Énergie NB Power

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PICA 16-6162

November 10, 2016

Mr. Brian Torrie, Director General
Regulatory Policy Directorate
Canadian Nuclear Safety Commission
280 Slater Street
P.O. Box 1046, Station B
Ottawa, Ontario
K1P 5S9

Dear Mr. Torrie:

Subject: **NB Power Comments on REGDOC-1.1.1, Licence to Prepare Site and Site Evaluation for New Reactor Facilities**

The purpose of this letter is to submit New Brunswick Power's comments on this draft Regulatory Document, which will replace *RD-346, Site Evaluation for Nuclear Power Plants* in keeping with the federal government's one-for-one rule and *Red Tape Reduction Action Plan.*

We appreciate the CNSC's efforts to update and consolidate its document suite and welcome the opportunity to provide feedback from a licensee's perspective. The high-level observations in this letter - and the detailed, supporting comments in Attachment A - emerged from a collaborative review among Bruce Power, Ontario Power Generation, New Brunswick Power, Canadian Nuclear Laboratories and the Canadian Nuclear Association.

Collectively, industry finds the scope of this document to be overly ambitious, which hinders its clarity and effectiveness. Within its 129 pages, this draft establishes requirements and guidance to secure a licence to prepare a site for a new reactor. It also details the CNSC's expectations for the evaluation of a site for a new nuclear power plant or a small modular reactor facility. It then goes further and provides information needed for future phases such as construction, operation and abandonment.

In doing so, the document strays from its central focus to guide applicants through the process of securing a licence to evaluate and prepare a site for new build. Specifically, it:

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- Duplicates requirements already found in existing Regulatory Documents, most notably *REGDOC 2.9.1, Environmental Protection, Environmental Policy, Assessments and Protection Measures*. Several examples are cited in Attachment A. This document would be more effective if it only identified requirements that are supplemental to the Environmental Assessment (EA) process and allowed applicants to refer back to their EAs rather than repeat the requirements.

- Overlaps responsibilities between the CNSC and other government bodies to regulate safety. This is seen in *Section 7, Operating Performance – Conduct of the Licenced Activity* in the area of industrial safety during construction and again in *Section 12 – Emergency Management and Fire Protection*. The need to meet redundant requirements imposed by the CNSC and other provincial or federal safety agencies will create confusion and force licensees to replicate research and submissions.

- Provides too much information on future lifecycle phases. We appreciate the CNSC's desire to show applicants how the links in its licensing chain fit together and note that Appendix B combines *all* phases of the process. Unfortunately, the result is a lengthy document with repetitive information that blurs the requirements for each stage. What licensees require most is a graded approach that provides concise, specific guidance for each phase so they can provide timely and correct information for the particular licence they are *currently* seeking. This is especially important for new applicants who may not be familiar with Canada's regulatory framework.

- Requires assessments and analysis based on a detailed reactor design well before an applicant might reasonably be expected to have chosen a design. A general understanding of the technology to be used should be sufficient at these early stages and reflected in the requirements in this document.

- NB Power also has concerns with the forcing of requirements from the regulations into the CNSC's Safety and Control Areas. As per our earlier feedback on *REGDOC 1.1.3, Licence Application Guide: Licence to Operate a Nuclear Power Plant*, our concern stems from the fact that certain clauses of the regulations are noted in multiple Safety and Control Areas. For example, *General Nuclear Safety and Control Regulations* Section 3(1)(d) is quoted under six different Safety and Control Areas. Similarly, Section 3(f) of the Class I Nuclear Facility Regulations, which covers proposed worker health and safety policies and procedures, is also referenced under six different Safety and Control Areas. This will result in the unnecessary duplication of information within an application. NB Power also notes that draft REGDOC 1.1.1 does not cover the following requirements from the Regulations: Class I Facilities Regulations 3(i); General Nuclear Safety and Control Regulations 3(1)(g)(h)(i)(l), 12(a)(b)(d)(e)(g)(h)(i)(j)(k). This leaves the industry and the CNSC open to potential court challenges with regard to the issuance of site preparation licences that are missing information required by the regulations.

NB Power appreciates the opportunity to provide comments on this regulatory document and is prepared to clarify our comments and concerns. If you require additional information, please contact Scott Demmons at 506-659-6557 or sdemmons@nbpower.com.

Sincerely,

Brett Plummer
Site Vice President and Chief Nuclear Officer

BP/SD

cc. Ben Poulet, Lisa Love-Tedjoutomo, Bruno Romanelli (CNSC - Ottawa),
consultation@cnsc-ccsn.gc.ca
CNSC Site Office
Al MacDonald, Carol Murray (NBP)

Attachment:

1. Comments on REGDOC-1.1.1, Licence to Prepare Site and Site Evaluation for New Reactor Facilities.

Attachment 1

Comments on draft REGDOC-1.1.1, Licence to Prepare Site & Site Evaluation for New Reactor Facilities

