

22-March, 2024

**IN THE MATTER OF THE YUKON ENERGY CORPORATION
2023-24 GENERAL RATE APPLICATION**

Heard before the

YUKON UTILITIES BOARD

WRITTEN ARGUMENT OF NATHANIEL YEE

Introductory Comments:

In this document I will mostly address capacity issues and rental and installed diesel.

The Department of Environment is sometimes referred to as “Environment Yukon” as this is how YEC often refers to it. No confusion is intended by using these terms interchangeably.

Issues not addressed in this document are not implying agreement or disagreement, but are left to other intervenors and the Board.

Relevance and YEC’s Arguments to the YUB for Exceeding Permitted Capacities and Contravening Permit Terms.

1. YEC has introduced their interpretations of specific sections of YESAA and the Environment Act in this proceeding, with the objective of having capacity that is unassessed, unpermitted and unauthorized for operation included in costs. Ideally, YEC would have valid permits for all capacity, and would then not be in the position of asking the Board to consider their arguments concerning unauthorized capacity.
2. As YEC has initiated the discussion of YESAA and the Environment Act in this proceeding and the Board has engaged, it is clear that this discussion is relevant to this proceeding.
3. Board Order 2023-05 Appendix A requests information concerning YEC’s interpretation of Section 49 of YESAA, and asks “... *are the rented diesels exempt from an assessment pursuant to section 49 of the Yukon Environmental and Socio-economic Assessment Act because they fall within an activity that is required in certain emergency conditions? If yes, what are the on-going emergency conditions and what YEC as [sic] done to resolve the emergency? If no, then please explain YEC’s position on this issue.*”¹
4. YEC responded with their opinion and argument on how they would like Section 49 of YESAA to be understood by the Board, explained how they considered section 113 of the Environment Act to be applicable and also provided current Air Emissions Permits for each diesel generation site. This exchange indicates that both the Board and YEC consider discussion of permits, capacities, YESAA and the Environment Act to be relevant to this GRA.²
5. These issues are particularly relevant to this GRA because YEC is asking for costs for capacities that have not been assessed as YESAA requires, and have not been permitted or authorized by the Department of Environment. It is therefore up to YEC to show how the Board’s acceptance of these unauthorized capacity increases does not undermine the authority of other regulators. This is YEC’s objective in introducing sections from YESAA and the Environment Act into this proceeding.

1 Exhibit 5 pdf p.21 line 26.

2 Exhibit 5 pdf p. 21-24, and permits p. 63-89

6. During cross-examination, YEC again gave their opinion on how they would like Section 49 to be interpreted by the Board. Asked if they stood by the statement that Section 49 allows them to operate any available diesel capacity in the event of an N-1 event, they confirmed that they did.³
7. However it is not clear that YEC's opinion on the utility of Section 49 in the hearing or as written in the GRA⁴ is relevant or appropriate for two reasons. First, YEC Counsel had previously pointed out that debate and opinions concerning emergency authorizations are more the domain of YEC's environmental regulator than the YUB,⁵ and second, that the Department of Environment had previously provided YEC with a document that contradicted YEC's opinion, as will be shown below.
8. I agree that the Department of Environment is the authority on permits, capacities and emergency authorizations, and their input on this issue would take precedence over my opinions or those of YEC.
9. On July 20, 2023 The Department of Environment provided YEC with a "Regulatory Reminder" that stated "*The regulator is unable to provide authorization to operate above the assessed capacity in the event of an emergency situation.*"⁶ So regardless of YEC's opinion of what they would like Section 49 to do, the Department of Environment does not see it that way. Capacity that has not been assessed cannot be authorized. YEC's opinions concerning Section 49 as expressed in the GRA and IR responses are incorrect and irrelevant.
10. Despite having received the Regulatory Reminder before submitting the GRA, YEC did not explicitly acknowledge it in the GRA or in IR responses and continued to push their alternate interpretation. In their Rebuttal Evidence however, YEC acknowledged that their views on Section 49 are not supported by the Department of Environment and stated that they disagreed with the Department of Environment's interpretation of the Environment Act.⁷
11. This hearing is not the correct venue for YEC to be arguing with the Department of Environment's interpretation of the Environment Act or presenting alternative interpretations that conflict with those of the Department of Environment.
12. Despite airing their disagreements with Environment Yukon in their rebuttal, earlier on the same page YEC also agrees that this is not the proper forum for permitting disputes: "*This issue is a matter within Environment Yukon's jurisdiction, as the regulatory agency responsible for interpreting and applying the air emissions permitting scheme in the Environment Act and its regulations. This GRA proceeding before the Board is not the proper forum to adjudicate such a dispute; it would usurp the role of Environment Yukon for the Board to do so.*"⁸

