaluation criteria, risk weighting, risk assessment)?
- Will NSP validate its key assumptions? If so, will it compare them to metrics generated by significant customers and key stakeholders such as the Halifax Regional Municipality?

As NSP and HRM move forward together towards critical climate action, we appreciate your continued support, collaboration and partnership.

Sincerely,

Shannon Miedema

Shannon Miedema
Energy & Environment Program Manager

Tel 902.490.3665

Cell 902.209.6194

Email miedems@halifax.ca