#	Document Section/ Excerpt of Section	Industry Issue	Suggested Change *(if applicable)*	Major Comment/ Request for Clarification	Impact on Industry, *if major comment*
1.	General	This application guide calls for assessments and analysis based on detailed design well before an applicant might reasonably be expected to have chosen a final design. For example, Section 17 requires safety or accident analysis of events/ accidents and characterization of site impacts based on the design, etc. At this stage in the lifecycle, the final design may not yet be known.	Ensure there is a consistent use of language throughout the document, similar in tone and substance to that used in Section 4.1, to recognize that a final design may not yet be established at the site preparation and evaluation stage. Requirements need to match the level of detail that is available to applicants at the various stages in the lifecycle.	Major	This application guide requires too much assessment, analysis, characterization, etc. based on detailed design. An applicant may not have this information available at the time of application. A general understanding of the technology to be used should be sufficient and the requirements need to reflect that. An appropriate level of detail is described in Section 4.1, p 7, which reads: "The bounding parameters that encompass all technologies under consideration shall be considered in the preparation of a site. Sufficient design information that is necessary for the proposed facility shall be supplied to support proposed site preparation activities such as, plant footprint excavation, and excavation of cooling water intake tunnels."
2.	General	The REGDOC does not cover the following requirements from the Regulations: Missing – Class I Facilities Regulations 3(i) General Nuclear Safety and Control Regulations 3(1)(g)(h)(i)(l), 12(a)(b)(d)(e)(g)(h)(i)(j)(k)	Add guidance on the missing requirements	Major	This leaves the industry and the CNSC open to court challenges by NGOs in regards to the issuance of site preparation licences due to missing information that is required by the regulations.
3.	General	1. There is considerable overlap with REGDOC 2.9.1.	Remove redundancy and duplication., referring to	Major	Creates potential for confusion of requirements

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			REGDOC 2.9.1 sections on environmental risk assessment , environment assessment and environmental monitoring.		
4.	General	The document does not make any allowance for the size of the reactor or site (e.g. SMRs) in specifying requirements for environmental assessments.	Provide graded approach depending on the size of the intended site, reactor.	Major	Burdensome, unnecessary requirements for small reactors.
5.	General	Discussing the requirements of the application to prepare site separately in Part A and Appendix A provides more clarity as to what is required for this specific application. Unfortunately Appendix B seems to confuse matters. In Appendix B, combining all phases of the licensing process in this prepare site and site evaluation document makes a rather lengthy document with considerable redundancy/replication of information including repeating of references and more importantly blurs the requirements for each stage of licensing. Greater clarity is required as to what exactly is required for each stage.	Remove redundancy and duplication.	Major	Licensees require clarity of requirements to ensure correct information is provided to avoid rework, and provide consistency in interpretation. This is especially important for any new applicants who may not be familiar with Canadian regulatory framework.
6.	General	The site evaluation is a precondition for submission of		*Clarification*	

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		application for site preparation; however, they appear in reverse order in the title and in the document?			
7.	General Comment	Overlap of requirements between existing regulatory documents (e.g., REGDOC 2.9.1 ,RD 346) and REGDOC 1.1.1. Emphasis on meeting all requirements of a running plant for new build is too cumbersome as presented in this document.	Streamline requirements for new build with reference to later/applicable licence requirements via existing suite of regulatory documents. Present strategy for a graded approach to implement requirements.	Major	Creates uncertainty with prospects of new build or attracting investors. Duplication of efforts for various licences.
8.	General Comment	Opportunity to amalgamate both RD-346, *Site Evaluation for Nuclear Power Plants* and RD/GD-369, *Licence Application Guide, Licence to Construct a Nuclear Power Plant* into REGDOC 1.1.1	Amalgamate documents.	Major	Opportunity to define requirements and how to apply/demonstrate meeting these in a single document.
9.	General Comment	Overlap of responsibilities between CNSC and provincial authorities to regulate safety, in particular, industrial safety during construction (i.e., section 7 Operating Performance).	Separate the defined authorities' responsibilities.	Major	Redundancy of meeting both the CNSC and provincial safety requirements or concerns with the alignment between various interpretations.
10.	All	Clear identification and numbering of the requirements in the text will contribute to better quality in the preparation the applications and	Add REQ# to the requirements in the document.	Major	Additional administrative burden for preparation of applications.

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		efficiency of the evaluation of applications by CNSC staff, as it allows for their traceability.			
11.	All	The document will benefit from clear acceptance criteria to all requirements, in a way that a proponent seeking a licence to prepare a site could evaluate the conformance of their application. This is an Obstacle in evaluation of the quality of applications.	Add clear acceptance criteria.	*Clarification*	
12.	General	The document refers to many USNRC and IAEA (e.g. on pages, 39, 44, 49, 50, 55) documents, but does not clarify how conformity with these documents supports proponents application. For example, document suggests graded approach and in the same time USNRC documents typically include prescriptive requirements.	Detail any relation other than informative between licence application and the documents in question.	*Clarification*	
13.	Preface, p i 2nd paragraph, final sentence: "Its content also addresses the information needed for subsequent lifecycle phases of construction and operation."	This REGDOC is explicitly for the purpose preparing and submitting a site preparation licence. Why would it include information needed for subsequent lifecycle phases?	Keep this application guide simple and focused by deleting extraneous information needed for subsequent lifecycle phases.	*Clarification*	
14.	Preface, p i 4th paragraph, 1st bullet: "consideration of events to	There may not be enough detailed design information available at the time of the site preparation licence	Delete the bullet.	*Clarification*	

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	include multiple and simultaneous severe external events that could exceed the design basis."	application to consider such events.			
15.	Preface, p i 7th paragraph: "For existing facilities: The requirements contained in this document do not apply unless they have been included, in whole or in part, in the licence or licensing basis."	This is a good statement to include. We suggest adding "explicitly" to provide greater clarity.	Edit to read: "For existing facilities: The requirements contained in this document do not apply unless they have explicitly been included, in whole or in part, in the licence or licensing basis."	*Clarification*	
16.	Section 1.3.1, *Nuclear Safety and Control Act* and associated regulations, p 2-3	This section lists licence application requirements from the construction, operation and abandonment sections of the Class 1 regulations. These don't belong in a guide for how to apply for a site preparation licence.	Delete licence application requirements from the construction, operation and abandonment sections of the Class 1 regulations from this REGDOC.	Major	Including these requirements in this guide will cause confusion and waste licensee and regulatory staff effort.
17.	Section 1.1, Purpose, p1	The purpose does not include any mention of the licence application.	Suggest adding the following wording to the purpose: "This regulatory document provides requirements and guidance for a licence to prepare a site and addresses site preparation and site evaluation for reactor facilities. ..."	*Clarification*	
18.	Section 1.2, Scope, p1	The definition of nuclear power plant and small reactor need to be revisited in the context of Small Modular Reactors.	The CNSC should recognize the advanced safety features of SMR designs by creating a new classification for ultra-safe	Major	Canada's current, reactor-related regulatory framework is based on water-cooled cores and separated into two distinct groups (Large and Small) which nominally