3 Hearing Transcript Vol II p. 276 Line 1.

4 Exhibit 1 p. 162 footnote 10.

5 Hearing Transcript Vol II p. 246 starting line 23 continuing through 247 line 4

6 Exhibit 8 p. 31. The Regulatory Reminder was provided shortly after YEC mentioned potentially using Section 49 to exceed capacity limits, in response to YESAB IR1.3 on June 29, 2023. IR1.3 is Exhibit 8 p. 38.

7 Exhibit 9 pdf p. 5, last paragraph, starting "Notwithstanding the Environment Yukon Regulatory Reminder..."

8 Exhibit 9, pdf p. 5 first full paragraph.

13. Accordingly, accepting the Regulatory Reminder from the Department of Environment is the only valid option. Should the Board instead accept YEC's argument/opinion that Section 49 of YESAA exempts rental diesels from assessment and allows operation of unassessed capacity in emergency situations, the Board would be directly contradicting the Department of Environment's Regulatory Reminder. As YEC notes this would, usurp the role of Environment Yukon, and would also undermine it's authority.
14. Subsequent to my evidence submission highlighting the Regulatory Reminder, YEC has somewhat backed away from claiming that Section 49 authorized them to operate unassessed capacity, it being clear that Environment Yukon does not agree with YEC's interpretation of YESAA and the Environment Act.⁹ With that option gone, YEC then introduced the idea of simply exceeding authorized and permitted capacity, and has now described how they would report exceeding their permit limits (and thereby contravening their permits) to Environment Yukon, using the "Unauthorized Emissions" provisions in their permits and section 113 of the Environment Act.¹⁰
15. First addressing the "Unauthorized Emissions" provision in the permits, which reads as follows:
PART 7: UNAUTHORIZED EMISSIONS
*1. The permittee shall contact either an environmental protection officer or the 24-hour Yukon Spill Report Centre (867-667-7244) as soon as possible under the circumstances in the event of an unauthorized release or emission, such as fugitive emissions or emissions resulting from burning fuel other than that allowed for under this permit.*¹¹
16. As the Yukon Spill Report Centre is listed as a contact, and the examples of unauthorized emissions are fugitive emissions and incorrect fuel, this permit provision addresses accidents and does not address intentional exceedances or contravention of permit terms.
17. Further, the only other mention of unauthorized emissions in the permits also refers to spills.
18. Part 8 Section 2 *The Permittee shall keep the following records:*
*c) notes concerning any spills, leaks or unauthorized emissions occurring at the site, including substance involved, estimated quantity, date of observation of the spill or leak, spill reports made and clean-up procedures implemented;*¹² Does YEC keep records of quantity and substance involved when exceeding permit limits?
19. As would be expected, the permit does not provide a suggested path for ignoring permit limits. Perhaps the Environment Act does?

9 Exhibit 9, pdf p. 5 last paragraph and pdf p. 7, footnote 5, where YEC notes that in light of the Regulatory Reminder, YEC's view on the issuance of an amendment in response to an emergency is not supported by Environment Yukon.

