



Terms of Reference for the Comparative Environmental Review (CER) of

Options for the Mactaquac Project, Mactaquac, New Brunswick

Preamble

The New Brunswick Power Corporation ("NB Power") operates the Mactaquac Generating Station ("the Station") in Mactaquac, on the St. John River approximately 19 km west of the city of Fredericton, New Brunswick.

The Mactaquac Generating Station is a run-of-the-river hydroelectric generating station with a capacity of approximately 670 megawatts (MW) that provides renewable electricity to New Brunswick. The Station has been in operation since 1968. It consists of an earthen dam constructed of rock-fill and sealed by clay, a reservoir ("headpond") between the Station and the town of Woodstock (approximately 96 km upstream), two concrete spillways, an intake structure, a powerhouse that houses six Kaplan-style turbines, and associated equipment. The dam also serves as an important highway link across the St. John River, linking Routes 102 and 105 of the provincial highway system.

The Station is experiencing a premature end of service life as a result of an alkali-aggregate reaction (AAR), a problem of expanding concrete, within the existing concrete structures at the Station. The current end of service life of the Station has been estimated at 2030. To address the issue, NB Power is considering three options for the Station (the "Project Options"), as follows.

- **Option 1**—Repowering: Refurbish the Station by constructing a new powerhouse, spillway, and other components, followed by the removal of the existing concrete structures at the Station.
- **Option 2**—Retain the headpond (no power): Build a new concrete spillway and maintain the dam as a water control structure without power generation, followed by the removal of the existing concrete structures at the Station.
- **Option 3**—River restoration: Remove the Station and enable the river to return to a free-flowing state.

As part of its due diligence, NB Power is continuing to review the projected 2030 end of service life for the Station. That work includes exploring ways to continue operations within the current footprint beyond 2030. The work done on the Station would not likely require a material change from current operations, and if this is the case, there would likely be minimal incremental upstream or downstream effects compared to current operations at the Station. Accordingly, NB Power is not subjecting these approaches to the Comparative Environmental Review, and therefore this work is not discussed further in this document.

The Project Options may be subject to a provincial environmental impact assessment (EIA), a federal environmental assessment (EA), or both. NB Power has determined that it must make a decision and initiate the applicable environmental regulatory processes for the option it will pursue (referred to as the "Preferred Option") during 2016, so as to allow sufficient time to address the early end of service life of the current facilities.



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To assist in the understanding of the environmental issues and other concerns associated with each of the Project Options, NB Power has proposed a Comparative Environmental Review (CER) of the Project Options. The CER will assist in the identification of potential environmental effects and key mitigation that would be required for each option. This information will be considered by NB Power, along with other information (e.g., business case, engineering, other considerations), in its decision-making regarding the Station. Information gathered during the CER process will also be used to support the scoping and conduct of any future formal EIA/EA that may be required for the Preferred Option.

Purpose

The purpose of the CER of the Project Options is to:

- evaluate, at a high-level, the likely potential environmental effects of each Project Option;
- identify the key mitigation measures to make each Project Option environmentally acceptable, if it were selected;
- support NB Power's selection of a Preferred Option in 2016; this decision will be based on the environmental, economic, engineering, energy policy, and social considerations that are identified through the CER process and other parallel studies being carried out by NB Power;
- provide a mechanism by which Aboriginal, public, and stakeholder input regarding environmental issues of the Project Options can be meaningfully considered by NB Power in its future decision-making; and
- aid in the scoping and conduct of any required future EIA/EA of the selected Preferred Option.

It is important to note that the CER process is not part of a formal environmental regulatory process, but rather informs a future EIA/EA process that may be required of the Preferred Option, once selected.

This document provides Terms of Reference for carrying out the CER of the Project Options. The purpose of these Terms of Reference is to:

- define the requirements of, and process for, carrying out the CER;
- define the desired outcomes, timeframes, and deliverables of the CER; and
- identify the composition and mandate of the CER Advisory Committee that will be formed to assist in the completion of the CER.

Key Participants

Key Participants in the CER Process are as follows.

- **NB Power**—NB Power is the owner of the Mactaquac Generating Station; the end client for all consultants and advisors participating in the CER; the lead for all aspects of the Project including engineering, Aboriginal, public and stakeholder engagement; and the decision-maker in relation to the selection of the Preferred Option (subject to the agreement of the Province of New Brunswick as the owner of NB Power).