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			reactors with regulatory requirements tied to their ability to meet defined safety and environmental goals, not the amount of power they can produce.		discriminate on their thermal power property. Large reactors are pressurized, water-cooled and produce thermal power in the thousands of megawatts. Smaller research or isotope reactors operate at low pressure with thermal power in the range of a few megawatts. These designations have served as an acceptable surrogate for a risk-based system, but this approach will need to become more sophisticated as new designs are introduced. The designs being proposed under the SM R label are varied, but they have several com m on features that set them apart from current designs. These include: • Extremely low risk of failures that could result in the release of radioactive materials to the public. This is the ultimate measure of safety for a reactor facility and new SMR designs are predicting release frequencies two to three orders of magnitude better than current designs. While those projections have to be proven, those are levels of safety virtually unheard of in human designs of any sort. • A limited potential for the spread of contamination should a release occur. Generally, contamination would be contained to the facility site. • Very limited operator intervention to

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					control reactor operations since the designs are largely passive in their operating nature. • A relatively simple decommissioning process at the end of a reactor's life. SM R designs allow for the quick rem oval of all long-lived radioactive material compared to the current designs. While some SMRs with these features will fit into the existing group of smaller research or isotope reactors, most will be above the category's thermal limit despite their simplicity and advanced safety. It is time to replace the thermal power surrogate for risk/safety with a class of licence based on actual measures of safety. High-level requirements for this group of ultra-safe reactors might include: • Safety features that are passive in nature and do not require operator interaction to place the reactor in a safe state. • Accident release frequency better than once in a 100 million per reactor year. • Very low environmental emissions during operation. • Contamination spread of less than 3 km, even under accident conditions. • Decommissioning and removal of all active components 5-10 years after the end-of-operation.
19.	Section 1.3.1, *Nuclear Safety*	The REGDOC currently references	Either delete references to	Major	Sections 6 and 7 of the *Class I Nuclear*

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	and Control Act and associated regulations, p 1	sections 6 and 7 of the *Class I Nuclear Facilities Regulations*. These sections do not apply for site preparation.	sections 6 and 7 of the *Class I Nuclear Facilities Regulations* or clarify that these requirements should be taken into consideration during the environmental assessment, site preparation and design phases of a new Nuclear Power Plant project.		*Facilities Regulations* cannot be applied to a site preparation licence. It is noted that this should be considered during any environmental assessment. However, this should also be noted in the REGDOC.
20.	Section 1.3.1, *Nuclear Safety and Control Act* and associated regulations, p 3.	This section does not list the cost recovery fees, which are explicitly mentioned in section 2.	Add the cost recovery fees to the list of relevant legislation.	*Clarification*	
21.	Section 2, Background, p 4 2nd paragraph: "It is important to note that, under the NSCA, the initial application does not necessarily have to be for a licence to prepare site. As such, the applicant could apply for any of the following licences as long as they address all applicable regulatory requirements, including those for the licence to prepare site:"	A few issues with this passage: • Presumably, this only applies in the situation where a licensee wants to licence a reactor design for marketing purposes and isn't proposing to build it on a specific site. • Licence to abandon isn't on this list. Is an applicant not allowed to apply for a licence to abandon before they apply for a licence to prepare? • Are licences to "prepare site and construct", "construct and operate", "prepare site, construct and operate" different than the same licences listed separately? • The statement, "as long as they	Revise the document to clarify these questions. Suggest the following; "Under the NSCA, the initial application does not necessarily have to be for a licence to prepare site. As such, the applicant could apply for any of the following licences as long as they address all applicable regulatory requirements:: • licence to prepare site • licence to construct • licence to operate • licence to decommission • licence to abandon	*Clarification*	

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		address all applicable regulatory requirements, including those for the licence to prepare site:" suggests that to apply for an operating licence, one must have met the requirements for a prepare site licence, which is contradictory to the first statement in this paragraph.			
22.	Section 2, p 4 6th paragraph, 2nd sentence: "Granting of the licence does not relinquish the licensee's responsibility to ensure that the site continues to be suitable throughout the project lifecycle."	This is sufficiently obvious and may not need to be stated.	Delete	*Clarification*	
23.	Section 2 Page 4	Confusing section: It is highly improbable that a licensee would apply for a licence to prepare site, to operate and to decommission at once.	Re-consider need to combine licence phases into one discussion.	Clarification	
24.	Section 4.1,p 8 Under Guidance, "...(specify anticipated thermal power output)..."	This phrase seems oddly specific and unnecessary in a very general guidance statement.	Delete	*Clarification*	
25.	Section 4.3.1, General considerations, p 9 2nd sentence under Guidance: "It is not expected that activities	It is not clear why this guidance statement is here. Site preparation activities might use radioactive tracers in the site characterization	Delete	*Clarification*	