10 Exhibit 5 pdf p. 22-23

11 Exhibit 5 pdf p. 83. This is the Whitehorse permit. The same provision appears on all permits.

12 Exhibit 5 pdf p. 83

20. As to YEC's claims about the relevance of section 113 of the Environment act, this again is YEC's opinion, and their interpretation of the Environment Act and permitting terms. It yet another push to have the Board authorize operation above permitted capacity by having this unpermitted capacity added to costs. Given that capacity issues fall under the jurisdiction of Environment Yukon, YEC's choice to engage in cherry-picking section 113 from the Environment Act in this proceeding should not be accepted by the Board.
21. Should the Board choose to consider YEC's argument to exceed existing permit limits established between YEC and Environment Yukon, there are of course a number of issues to consider. As described above, this first includes the Board's authority to accept and allow capacities greater than those accepted by Environment Yukon.
22. For example, If YEC had wanted the Board to consider Mayo rental diesel to be a 7.2 MW project, why was it presented to YESAB and Environment Yukon as a 4.9 MW project? The 4.9 MW permit was issued 82 days after the GRA was submitted, so YEC has chosen to ask for different capacities from two different regulators simultaneously. YEC did not present the 7.2 MW capacity to Environment Yukon, nor was the idea of exceeding permits presented to YESAB, Environment Yukon or the First Nation of Na-Cho Nyäk Dun. Allowing costs for capacity that has not been assessed and permitted undermines the authority Environment Yukon and YESAB.
23. If despite all of this, the Board still wishes to consider YEC's arguments concerning exceeding capacities determined by Environment Yukon, it will be necessary for the Board to examine section 113 of the Environment Act which was singled out by YEC as applicable, and also to take a look at other relevant sections. Section 113 and a few others will be explored here.
24. Section 113 of the Environment Act falls under *Part 9, Release of Contaminants*, and reads as follows:
113 Report of release
Every person who releases a contaminant in an amount, concentration, or level in excess of that prescribed by regulation or allowed under a permit shall, as soon as possible under the circumstances, report the release to an environmental protection officer or to a person designated by regulation.
25. This could apply to YEC exceeding permitted capacity, but only if we are to assume that running the excess capacity would release a contaminant level that exceeds the permit or regulation. However the permits in question do not specify limits on contaminant levels. Rather than specifying contaminant levels, the Air Emissions Permits express maximum capacity (MW) and the number of generators allowed to be running. So section 113 of the Environment Act is not relevant, since it discusses exceeding contaminant level limits that do not exist on the permits in question. It is hard to know if one is exceeding something that is not measured or mentioned on the permit. This section does not address exceeding the MW total permitted or the number of generators permitted.

26. There are, however other sections of the Environment Act that do apply. I will start with section 172 (b).
27. *PART 14 OFFENCES AND PENALTIES*
172 Contravention of a permit, order, or other provision
A person who
(b) contravenes a term or condition of a permit;
is guilty of an offence and is liable
(g) on a first conviction, to a fine not exceeding
\$300,000 or to imprisonment for a term not
exceeding six months or both; or
(h) on each subsequent conviction, to a fine not
exceeding \$1,000,000 or to imprisonment for a
term not exceeding three years or both.
28. Certainly YEC's decision to exceed permit limits contravenes a term or condition of a permit, making section 172 (b) far more relevant than section 113 that YEC has chosen.
29. Further 172 (e) lists a number of other offences, a few of which also apply.
172 (e) contravenes section 83, 89, 90, 94, 95, or 112 or subsection 114(6) or section 120;
30. Here are the ones that are relevant:
83 Permit required When a development or activity requires a permit no person shall
(a) construct or operate the development or undertake the activity;
without the appropriate permit.
31. The permit is required, and a 4.9 MW permit is not "the appropriate permit" for a 7.2 MW project.
32. *89 Prohibition*
(1) No person shall proceed with a development or activity for which a person has
received a permit from the Minister except in accordance with the terms and conditions
set out in the permit.
33. YEC's exceeding permit limits is certainly not in accordance with the terms and conditions set out in the permit.
34. *90 Amendment of permit*
(1) A permit holder who intends to alter, add to, or in any other manner change a
development or activity shall apply to the Minister for an amendment of the permit.
35. YEC has made it clear that they do intend to operate additional unassessed capacity in the event of an emergency. YEC has not applied for amendments to the permits, choosing instead to contravene them.
36. As these are all listed as contraventions under 172 (e), the same penalties listed above apply, 172 (g) and (h).