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- **Stantec Consulting Ltd. (Stantec)**—Stantec is the lead environmental consultant for the CER, the main author of the CER Guidelines and associated scoping of key environmental issues, and the main author of the CER Report.
- **Canadian Rivers Institute (CRI)**—CRI is the lead scientific authority in relation to the collection of environmental data and conduct of predictive or other studies contributing to the Mactaquac Aquatic Ecosystem Study (MAES) for the Project.
- **Dillon Consulting Ltd. (Dillon)**—Dillon, with services from the Kingsclear First Nation Economic Development Corporation, is the lead Aboriginal engagement consultant that is assisting NB Power in its Aboriginal engagement activities related to the Project.
- **CER Advisory Committee**—The CER Advisory Committee is an advisory body to NB Power that provides independent review and advice on the conduct of the CER as well as provides scientific and technical input to NB Power in relation to CER-related deliverables.

CER Advisory Committee

A CER Advisory Committee will be formed to provide independent review and advice on the conduct of the CER as well as to provide scientific and technical input in relation to the scope and outcomes of the CER, including independent review of CER-related documents and deliverables. Its mandate and composition is described below.

- The CER Advisory Committee will consist of approximately 4-6 members selected and appointed by NB Power.
- The CER Advisory Committee members will be selected based on their expert knowledge and experience in their respective disciplines. They will provide review and advice in relation to the anticipated environmental effects of the Project Options, as outlined in the CER Guidelines and ultimate CER Report.
- Collectively, the members of the CER Advisory Committee will have skills, knowledge, and experience in the following areas:
 - environmental impact assessment processes and related regulatory matters;
 - infrastructure developments (preferably including design of dams, highways, bridges, and other public infrastructure);
 - aquatic biology (preferably including fish, fish habitat, and fish passage);
 - terrestrial ecology (preferably including wildlife, wildlife habitats, wetlands, and birds); and
 - societal matters relating to how development projects can interact with communities, including First Nations communities in New Brunswick.
- The CER Advisory Committee will report directly to NB Power, without influence of the engineering consultant(s) that is/are separately preparing the CER Report and associated deliverables.
- As is the case with the CER itself, the CER Advisory Committee and its members are not being asked to rank the Project Options or select a Preferred Option with respect to environmental criteria or any other criteria.



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- The members of the CER Advisory Committee will be unbiased and free from any material conflict in relation to any of the Project Options.
- The CER Advisory Committee is advisory in nature only, and limited to the CER Guidelines, the CER Report, and any other CER-related documentation as deemed necessary by NB Power. Any advice provided by the CER Advisory Committee shall be non-binding on NB Power or any key participant.
- Any decision-making in relation to any aspect of the CER process or the Project Options shall remain the responsibility of NB Power.
- The members of the CER Advisory Committee will perform their role in a careful, professional, and precautionary manner.
- The CER Advisory Committee will conduct its review of the CER-related documents, individually and collectively as deemed necessary, and provide the results of its review in a short report(s) to NB Power, setting out its comments and advice.
- The CER Advisory Committee's report(s) will clearly set out its rationale for its expert advice relating to the key environmental issues of concern and any required mitigation measures and follow-up programs.

Comparative Environmental Review (CER) Process and Elements

The proposed CER process and methodology is shown in Figure 1. It is further described conceptually below.

- **Prepare Preliminary Project Concept**—In this initial step, a high-level description of the Project Concept for each of the three options is prepared. The Preliminary Project Concept provides high-level detail, for each Project Option, of the required components and infrastructure associated with each Project Option, and how these components and infrastructure will be constructed and operated if ultimately selected. The Preliminary Project Concept is intended to provide a baseline of information on the Project Options as available at this early stage of planning, to guide the scoping of environmental issues and required mitigation that will be developed through the CER.
- **Develop Terms of Reference for CER Process**—In this step, NB Power establishes Terms of Reference for the CER (*i.e.*, this document), which describe: the purpose, objectives, and methodologies for the CER; the composition and mandate of the CER Advisory Committee; and the CER process steps, including deliverables and key timelines. The launch of the CER Process is publicly announced, and the Preliminary Project Concept and Terms of Reference are made available for reference. Any Aboriginal, public, or stakeholder input is considered and addressed through the CER as appropriate.
- **Develop Draft Guidelines for the CER**—In this step, draft Guidelines for the CER are developed to identify the key environmental issues of concern that will be reviewed and addressed as part of the CER. Any baseline or predictive studies that are required to inform the CER (or subsequent EIA) are identified as part of this process. The draft CER Guidelines will frame the studies and CER requirements to support its purpose and objectives. The draft CER Guidelines will be reviewed by the CER Advisory Committee, and will be presented to the staff of provincial and federal regulatory agencies for their informal comments, prior to their public release for comment.