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	encompassed by the licence to prepare site will involve the handling of radioactive or nuclear substances.	activities.			
26.	Section 6, p11 Guidance, 2ND paragraph (Also Section A.4, p60)	Wording should align with description used in CSA N286-12.	Edit slightly to align with N286-12: "The management system integrates all elements of safety, health, environmental, and security, economics and quality (including quality assurance) elements to ensure that safety is the paramount consideration, guiding decisions and actions; supported by requirements. is properly taken into account in all of an organization's activities. The management system's main objective is to ensure, by considering the implications of all actions not within separate management systems but with regard to safety as a whole, that safety is not compromised.	*Clarification*	
27.	Section 6, p11 Last bullet under Guidance says, "a description of the applicant's site preparation organization for each aspect of the site preparation program, including	Improved alignment with N286-12 language.	Suggest either deleting bullet, since N286-12 already requires the requested descriptions, or aligning more directly with N286-12 language by saying: • a description of	*Clarification*	

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	the corporate and site management structure and the position titles of the persons responsible for the management and control of each program".		organizational structure; authorities, accountabilities and responsibilities of positions; internal and external interfaces; how and by whom decisions are made.		
28.	Section 6.3, p14 Under Guidance, it says, "The management system for the security program includes:"	It is unclear whether the security program is envisaged as somehow separate from the management system. The way it is referenced here and in A4 sets it apart – "the management system for the security program", as opposed to the "security requirements of the management system".		*Clarification*	
29.	Section 6.3,p14 Guidance bullet #3 says: "a demonstration that the proposed security program has considered the applicable quality assurance criteria contained in ISO 17799:2005, *Information Technology – Security Techniques – Code of Practice for Information Security Management"*	While ISO 17799:2005 can be a standard of the management system, it should be up to the licensee to determine which programs and/or processes it applies. The REGDOC should identify *what* is required, not how/where it should be implemented.		*Clarification*	
30.	Part A Section 9.2 Page 16	Request for clarity in following statement:	Remove Item as it is unnecessary. If unduly impacted by proximity to the exclusion boundary, this	Clarification	

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		"The following criteria (for an operating unit) shall be considered in determining the size of the proposed exclusion zone: *Demonstration that the dispersion model used for the dose calculations is not unduly impacted by the proximity of the nuclear facility to the exclusion boundary."*	demonstrates that the exclusion zone is too small.		
31.	10 Radiation Protection	Not required for new build.	Requirements are defined under other licences. Delete redundant requirements in the environmental requirements section.	Major	Possible confusion with refurbishing an existing reactor versus new build.
32.	12 Emergency Management and Fire Protection	Not required for new build. Provincially regulated.	Requirements are defined under other licences. . Delete redundant requirements in the Emergency Management and Fire Protection section.	Major	Redundancy of meeting both the CNSC and provincial safety requirements or concerns with the alignment between various interpretations.
33.	Section 13	Not required for new build. Provincially regulated.	Requirements are defined under other licences. . Delete redundant requirements in the Environmental protection section – suggest collapsing section 13 into one paragraph referencing REGDOC 2.9.1.	Major	Redundancy of meeting both the CNSC and provincial safety requirements or concerns with the alignment between various interpretations.
34.	Section 13.3 Page 22	Issue with the statements that the proposed effluent monitoring	It should be clearly stated that monitoring here only applies to	Clarification	

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		program is required for the licence to prepare site addressing the clauses of CSA N288.5-11. This statement seems to imply the need for an effluent monitoring program will be developed for an operating NPP, which should not be a requirement until commissioning and operation of the facility. This would be covered in the ERA or EA. This is another example of the potential for confusion caused by repeating requirements that are addressed in other regulatory documents.	potential contaminants associated with site preparation, e.g., dust, exhaust emissions, storm water runoff, noise, etc.		
35.	Section 13.3 Pg 22-23	Guidance: The effluent monitoring program should also address the following: 6 bullets dealing with the release of radioactive material. Since no radioactive material is generally released during site preparation and construction, these requirements should not apply unit commissioning and operation.	Clarify what is required by when.	Clarification	

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36.	Section 13.4 Pg. 23	Unclear purpose of environmental monitoring at this phase.	This section should clearly state that the environmental monitoring program at this stage is to define baseline conditions and to monitor the impact of site preparation activities on the environment.	Clarification	
37.	Section 13.4, p23 1st bullet associated with third paragraph	Clarity is sought since there is no regulatory requirement to conduct an EA follow-up, which is listed in the first bullet.	.Delete 1st bullet: ~~"environmental monitoring recommended in an EA follow-up program"~~	*Clarification*	
38.	Section 14	Not required for new build (Decommissioning aside). Provincially regulated.	Requirements are defined under other licences. Remove requirements that are provincially regulated.	Major	Redundancy of meeting both the CNSC and provincial safety requirements or concerns with the alignment between various interpretations.
39.	Section 15	Aside from Prescribed Information does not appear to be required. Treat as construction site until fuel is introduced to site.	Requirements are defined under other licences.	Major	
40.	Section 15.2, Site security program, p27	The site security program during site preparation needs to use a graded approach. There will not be any Category I or II nuclear materials at the site during this period.	Revise the site security program requirements to be in line with the required level of security.	Major	There will not be any Category I or II material on site during the site preparation phase and it is highly unlikely that there will be any prescribed information on site either. This will result in significant unnecessary costs to licensees during this phase of a new build project.
41.	Section 15.2.1, Site access clearance, p 27	Site access clearance should not be required at this point in the project unless it is at an existing NPP site.	Revise the site access clearance requirements to be in line with the required level of security.	Major	There will not be any Category I or II material on site during the site preparation phase and it is highly unlikely that there will