37. YEC confirms that “*Environment Yukon would have the responsibility as regulator to determine what if any consequences should result.*”¹³ This is not a prudent path to follow.
38. While I would expect that the Board will simply respect the permit limits established between YEC and the Department of Environment, a decision to allow costs for unassessed and unpermitted capacity would have to consider various sections of the Environment Act as outlined above. YEC has suggested Section 113 to the Board, relating to release of contaminants, but has not mentioned the more relevant section 172 which discusses contravention of a permit, or as YEC calls it, “exceeding its permitted operating capacity under its current air emissions permits.”¹⁴
39. Recommendation: That the Board accept only the capacity limits that YEC has established with Environment Yukon, and not allow costs for any capacity that has not been properly assessed and permitted. It is not appropriate for YEC to ask for capacity that contravenes permit terms to be included in costs and not prudent for YEC to contravene permits. Accepting capacity numbers greater than those assessed by YESAB and permitted by Environment Yukon would usurp the roles of Environment Yukon and YESAB, undermine the authority of Environment Yukon, and violate the terms of YESAA.
40. YEC is likely to claim in reply argument as they did in rebuttal evidence and in the hearing that arguments and disputes concerning permits and capacities are not relevant to the GRA proceeding.¹⁵ I agree that if YEC wants higher capacity numbers, they should take this up with Environment Yukon rather than with the YUB, and that the capacity limits on the permits that YEC submitted in this proceeding¹⁶ should be respected by the Board.
41. YEC will also likely claim that this issue was settled in the 2021 GRA, with the Board’s hesitant approval of YEC’s interpretation of Section 49 in that proceeding, which of course did not take into account the Regulatory Reminder issued to YEC by Environment Yukon in July of 2023. This is a big change since the 2021 GRA.
42. In light of the Regulatory Reminder which states that “*The regulator is unable to provide authorization to operate above the assessed capacity in the event of an emergency situation*”,¹⁷ the Board’s previous acceptance of YEC’s interpretation of Section 49 as authorizing capacity without an assessment in response to an emergency is not valid in the current proceeding.
43. While in the 2021 GRA the Board did find that “N-1 emergency conditions described by YEC appear on their face to be consistent with Subsection 49(1)” of YESAA,¹⁸ the

13 Exhibit 9, pdf p. 7 end of last full paragraph.

14 Exhibit 9, pdf p.4 2nd paragraph.

15 Exhibit 9, pdf p. 5 first full paragraph, Transcript Volume II p. 246, starting line 23.

16 Exhibit 5, pdf p. 63-89

17 Exhibit 8 pdf p. 31

18 Board Order 2022-03 Appendix A pdf p. 26 para 110.

Department of Environment has now made it clear that regardless of Section 49, assessment is required to authorize operation, even in response to an emergency.

44. YEC acknowledges the significance of the Regulatory Reminder in expressing their disagreement with Environment Yukon's interpretation of the Environment Act and then pivoting towards contravention of permit terms and section 113 of the Environment Act.¹⁹

Capacity Needs, Permitting Choices and Practical Options.

45. Faced with the reality that their interpretation of Section 49 of YESAA is not supported by Environment Yukon, YEC claims in their rebuttal evidence that "*the only practical option currently available to YEC to prevent immediate harm to public welfare, health or safety during an emergency event is to exceed its permitted operating capacity if and when it becomes necessary to do so and to report that exceedance to Environment Yukon, as YEC has very clearly explained in the materials filed in this proceeding.*"²⁰
46. This statement is problematic on a number of levels. Claiming that exceeding permitted capacity is "the only practical option" ignores what is typically understood to be the only option, which is having valid permits that accurately reflect the project. With 82 days of overlap between the submission of the GRA and the issuing of the 4.9 MW permit for Mayo in November of 2023, there was plenty of time to do it right. It is clear that YEC planned all along to present different capacities to different regulators.²¹ The same is true in Whitehorse, where the amendment authorizing the rentals expired in March of 2022. There is no mention of the rentals or associated capacity to be found on the amended permit that YEC has provided for reference, and YEC has certainly had time to apply for a new permit amendment.²²
47. Why do YEC's permits not match their activities as presented in this hearing, and why has YEC not made any effort to correct this issue? The ongoing contravention of terms of a permit is not "the only practical option currently available" and it is certainly not prudent.
48. Assessment and permitting are integral to the undertaking and operation of all projects, and failure to complete these steps is a failure to implement the projects correctly, thereby failing to ensure safe and reliable power for Yukon. YEC could have done the permitting correctly in the first place, or could be making the effort to correct the issues now. Claiming that exceeding permit limits and the ongoing contravention of the terms of permits is "the only practical option currently available" ignores the idea of doing the job correctly, and is not sustainable or prudent.
49. While YEC has demonstrated a need for this capacity which is required to meet N-1 criteria, this need does not exempt YEC from relevant regulation or give reason for