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- **Public Review of the Draft CER Guidelines**—Following their presentation to regulatory agencies and review by the CER Advisory Committee, the Draft CER Guidelines are released to the public for a 30-45 day comment period. Following the comment period, the CER Guidelines are finalized in consideration of Aboriginal, public, and stakeholder input received, and Final CER Guidelines are publicly released.
- **Conduct CER and Prepare CER Report**—In this step, the baseline and predictive studies, and the resulting CER Report identifying key environmental issues and associated mitigation for each of the Project Options, are prepared. The CER Report describes the environmental consequences of each option based on available Project information. It also identifies, as applicable, the key mitigation required, existing environmental conditions, and anticipated potential environmental effects. The CER Report is reviewed by the CER Advisory Committee prior to its public release. The CER Report considers, as appropriate:
 - the scope of the CER as defined by the Final CER Guidelines;
 - the results of the review of the CER Report by the CER Advisory Committee;
 - comments received from Aboriginal people, the public, or stakeholders as part of the process at that time; and
 - the preliminary results of the Mactaquac Aquatic Ecosystem Study or other Component Studies carried out in support of the CER process.

As the CER Report is a technical document, a brief summary report written in plain language is also prepared for the general public.

- **Public Review of the CER Report**—Following its review by the CER Advisory Committee, the CER Report and a brief Summary Report are released for a 60-90 day comment period. Opportunities to provide input into the report (e.g., presentations, workshops, open houses) will be made available as considered necessary.
- **Finalize CER Report**—Following the comment period, the CER Report is finalized in consideration of comments from First Nations, the public, and stakeholders, as appropriate. The Final CER Report and Summary Report are issued to NB Power for use in its decision-making for the Preferred Option. The Final CER Report and Summary Report are made available publicly.
- **NB Power Decision**—NB Power's selection of the Preferred Option is not part of the CER Process. Rather, the CER Report and its outcomes are one source of information that is considered by NB Power in its decision-making relating to the Preferred Option, along with the results of other parallel studies being carried out. The overall decision-making by NB Power in this regard considers a wide range of environmental, economic, engineering, energy policy, and social issues, informed by the CER Report and the outcomes of other studies being carried out. Input from Aboriginal people, stakeholders, and the public on these topics is also part of that decision-making process.

Expected Timeframe and Deliverables

The overall expected schedule for carrying out the CER process is shown in Figure 2. A high-level summary of the key timelines and outcomes of the CER is as follows:

- prepare Preliminary Project Concept and Terms of Reference for the CER: Spring 2014;
- prepare Draft CER Guidelines for the CER: Summer 2014;



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- announce CER Process and Draft CER Guidelines, invite input on Draft CER Guidelines via website: Fall 2014;
- public Comment Period on Draft CER Guidelines: Fall 2014;
- finalize CER Guidelines: End of 2014;
- conduct CER and Prepare CER Report: First half of 2015;
- public comment period on CER Report and Summary Report: Fall 2015; and
- finalize CER Report and Summary Report: End of 2015.

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Figure 1: Comparative Environmental Review (CER) Process – Mactaquac Project