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					be any prescribed information on site either, this will likely be stored at a head office or satellite office facility. There is no need for this level of security at this point in the project. This will result in significant unnecessary costs to licensees during this phase of a new build project.
42.	Section 15.2.3, Physical security , p 28	The level of physical security needs to be in line with the requirements for site preparation. There will not be any Category I or II nuclear materials at the site during this period and it is unlikely that any prescribed information will be on site at this time.	Revise the physical security requirements to be in line with the required level of security.	Major	There will not be any Category I or II material on site during the site preparation phase and it is highly unlikely that there will be any prescribed information on site either, this will likely be stored at a head office or satellite office facility. There is no need for this level of security at this point in the project. This will result in significant unnecessary costs to licensees during this phase of a new build project.
43.	Section 15.2.4, Cyber security, p 28	This section requests consideration of documents that are outdated in terms of current best practices, namely: 1) IAEA Nuclear Security Series 17, *Computer Security at Nuclear Facilities* and 2) Nuclear Energy Institute, NEI 04-04, *Cyber Security Program for Power Reactors.*	1) Remove the two existing references (NSS17 and NEI 04-04) 2) Add a reference to CSA N290.7-14 *Cyber Security for Nuclear Power Plants and Small Reactor facilities.* 3) Add a more general reference to IAEA Computer Security guidance, thus including many important, more up-to-date documents under development such as IAEA NST-045 and NST-047.	Major	Although both of these references provide some value, they are outdated in some 'best practices' for cyber security. Furthermore, there is no reference to the new Canadian nuclear cyber security standard, CSA N290.7-14 *Cyber Security for Nuclear Power Plants and Small Rector facilities.* This new standard was created at the initiative of the CNSC, and is currently being phased into the License Condition Handbook of Canadian operators.

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			4) Consult with Mr. Chul-Hwan Jung, the CNSC cyber security expert on this draft REGDOC.		
44.	**Section 15.2.5, Security officer program, p 29**	The security officers for site preparation do not need to be to the requirements of an operating NPP. There will not be any Category I or II nuclear materials at the site during this period and it is unlikely that any prescribed information will be on site at this time.	Revise the security officer program requirements to be in line with the required level of security.	**MAJOR**	There will not be any Category I or II material on site during the site preparation phase and it is highly unlikely that there will be any prescribed information on site either, this will likely be stored at a head office or satellite office facility. There is no need for this level of security at this point in the project. This will result in significant unnecessary costs to licensees during this phase of a new build project.
45.	Section 16 Figure 16.1 Page 32	Typo	Crown's duty to consult should be subsection 5.2 instead of 5.3.	Clarification	
46.	Section 16.4 p.33	*'this document is consistent with the present IAEA consensus on what is expected in the site evaluation process'* The statement implies that any change in the *"IAEA consensus"* shall be immediately reflected in the document.	Delete the phrase.	*Clarification*	
47.	Section 17, p 34 Second bullet says: "reactor facility events, including beyond-	At the site prep stage, the final design may not have even been selected yet. It seems incongruous	Delete	*Clarification*	

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	design-basis-events and severe accidents"	to be talking about beyond design basis events when the design basis hasn't even been established yet.			
48.	Section 17, p 35 First line: "A high level overview of alternate sites considered prior to selecting the proposed site should be provided. A brief description of the degree and depth of site evaluation used to narrow down the final choice(s) should be included.	This is unnecessary and should be deleted. There is no need to explain why one site was chosen over another. The application is for one site and it simply has to be evaluated based on its merits.	Delete	*Clarification*	
49.	Section 17.3 First line of Page 36	"The analysis shall include an examination of potential cliff-edge effects that may arise from small increases in the severity of events. This information provides a baseline for future assessments over the life of the facility." It is not clear how a small increase should be defined.	Remove or clearly state the severity level.	Major	Severity of events can have major impact on the cost and time that is required by the applicant.
50.	Section 17 Table 17.1 Page 37	Potential mistake under Considerations. There is a repeat in second and third row	Remove repetition.	Clarification	
51.	17.4	Determining potential impact on Environment – redundant to Environmental Assessments	Refer to the EA process rather than repeat requirements.	Clarification	

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52.	Section 17.4 Bottom of Page 38	*"Two or more reference areas are needed to characterize natural spatial variability in measured parameters ...".* It is not clear if this applies to all or some parameters.	Define where needed if suitable reference sites are available.	MAJOR	This can require considerable consumption of time and resources to accomplish with little improvement in safety of the resultant site selection or preparation of site. Presently multiple reference sampling locations are used for benthic invertebrates, but if applied to multiple parameters this could lead numerous reference areas being sampled in both the aquatic and terrestrial environment making costs and logistics prohibitive.
53.	Section 17.5.2, p 40 First line: "Because of the time involved for this task, it is important to initiate these discussions during the initial (pre-licensing) site evaluation phase. The CNSC will expect these agreements to be in place before granting a licence to prepare site."	It makes sense to have the discussions with offsite agencies at this stage in the life cycle, but it is excessive to expect formal agreements to be in place before the licence is granted.	Delete this requirement.	Major	The requirement to have agreements in place before a site preparation licence is granted is unnecessary and overly restrictive. There will be plenty of time to establish these agreements before the facility is even built let alone operated.
54.	Section 18 Page 41	Concern with open-ended statement that can easily mean years/decades of baseline sampling before applying for a prepare site licence. *"Baseline data should be of sufficient sample size and duration*	Include a statement to clarify the number of years of baseline data are required for the application to prepare site, considering that baseline monitoring will continue through the life of the project.	Major	This could be a major cost and resource impact on the industry if the stated condition is required to begin site preparation.