19 Exhibit 9 pdf p. 5, last paragraph.

20 Exhibit 9 pdf p. 5-6

21 Exhibit 5 pdf p. 84, YEC's 4.9 MW permit for Mayo rental diesel.

22 Exhibit 5 pdf p. 79, YEC's Whitehorse thermal permit, amended 11-May, 2022.

YEC to claim higher capacities in this hearing than have been presented to other regulators. YEC does need this capacity, and YEC also needs to have this capacity authorized for use by the public before it can be included in costs. YEC showing the Board that the capacity is useful does not change the requirements that must be met before this capacity is authorized for operation by Environment Yukon. Including unauthorized capacity in costs again undermines Environment Yukon's authority. YEC needs the capacity, and YEC needs assessments and permits to assure that it is safe and reliable. YEC needs to do the job right.

50. As to YEC having "very clearly explained" the plan to contravene permits in materials filed in this proceeding, it is notable that the current explanation involving section 113 of the Environment Act is not exactly clear in terms of its applicability or consequences as was explored above, and it was not mentioned until after my evidence submission so there has been little opportunity to question it. And no matter how or when it is explained, it is still a contravention of permit terms.
51. Recommendation: YEC's need for capacity does not exempt it from it from regulation, and should not be accepted by the Board as rationale for including unauthorized capacity in costs. Similarly, YEC's stated commitment to contravening the terms of its permits²³ is also not acceptable as rationale for including unauthorized capacity in costs. As previously noted, a rates hearing is not the appropriate forum for YEC to be arguing for capacity that has not been authorized by Environment Yukon.

Unauthorized Capacities, Actual Numbers.

52. YEC has indicated a capacity of 36 MW from 20 rental units. More than half has not been assessed, permitted or authorized.
53. In my evidence document I listed the unauthorized capacities as follows²⁴:

21.2 MW of unauthorized capacity counted towards N-1 requirements and included in costs:
 - 4.1 MW of capacity not assessed or permitted in Mayo.
 - 12 MW of capacity not assessed or permitted in Whitehorse.
 - 5.1 MW in Faro.
54. YEC repeated this capacity list in their rebuttal evidence,²⁵ and only objected to the Mayo capacity number.

23 Exhibit 9 pdf p. 7, last full paragraph "YEC would temporarily exceed its permitted capacity as required..." (YEC's underlining)

24 Exhibit 8 p. 8

25 Exhibit 9 pdf p.8.

55. However, there have also been updates to the others, with new information provided by YEC, so the new totals are provided here, followed by full explanations in following paragraphs.

21.8 MW of unauthorized capacity counted towards N-1 requirements and included in costs, including:

- 2.3 MW of unauthorized capacity in Mayo. 7.2 MW GRA capacity, 4.9 MW permit.
- 14.4 MW of unauthorized capacity in Whitehorse, using the most recent amended permit that YEC has provided in this proceeding.
- 5.1 MW of unauthorized capacity in Faro or elsewhere.

56. In Mayo, YEC presented a 4.9 MW total capacity to YESAB, the Department of Environment and the First Nation of Na-Cho Nyäk Dun. The permit that YEC provided in response to a Board IR reflects the 4.9 MW limit,²⁶ and the Decision Document did not accept emergency conditions as a valid reason to exceed this capacity:

- Maximum operating (production) capacity of 4.9 MW during peak demand (winter) and during N-1 emergencies.²⁷

57. In the GRA it initially appeared to me that that all five rental diesels (9 MW) were being counted towards capacity totals, given the YEC had indicated that the capacity from 5 rentals was needed, and 5 were being installed in Mayo.²⁸ However, in their rebuttal evidence, YEC calls this a 7.2 MW project, with 4 of the 5 installed generators used to produce this capacity.