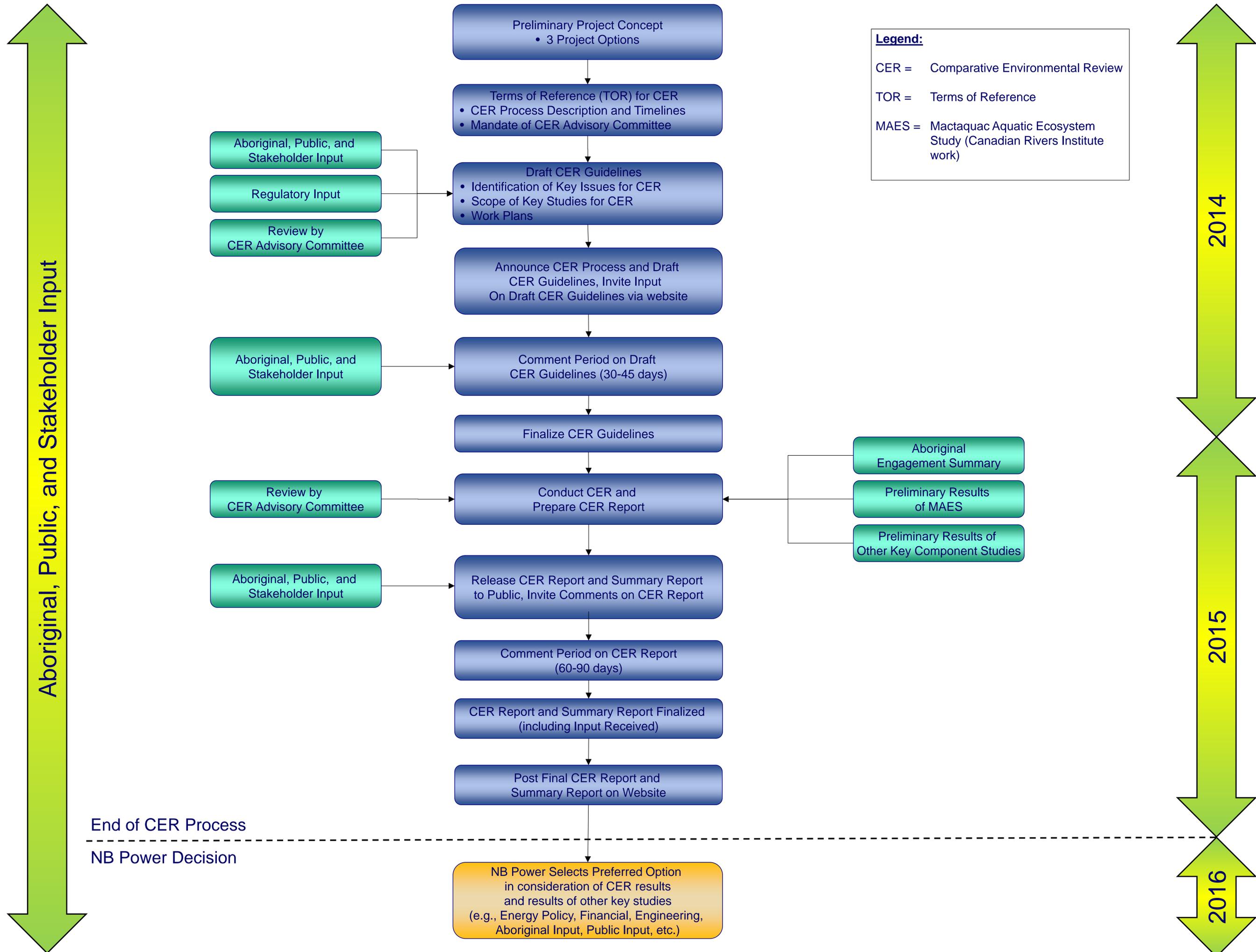


Figure 2: Schedule for Comparative Environmental Review (CER) Process - Mactaquac Project

ID	Task Name	Start	Finish	2014				2015				2016				2017	
				Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
1	Complete Environmental Strategy Document	Tue 12/17/13	Tue 12/17/13		Dec 17 '13												
2	Develop Preliminary Project Concept (3 Options)	Sat 2/1/14	Fri 5/30/14			May 30 '14											
3	Develop Environmental Information Requirements and Key Mitigation (Gap Analysis)	Sat 2/1/14	Sun 6/15/14			Jun 15 '14											
4	Begin working on Key Component Studies identified as Gaps (e.g., socio-economic, transportation, heritage resources, biophysical environment, groundwater resources, human health and safety)	Tue 4/1/14	Sat 7/12/14			Jul 12 '14											
5	Develop Terms of Reference (TOR) for CER	Sat 2/1/14	Mon 6/30/14			Jun 30 '14											
6	Develop Draft CER Guidelines	Thu 5/1/14	Sat 8/30/14			Aug 30 '14											
7	Announce CER Terms of Reference and Draft CER Guidelines, Invite input on Draft Guidelines via website	Tue 11/25/14	Tue 11/25/14							Nov 25 '14							
8	Comment Period on Draft CER Guidelines (30-45 Days)	Tue 11/25/14	Thu 1/8/15							Jan 8 '15							
9	Finalize CER Guidelines	Fri 1/9/15	Fri 1/9/15							Jan 9 '15							
10	Conduct CER, Prepare CER Report	Mon 12/1/14	Mon 6/15/15								Jun 15 '15						
11	Release Preliminary Results of Other Key Component Studies	Mon 6/15/15	Mon 6/15/15								Jun 15 '15						
12	Release CER Report and Summary Report to Public, and Invite Comments on CER Report	Fri 5/15/15	Mon 6/15/15								Jun 15 '15						
13	Comment Period on CER Report (60-90 Days)	Mon 6/15/15	Tue 9/15/15									Sep 15 '15					
14	CER Report and Summary Report Finalized (including Input Received)	Tue 9/15/15	Tue 12/15/15									Dec 15 '15					
15	Post Final CER Report and Summary Report on Website	Tue 12/15/15	Tue 12/15/15										Dec 15 '15				
16	NB Power Decision-Making Process	Fri 1/1/16	Sat 12/31/16														Dec 31 '16