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		to conduct hypothesis testing against post-commissioning (follow-up) monitoring data, with sufficient power to detect relevant effect sizes."			
55.	Section 18.3 Page 42	Concerns about requirements under this statement: *"The evaluation shall take into account prehistoric, historic, and instrumentally recorded climatic data sources that reflect regional conditions... Descriptions of basic meteorological variables shall include:...atmospheric pressure."*	Change "shall" to "should" as some of this data may not be available (Prehistoric data in particular). Atmospheric pressure is not used in EAs/ERAs. Should only ask for data that are essential for the application to prepare site.	Major	There will be information gap if data are not available. Some of the data will not be readily available in the ERA and they not needed or used in present assessments. For example, there may not be any records of atmospheric pressure being available or being used in assessments, so this should not be required. Design of the NPP takes extreme weather conditions, which includes atmospheric pressure extremes into account which is documented in the safety analysis report.
56.	Section 18.6 Page 43	Concern with the following statement: *"Documentation of the biota utilizing the habitat and the proposed site shall be provided and include descriptions of ... and invertebrate communities."*	Revise to be more specific on what is required for monitoring. For example, require focus on identifying legally protected species (e.g. monarch butterfly) and invertebrates that will serve a purpose for environmental effects	Clarification	

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		Documentation of the terrestrial invertebrate community inhabiting soil and foliage is an enormous task and at the present level of the science of limited use for monitoring effects. To date the only requirement is for benthic invertebrates (at the level of genera) and observations on invertebrates of "special concern"	monitoring.		
57.	Section 19.3.1	Flood - How in situation where Canadian documents are currently unavailable, is the conformance criteria established and assessed?	Explain acceptance criteria.	*Clarification*	
58.	Section 21.2.3 Page 53	There is no leverage point available to a utility on the issue of establishing means of deterrence to "high risk" airspace.	The expected outcome of discussions with municipal, provincial and federal governments to establish means of deterring entry into "high risk" airspace is unclear. I don't see a definition of "high risk" airspace. There is little in place to deter entry for existing facilities. Current practices are reactive, not preventative. This point requires clarification and is not written in consideration of industry's ability to impact	Major	For industry to engage in New Build on existing nuclear properties, the requirement for this deterrence is out of sync with our current norm.

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			this area.		
59.	Section 23, p54 First line: "A management system, quality management or quality assurance (QA) program shall be established when it can be applied to the site evaluation process."	There is a significant difference between a management system and a quality assurance program, with the management system integrating all requirements and ensuring safety is the overriding consideration. It doesn't seem appropriate in this section to allow for the choice of only a QA program.	For clarity, recommend removing "quality management or quality assurance (QA) program."	*Clarification*	
60.	Section 23, p55 Second to last bullet under further guidance	Reference to CSA N286-05 should be revised to CSA N286-12.	Revise to reference N286-12.	*Clarification*	
61.	Appendix A	Redundant to REGDOC 1.1.3	Opportunity to create single LAG specifying various requirements for different licences.	Major	Having redundant requirements in a more than one Regulatory document leads to potential for confusion.
62.	Appendix B	Redundant to REGDOC 1.1.3	Opportunity to create single LAG specifying various requirements for different licences.	Major	Having redundant requirements in a more than one Regulatory document leads to potential for confusion.
63.	Appendix B.2.1, p67 - "Because characterization methods and tools evolve over time, the licensee shall demonstrate that the process of site evaluation will continue to be periodically updated in future licensing phases to ensure that the design	Clarity is sought around this expectation. Licensees accept that information will be updated over time, but the initial site evaluation will remain valid unless additional requirements are imposed (Environmental Assessment, for example).	Clarify expectations around future periodic review.	*Clarification*	

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	basis and the licensing basis are supported by up-to-date information."				
64.	Appendix B.2.1, p67 Guidance, 1st bullet: "applicable federal environmental legislation"	This is too vague for effective guidance.	Specify	*Clarification*	
65.	Appendix B B.3 Guidance Page 69 4th paragraph	*"This includes specifying the deviation from a reference conditions that would be considered an adverse effects, taking into consideration the normal and natural variation for that parameter. This can be done through the implementation of statistical design into baseline studies."* This may be achievable after a facility is in place and operated for considerable time, but is not possible early in the program. The text implicitly implies several years or decades of baseline monitoring before implementation of the project.	Include a statement to clarify the number of years of the baseline data required for the application to prepare site, considering that baseline monitoring will continue through the life of the project.	Major	This could be a major cost and resource impact on the industry if the stated condition is required to begin well before site preparation.
66.	B.3.1 2nd bullet Page 69	Concern with statement:	Specify whether the one-year period also applies to other	Major	This will consume unnecessary resources and time of the applicant.

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		"One year of onsite meteorological data for the most recent one-year period is required for baseline climate, meteorological data and air quality data (repeated on pg. 70).	baseline parameters as well. One year of baseline monitoring prior to prepare site should be sufficient, but regulatory statements seem to imply several years may be required.		
67.	B.3.1 3rd bullet Page 69	Concern with bullet: *"information about climatic parameters such as air masses, general airflow, pressure patterns, frontal systems and temperature and humidity conditions, as compared against references."* . A general description of dominant wind direction, temperature and precipitation is usually given in an ERA or application, but not to the level of detail requested here. It is highly unlikely that there would be major differences in the reference areas and study site if reference areas are nearby, and if significantly different, then they are not appropriate reference areas.	This bullet should be changed or deleted.	Major	This cannot be implemented as all information is not readily available and will not be available at the micro-scale to compare among the selected site and reference sites. This will create a data gap in requirements.
68.	B.3.2.3 Page 72	*"Estimates of the rate(s) of erosion of shores or riverbanks on or near*	This topic could be addressed and mitigation can be applied	Major	This will consume unnecessary resources and time of the applicant with no significant

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		the site should be provided. ... for the average long term and also for the historical occurrence...". Although erosion is an obvious concern over the long term facility life, are measurements required for the application to prepare site, especially long-term average values and how they have changed with historic events, i.e., this information would likely not be available and would be considered a gap. Again on pg. 73 B.3.3.1 3rd bullet " *for surface-water bodies and wetlands, estimated erosion characteristics and sediment transport, including rate, bed, and suspended load fractions and graduation analyses ...*" . Is this required to prepare site? Is this required at all if there is no visual evidence of an issue? If required, how often is this to be measured?	as needed during the life of the facility. During site selection, visual inspection of the sites would identify issues with erosion and if serious problem were evident the site would not be selected.		benefit.
69.	B.3.3.2 4th bullet Page 74	Concern about information on "*historical drought stages and*	Specify where this information	Major	This cannot be implemented if the information is not available.