58. Their commitment to contravene the terms of their permit reads as follows: *“For the purposes of this GRA Application, YEC is only claiming a dependable capacity of 7.2 MW from the Mayo plant, from 4 diesel rental units. Accordingly, the correct amount of unpermitted diesel assumed in this GRA proceeding for dependable capacity at Mayo is 2.3 MW.”*²⁹ Unpermitted dependable capacity seems to be a concept unique to this GRA, and there is no precedent for its acceptance. However, I do accept that YEC is planning to contravene their permit terms by 2.3 MW.

59. For Whitehorse, I had initially considered that 12 MW of capacity was not authorized, as the provision temporarily authorizing 12 MW for the rentals expired in 2022. However, I had not previously seen the amended permit that was issued in May of 2022 and presented in this proceeding. In light of information from the permit that YEC submitted on January 18 in response to a Board Order, the correct number is 14.4 MW of unauthorized capacity in Whitehorse.

26 Exhibit 5 pdf p. 84

27 Exhibit 8 pdf p. 30., the Decision Document. In the project proposal the 4.9 MW is produced by three units, and YEC notes that “two (2) of the up to five (5) units installed at site are intended to be available only as back up in case of emergencies (e.g., failure to start of another unit).” Just how the spares are described in the GRA.

28 Exhibit 1 pdf p. 166.

29 Exhibit 9 pdf p. 8 footnote 6.

60. It is notable that previous iterations of the permit were ambiguous, listing a number number of generators and not a MW capacity limit. YEC had argued in 2021 that the unwritten MW total was significant, while I had argued that the explicitly stated number of generators was significant. As it turns out, we were both right, given that in adding the MW total to the permit document, Environment Yukon also kept the number of generators, and added both to the first page of the permit, where this information had previously been buried in Part 3 of the permit.
61. From the first page of the permit: (highlighting added)
*Scope of Authorization: In accordance with your application, you are authorized to operate electricity generating equipment at the above site location (the "site"), up to a site capacity of 16.15MW from five diesel generators and 13.13MW three LNG generators as set out in the terms and conditions of this permit.*³⁰
62. Then in Part 3 Item 1, Environment Yukon adds "The permittee must obtain a permit amendment prior to installing any additional generators at the site."³¹ The number of generators is significant, as a different number of generators could significantly change environmental and socio-economic impacts. Diesel capacity in Whitehorse has not been assessed since 2011, and if YEC had wished to change this configuration on their permit or request another amendment, they have had plenty of time to do so.
63. Anyway, in the GRA, Whitehorse diesel capacity is 26.7 MW³² However, the maximum output permitted without contravention of the permit which specifies a 5 generator limit is 12.3 MW.³³ The difference is 14.4 MW of unassessed, unpermitted and unauthorized capacity that YEC would like included in costs.
64. In Faro, YEC had initially indicated in the GRA that along with diesel replacement, they would increase capacity by 5.1 MW using Section 49 of YESAA to avoid an assessment. They had not validated this idea with Environment Yukon, and in their opening statement now indicate that they now plan to move two of the seven rentals out of Faro – as they had indicated previously to the Department of Environment. YEC has not yet decided where these generators will go.³⁴ Regardless of location, a permit or permit amendment will still be needed. Removing two rentals (3.6 MW) and permitting them elsewhere would reduce Faro unpermitted to 1.5 MW. But for now, the 5.1 MW is still unpermitted wherever some of it might end up, and is therefore counted as such.
65. It is notable that 21.8 MW of 36 MW of rental diesel has not been assessed or permitted. This is 12 of the 20 rentals which have not been authorized by the Department of Environment. While only 8 rental units have been authorized, the Board will be approving an additional 12 units should these costs be granted to YEC.

