Filed: 2021-11-29 EB-2021-0110 Exhibit I Tab 4 Schedule A-CME-001 Page 1 of 2

A - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 001 1 2 Reference: 3 Exhibit A-2-3, Page 4 4 5 Interrogatory: 6 HONI has proposed a supplemental stretch factor on capital of 0.15%. 7 8 a) Please describe any analysis HONI has performed to determine whether 0.15% is the 9 10 appropriate supplemental stretch factor to apply in this instance. 11 Response: 12 a) The proposed Supplemental Stretch factor aligns with the OEB's decisions in Hydro One's 13 recent Custom IR proceedings (EB-2017-0049, Decision and Order, p. 32 and EB-2019-0082, 14 Decision and Order, p 39), in which the OEB ordered a 0.15% supplemental stretch on capital 15 in order to further incent Hydro One to seek productivity gains. 16

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A - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 002 1 2 Reference: 3 Exhibit A-3-1, Page 24 4 5 Interrogatory: 6 At page 24, HONI states that it also considers factors such as "load forecasts, equipment ratings, 7 operating restrictions, security incidents, environmental risks and requirements, compliance 8 obligations equipment defects, obsolescence, and health and safety considerations to help ensure 9 that capital expenditures target the appropriate mix of assets". These are in addition to the ARA 10 process. 11 12 a) With respect to the ARA factors, are these quantitative or qualitative factors? 13 14 b) With respect to criticality, how does HONI define the impact on the system? Is it by the 15 number of people affected (without power), the size of the load of the impacted customers, 16 etc.? 17 18 c) With respect to the additional factors listed by HONI that it considers to ensure the 19 appropriate mix of assets, how are these factors integrated into the existing ARA decision 20 making process. For instance, with respect to "compliance obligations" or "health and safety", 21 these factors suggest that they would replace the normal ARA considerations and make 22 certain investments mandatory. In contrast, a factor such as load forecast might already be 23 captured in the "utilization" ARA component. 24 25 **Response:** 26 a) These are quantitative factors. 27 28 b) Criticality considers the role and impact the asset has in the system, the type and size of 29 connected customers, power flow, and the single point of vulnerability. 30 31 c) These additional factors are considered as part of the asset needs assessment and may 32 influence the development of a candidate investment; certain elements may also inform the 33 risk assessment process undertaken through investment planning. 34

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Filed: 2021-11-29 EB-2021-0110 Exhibit I Tab 4 Schedule A-CME-003 Page 1 of 2

A - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 003 1 2 3 Reference: 4 Exhibit A-3-1, Page 24 5 **Interrogatory:** 6 At page 24, HONI states "many system renewal investments are informed by the asset needs 7 assessment process." 8 9 10 a) Please confirm which system renewal investments are not informed by the asset needs assessment process, and why they are not. 11 12 **Response:** 13 a) The interrogatory contains an incomplete reference. As stated in A-03-01 Pg.24, "Many 14 system renewal investments are informed by the asset needs assessment process, largely 15 driven by asset condition". All of Hydro One's investments, including System Renewal, are 16 informed by a needs assessment as stated on pg.23 of the same Exhibit. The asset needs 17 assessment process, as it pertains to System Renewal investments, is largely driven by asset 18 condition. However, asset condition is not the only driver, with other considerations including 19 customer needs, system needs, operational needs, and/or other external influences. System 20 Renewal investments not driven by condition include the following: 21 D-SR-05 – Distribution Lines Trouble Calls and Storm Response: informed by historic • 22 demand 23 • D-SR-01 / T-SR-09 – Stations Demand Capital / Transmission Spares: informed by historic 24 25 demand

D-SR-06 – Distribution Lines PCB Equipment Replacement: mandated by compliance
 requirements

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A - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 004

2

3 Reference:

- 4 Exhibit A-3-1, Page 54
- 5

6 Interrogatory:

At page 54, HONI proposes to modify the CISVA to provide an opportunity for HONI to "catch
 up" on shortfalls in in-service additions.

9

a) In HONI's proposal, please confirm whether there would be any mechanism to recompense
 ratepayers for the time difference of in-service additions if there are shortfalls in the early
 years and they are offset later on the term?