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		discharges..." For many areas in Canada this information is likely not available.	is available, otherwise delete.		
70.	B.3.3.3 Page 74	It is not clear whether all the information is needed and what level of detail is required for the application to prepare site. For example, bullet 7 "*net loss, including evaporation and seepage*" Evaporation could be estimated using equations but seepage would require considerable monitoring.	Clarify that knowing whether there is sufficient quantities of water available should suffice to meet requirements for the prepare site phase.	Major	This will consume unnecessary resources and time of the applicant with no significant benefit.
71.	B.3.4.2 Page 75	Concern with statement on Water Quality Guidance "Water quality benchmarks from peer-reviewed scientific literature will be recognized only when no federal or provincial benchmarks exist". There are many natural (unperturbed) waters in Canada that do not meet the water quality guidelines. Sound rationale or scientific justification should be permitted. As stated in the guidelines, they are for guidance only.	Delete or modify this statement.	Major	This may restrict the availability to select an excellent site.

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72.	B.3.4.3 Page 75	Concern about Baseline sediment quality guidance requirement: *"Without federal or provincial standards and guidelines, sediment quality benchmarks from peer-reviewed scientific literature should be used with appropriate rationale."* The federal and provincial sediment quality guidelines were development from data from the Great Lakes. Sediment quality data from other locations can be compared to these benchmarks, however, sediment quality from other areas cannot be expected to meet these benchmarks as many/most lakes and wetlands on the Canadian Shield including pristine lakes, do not meet these guidelines. Further, not all good pieces of work/data sets demonstrating this are in peer-reviewed literature. Sound rationale or scientific justification should be permitted.	Delete or modify this statement.	Major	This statement limits the construction of nuclear plant to the Great Lakes.

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73.	B.3.5 Page 78	Concern about lack of clarity about level of detail in terms of number of years of study. This will consume unnecessary resources and time of the applicant.	This is nominally covered in the EA. EA requirements should not be duplicated in this document Instead focus on supplemental requirements.	Clarification	
74.	B.3.5 last paragraph Page 79	*"For commercially or recreationally valuable species, ...the provincial, local conservation agencies or organizations that maintain harvest records of these species should be identified."* Is this necessary? For example, records kept by the Ontario Ministry of Natural Resources for harvest of game animals such as deer and moose are crude and are of little use for site preparation.	Remove expectation. This is nominally covered in the EA. EA requirements should not be duplicated in this document Instead focus on supplemental requirements.	Clarification	
75.	B.3.6.1 Page 79	Concern about baseline aquatic flora, fauna and food chain data: *"Characterization information shall address the site and surrounding region potentially affected by the project such as the following ... phytoplankton, zooplankton,... ".*	Characterization of the algae and zooplankton communities should be removed.	Major	This will consume unnecessary resources and time of the applicant with no value added. This level of detail imposes requirements that cannot be met by industry. Characterization of the algae and zooplankton communities is time consuming, expensive, and generally not used for environmental monitoring. If specific issues develop over the course of operating a facility, specific studies can

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		It is not clear how a species list of algae species and zooplankton species and their relative abundance will be useful considering their population dynamics (highly variable). There is little use in biomonitoring.			address the issue at that time as a licence condition.
76.	B.3.6.1. fish habitat mapping 2nd sub-bullet Page 80	Concern with *"this includes mapping of streams and ditches that contain fish for substrate type, cover and structure (run, riffle, pool) and stream channel morphology, according to published protocols ...".* By definition drainage ditches are not designed to provide habitat for fishes. Fishes may colonize drainage ditches to a limited extent and ditches may become naturalized over time, however, eventually they need maintenance to prevent flooding and are dredged. No protocols developed for mapping fish habitat were developed to specifically address drainage ditches.	Drainage ditches should be deleted from this bullet.	Major	Unnecessary expense for applicant and is contrary to the design and purpose of the drainage ditch.

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77.	B.3.6.1 5th major bullet Page 80	Question regarding: *"For existing facilities on the same site, a description of the zone of influence of the existing thermal plumes (>1°C above ambient)".* Why is 1°C above ambient used as opposed to a minimum temperature above ambient where effects may appear? i.e., no effect would be seen with a 1°C increase in temperature. Comment also applies to pg. 108 requirement	The zone of influence should be based on the area of expected impact , e.g., for round whitefish, a sensitive species, this would be >3°C above ambient, a much smaller area of influence than for >1°C increase. This is nominally covered in the EA. EA requirements should not be duplicated in this document Instead focus on supplemental requirements.	Major	This affects social licence. 1°C will show much larger potential affect area than in reality would be affected.
78.	B.3.6.1 fish habitat mapping 5th sub-bullet Page 80	Concern with *"spring freshet effects on biota and habitat quality in site streams..."* . Spring freshets are natural phenomena as a result of snow melt that aquatic organisms normally have to contend with whether there is a facility there or not. Why is this a requirement?	Remove requirements	Major	This will consume unnecessary resources and time of the applicant with no significant benefit.
79.	B3.6.1 2nd bullet Page 81	Concern with *"baseline characterization field study of site reference ditches that provide habitat for aquatic biota ..."*.	This bullet should be deleted. Alternatively specify how many reference ditches the licensee should construct for comparison with their drainage	Major	This will consume unnecessary resources and time of the applicant with no significant benefit.