30 Exhibit 5 pdf p. 79, YEC's Air Emissions Permit for Whitehorse. Provided in response to Board Order 2023-25.

31 Exhibit 5 pdf p. 81

32 Exhibit 4, pdf p. 4,5 adding 10.5 MW of installed diesel to 16.2 MW of rental diesel

33 Respecting the 5 generator limit explicitly stated twice in the permit 12.3 MW is the maximum output. 10.5 MW from four installed diesels plus 1.8 MW from one rental. There is no combination of 5 generators that would produce more than this or cover the 26.7 MW capacity that YEC uses for this GRA.

34 Exhibit 10 pdf p.10.

66. Recommendation: Costs for any capacity that exceeds permitted limits or contravenes permit terms should be disallowed, using the figures provided above, with 21.8 MW being the equivalent of 12 rental units.

Sudden Upgrading of all YEC Diesel.

67. I think we can all agree the YEC needs all of the capacity it can find, and that this capacity should be safe and reliable, up to YEC’s usual standards. However, to meet the N-1 requirement, YEC has upgraded every installed diesel generator. It is not clear that these upgrades will provide safe and reliable capacity.

68. YEC did not initially mention in the GRA that all installed diesel capacity had been upgraded. While units are often derated as they age, they are also occasionally upgraded. Upgrading all capacity without any overhauls is truly exceptional, and it is interesting that including these upgrades, YEC exactly meets N-1 requirements for 2024-25.

69. Here is a look at upgrading and derating since 2008. Deratings are in green and upgrades are in red.³⁵

		Original Nameplate Capacity	2008 Dependable Capacity	2011 Dependable Capacity	2016 Dependable Capacity	2020 Dependable Capacity	2023 GRA Dependable Capacity		In-Service Date
Faro	FD7	3000	2400	2400	2800	2800	3000		1992
Dawson	DD1	800	720	720	720	650	850		1988
	DD2	1000	920	920	920	850	1000	*Retired 2024	1987
	DD3	1000->1030	920	920	920	850	1030		1990
	DD4	1440	---	---	1000	1000	1440		
	DD5	1500	1400	1400	1400	1350	1500	*Retired 2024	1996
	YM1	1440	--	1300	1000	850	1200		1990
Mayo	MD1	1000	850	850	850	850	1000		1989
	MD2	1000	850	850	850	850	1000		1989
	MD3	1000	---	---	850	850	950		
Whitehorse	WD4	2500	2250	2250	2500	2250	2500		1975
	WD5	2500	2250	2250	2500	2250	2500		1975
	WD6	2500	2500	2250	2500	2250	2500		1990
	WD7	3300	2800	2800	3000	2800	3000		1991

(And it is noted that while a number of upgrades occurred in 2016, the 2016 Generation Inventory also had a number of errors, including having "installed capacity" (nameplate capacity) often underreported and matching (derated) dependable capacity. Regardless, 4 of the 5 upgrades from 2016 were reversed (or corrected?) by 2020.)

70. While it is perhaps good that YEC found a way to meet N-1 requirements, it seems likely that upgrading all installed diesels will impact safety and reliability. And if these upgrades are legitimate and could all be done under O&M costs with no specific documentation of the actual work being done³⁶, as YEC claims, why was this not done anytime in the last 15 years?

71. While the quiet upgrading of all installed diesel simultaneously is problematic, a few units stand out.

35 2008 Capacities from 2008 YESAB Exhibit 8 p. 63. 2011 from 2011 YESAB Exhibit 8 p. 64. 2016 and 2020 are from 2020's 10 Year Renewable Plan pdf p. 71-72 and YEC's 2016 Resource Plan pdf p. 138 and 2023 numbers are from Exhibit 4 pdf p.4.

36 Exhibit 4, pdf p. 3 line 1.

72. DD1 was installed in 1988, and was derated in 2008 and again in 2020. In 2023, its dependable capacity was uprated to above original nameplate capacity. A 35 year old generator is now able to reliably exceed the manufacturer's original specification? I asked how the the generator could now exceed nameplate capacity, and was initially informed that nameplate capacity was 1000 kW.³⁷ Questioning the change of nameplate capacity I was later informed that nameplate capacity was 800 kW and the previous responses had been in error.³⁸ It was never fully explained how the generator is now providing a greater dependable capacity than was ever intended by the manufacturer back in 1988.
73. *"Based on those test runs, the DD1 max load achieved was set at 850 kW with overload capability (exceeding the unit's nameplate capacity)."*³⁹ Odd that YEC had not noticed that this generator was capable of more than the manufacturer had intended in any previous tests in the last 35 years.
74. DD2 and DD5 were uprated to nameplate capacity for 2023-24, and then promptly retired. I have not seen any other examples of generators that were performing to as-new specifications being retired. If they were actually running better than they had since 2008, did retiring them make sense?
75. In a motion, I questioned DD3's being uprated above the original nameplate capacity, and YEC replied with an uprated nameplate capacity for this unit. YEC now claims that 1030 kW, is the correct nameplate capacity, meaning that YEC has misreported the nameplate capacity – the manufacturer's original specification - in all documents to the Board and to the Department of Environment since at least 2006, the earliest records I have accessed. It does seem strange and unlikely to me that the reply to NY-YEC-1-2 REVISED is the first time YEC has ever reported this capacity correctly. Otherwise I am not convinced that the uprating is legitimate.
76. DD4 was also problematic, as YEC had indicated it was in need of an overhaul in the GRA:
*In response to ongoing unit shutdowns due to high oil temperature, a 3rd party contractor (Collicutt Energy) was commissioned to complete and assessment of Dawson diesel unit DD4. The resulting report recommendations included the completion of a 24,000 hour overhaul as soon as possible. If this work is delayed beyond 2024, the risk of unplanned failure will likely exceed acceptable limits. This work is required to ensure safe and reliable operation as such there is no alternative to proceeding with this work.*⁴⁰
77. In reply to a Board IR, YEC reported that the DD4 overhaul for \$0.454 million had been postponed. *"Project postponed due to internal resource constraints."*⁴¹

37 Transcript Volume 4, p. 461 line 23 and p. 574 line 12 thru page 575 line 8.

38 YEC Undertaking Responses #43 pdf p. 118

39 YEC Undertaking Responses #43 pdf p. 118

40 Exhibit 1 p. 223.

41 Exhibit 2 pdf p. 527

78. How can the dependable capacity of DD4 be updated to “as-new” nameplate capacity while at the same time YEC is reporting “*ongoing unit shutdowns due to high oil temperature*” and “*the risk of unplanned failure will likely exceed acceptable limits*” and that “*there is no alternative to proceeding with this work. (the overhaul)*”
79. YEC also mentioned that some units have had to be derated again and specifically mentioned DD4.
80. “YEC is currently finding instances where some of the units have had to be derated again after putting the units through extended runs [for example, DD4].”⁴²
81. Which units? YEC has not indicated that any units have been “*derated again*” in the generation inventory provided on the following page of this revised IR response.
82. Despite all of these issues and contradictory claims, YEC replied in an undertaking that DD4 was reliable up to nameplate capacity, and that preventive maintenance had been done to fix known issues.⁴³ So apparently “*no alternative to proceeding with this work (the overhaul)*” was exaggeration, or perhaps the unit should be derated again, as YEC had indicated in IR responses.
83. YEC also referred to an assessment of the unit that was done in 2022⁴⁴ which notes a number of issues and recommends an overhaul “as soon as achievable.” The “ongoing unit shutdowns” issue may have been addressed in 2022 according to the report, however it must have come back since YEC uses this issue to justify the overhaul in the 2023-24 GRA.
84. In the time since the GRA was submitted in August, has YEC really been able to fix issues such as “*ongoing unit shutdowns*” and “*the risk of unplanned failure*” and solved the “*no alternative to proceeding with this work (the overhaul)*” problem while also having to postpone the overhaul project “due to internal resource constraints”? Quite a story behind what YEC calls “preventive maintenance”.
85. Recommendation: That the Board not count these convenient upratings towards YEC’s N-1 requirement, as it seems very likely that safety and reliability have been compromised. These upratings amount to 3.02 MW. Reliable and safe backup capacity is becoming even more important with climate issues potentially affecting hydro generation as has happened in BC and NWT.

Respectfully submitted,

Nathaniel Yee
22-March, 2024

42 Exhibit 4, pdf p. 3 line 6.

43 Transcript Volume 4, p. 461 line 4.

44 Undertaking #42, pdf p.93