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		The use of reference ditches off-site, not under the licensee's control, is of limited use. For example, agricultural ditches maybe contaminated with pesticides and those along roadway by metals, road salts and petro-contaminants. Both can be dredged at any time destroying their use as a reference ditch.	ditch and how these ditches can be kept from being exposed from on-site potential contaminants.		
80.	B3.6.1 last main bullet Page. 81	*"a total aquatic species inventory list based on field studies for the site and local study area and available published information for the regional study area."* It is not clear how this information is ever used, although often a requirement. The statement "a total aquatic species inventory" implies a total inventory, i.e., protozoa, nematodes, aquatic bacteria, fungi, algae, etc.	If this needs to remain a requirement, change statement to request an aquatic species list of fish, benthic invertebrates and major macrophyte species, based on species collected in field studies on the site and local area and those species expected to be found in the area based on regional studies with some indication on their relative abundance and the presence of protected species. This should be limited to the requirements identified in the EA. EA requirements should not be	Major	This will consume unnecessary resources and time of the applicant with no significant benefit. This requirement is unrealistic.

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			duplicated in this document.		
81.	Appendix B.3.8, p84 "Baseline land-use information that includes future changes in land use is used to predict the effects on the proposed site operations, and of the site operations on the environment."	Additional information is requested on what level of prognostication is expected from licensees regarding "future land use"		*Clarification*	
82.	B.6.1 Effects of project on air quality 5th major bullet, 1st secondary bullet Page 102	Concern with *"description of cumulative effect of emissions from the facility..., including: representative background concentrations in the worst-case air quality assessment".* It is not clear what is being said here. This is nominally covered in the EA. EA requirements should not be duplicated in this document Instead focus on supplemental requirements		Clarification	
83.	B6.2 Page 103	*"Sufficient data should be provided for the assessment of*	This requirement needs further consideration if the goal is to	Major	This will consume unnecessary resources and time of the applicant.

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		anticipated impacts during... Effects description should include direct exposure effects (e.g., on survival, growth, reproduction, age, species distribution of community) and indirect effects (e.g., altered predators, prey, competition, exposure via the food chain)." This statement infers an intense evaluation in the environmental effect monitoring program rather than an ERA analysis. Sampling to assess potential effects will likely have a major impact on biota. This is nominally covered in the EA. EA requirements should not be duplicated in this document Instead focus on supplemental requirements.	minimize environmental effects to biota.		This can have potential major environmental impacts through excessive sampling.
84.	B.6.3 Guidance Page 104	Concern with : *"The typical, natural variation in radioactivity and hazardous substances concentrations at reference sites should be determined through the*	This statement requires a caveat stating where it is statistically feasible. .	Major	This will consume unnecessary resources and time of the applicant. This can have potential major environmental impact through sampling.

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		implementation of statistical design into the baseline studies". Natural variation is frequently so high that a statistic design is not practical, i.e., too many samples are required to gain a reasonable measure of certainty.			
85.	B.6.4 Page 105	Concern with statement: *"Well prepared effects predictions: last bullet "specific predicted effects as the difference in attribute(s) between a future condition without the project, and a future with the project."* Unless applied to all assessments of projects in Canada that require an approval (by regulators other than the CNSC) this produces an unfair disadvantage on nuclear energy. Production of energy by nuclear power has little direct effect on the environment, but production of energy allows for population growth and industrial growth that have a direct effect on	This requirement should be deleted.	Clarification	

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		the environment.			
86.	B.6.4 last bullet Page 105	Concern with statement: *"defensible arguments for or against using the benthic invertebrate community as indicator of loss of fish habitat, since this is a food base for many fish species".* Benthic invertebrates are excellent indicators of environmental quality, are food for fish and a pathway for movement of contaminants from water and sediment to higher trophic levels. Justification as an indicator of loss of fish habitat is not required, it is a given.	Delete this bullet. Benthic invertebrates are excellent indicators of environmental quality, are food for fish and a pathway for movement of contaminants from water and sediment to higher trophic levels. Justification as an indicator of loss of fish habitat is not required, it is a given.	Clarification	
87.	B.6.4.4 Thermal plume effects on the aquatic environment 1st bullet Page 109	Concern with statement: *"direct consequences to the ecosystem (process, structure, function) aquatic invertebrates (bacteria, protozoans, viruses, zooplankton, benthic and other macroinvertebrates) phytoplankton, rooted aquatic*	Demonstration of effects or no effects to all taxa is an extreme requirement. Suggest modifying to potential thermal effects only to fishes.	Major	This will consume unnecessary resources and time of the applicant. This may have a negative impact on social licence. Excess sampling can have a negative environmental impact.

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		plants and fish, and indirect effects (via food chain) to aquatic birds and mammals." If this is to be demonstrated by sampling and analysis, the environmental effects placed on the environment by the regulator may be greater than that from the project. This requirement is cost inhibitory and appears to take a very strong anti-nuclear position.			
88.	B.6.7.3 Page 114	Concern with statement: "*Chronic exposures that are less than a biota effective dose screening criterion of 10 µGy/h require minimal interpretation or discussion."*	Does the CNSC have a simpler criteria for the human dose rate for which minimal interpretation or discussion is required. If so, please state here.	Clarification	
89.	page 120	The definitions on page 120: *-site preparation - the act of establishing basic infrastructure to support the future construction and operation of a facility regulated under the Nuclear Safety and Control Act.* *- site evaluation - the processes and methodologies to determine whether the characteristics of the*	Update definitions	*Clarification*	

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		site and the surrounding region are appropriate for the construction, operation and future decommissioning of a facility regulated under the NSCA. Appear to be misaligned with the descriptions in the text of the document, for example, the document describes a process way beyond "basic infrastructure".			

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