13

14 **Response:**

a) Hydro One does not confirm that there would be any such mechanism. The CISVA as 15 currently approved for Transmission, as well as under the proposed modification in 16 respect of Transmission, is asymmetrical to the benefit of ratepayers. As such, the 17 account provides protection to ratepayers from variances between the revenue 18 requirement associated with approved in-service capital additions and actual in-19 service capital additions, as further described in Exhibit A-04-01, pp. 5-6. This is to 20 align Hydro One's interests with the interests of customers and to provide additional 21 22 elements of protection for customers. The asymmetrical nature of the account will not change. As such, Hydro One does not believe it is necessary to recompense 23 ratepayers for time differences that occur during the rate period in the 24 circumstances described. Consistent with this, Hydro One would not benefit from 25 any in-service addition surpluses that it may achieve in the early years. Moreover, it 26 would it be burdensome to track and calculate the impacts of any such time 27 differences throughout the rate term, and the introduction of such a mechanism 28 would undermine the flexibility that is intended to be provided in the context of 29 delivering a five-year capital plan under a Custom IR framework. Additionally, as 30 further explained in Exhibit G-01-02, Hydro One believes this modification ensures 31 that if there are projects that are delayed outside of Hydro One's control, Hydro One 32 would not be unfairly penalized. 33

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Filed: 2021-11-29 EB-2021-0110 Exhibit I Tab 4 Schedule A-CME-005 Page 1 of 2

A - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 005 1 2 Reference: 3 Exhibit A-3-1, Page 54-56 4 5 Interrogatory: 6 At page 54, HONI proposes to add two additional transmission variance and deferral accounts as 7 well as five new distribution variance and deferral accounts. 8 9 10 a) Please provide HONI's view on whether the proliferation of variance and deferral accounts undercuts the purpose of incentive regulation. Please describe fully. 11 12 Response: 13 Hydro One does not agree with CME's characterization of the Application as resulting in the 14 "proliferation" of regulatory accounts. While CME is correct that Hydro One is proposing two 15 new Transmission accounts and five new Distribution accounts, as described in Exhibit G-01-02, 16 Tables 1 and 2, Hydro One is also proposing to discontinue four Transmission accounts and four 17 Distribution accounts. As such, Hydro One's proposals result in a net reduction of one regulatory 18 19 account. 20 In Hydro One's view, deferral and variance accounts do not undercut the purpose of incentive 21 regulation but rather are an integral part of a utility's overall rate framework. Hydro One's CIR 22 Application includes robust incentives to drive its performance, and its proposals for new 23 regulatory accounts represent measured and appropriate means for addressing specific 24 circumstances where certain amounts are not yet known or where, generally for reasons 25 outside of Hydro One's control, there is a significant level of uncertainty associated with a 26 particular forecast involving a material amount. Moreover, some of the requested accounts are 27 directly for the benefit of ratepayers. It is therefore important to look not at the number of 28 regulatory accounts but rather at the specific purpose and nature of each account being 29 requested. 30 31 Furthermore, for each of the proposed new regulatory accounts, Hydro One has provided 32 detailed evidence as to why the account is being requested and should be approved, having 33

regard to the OEB's well-established eligibility criteria of Causation, Materiality and Prudence.

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Witness: CHHELAVDA Samir

Filed: 2021-11-29 EB-2021-0110 Exhibit I Tab 4 Schedule A-CME-006 Page 1 of 2

A - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 006 1 2 Reference: 3 4 Exhibit A-3-1, Page 60-61 5 Interrogatory: 6 At pages 60-61 HONI provides its forecast transmission and distribution load forecasts. HONI 7 states that it forecasts transmission load to grow .2% over the 2023-2027 period. According to 8 HONI's evidence, this increase results from lower CDM assumptions, higher housing starts, and 9 10 growth in southwestern Ontario. 11 a) In CME's experience, there is increasing discussion regarding electrification, whether of 12 commercial vehicles, such as Tesla cars or space heating alternatives. When forecasting 13 Transmission load over the plan period, did HONI incorporate any increases to load as a result 14 of electrification, why or why not? 15 16 **Response:** 17

a) Yes; for details, please see VECC 43, part c).

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1

1	E	31 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2		007
3		
4	Re	ference:
5	Exh	nibit B-1-1, Section 1.6, Attachment 1, Page 1
6		
7	Int	errogatory:
8	a)	In Innovative's experience, does the design of the survey and/or the questions have an impact
9		on the answers provided by those that respond to the survey?
10		
11	b)	If yes, please describe what steps Innovative took to mitigate the impact of the survey and
12		questions on the answers provided.
13		
14	Re	sponse:
15	a)	Response provided by Innovative
16		
17		The design of the workbook and questions can have the potential to impact answers.
18		
19		In this specific case, as noted on page 7 of Hydro One's 2023-2027 Joint Rate Application
20		Customer Engagement Report, the key challenge to customer participation in an engagement
21		of this nature is a lack of knowledge regarding Ontario's electricity system and Hydro One's
22		role within it. The OEB has provided guidance through previous decisions that they are
23		interested in customer views on pacing and trade-offs on specific investment decisions.
24		However, as noted on page 9 of the Customer Engagement Report, some customers may
25		begin an engagement of this nature feeling they do not know enough to contribute.
26		
27		As stated on pages 9 and 10 of the Customer Engagement Report, both the Phase I and Phase
28		II workbooks were designed to give customers the opportunity to learn the basics of the
29		electricity system, including Hydro One's role within it and to provide the context needed to
30		address those questions. INNOVATIVE has designed and tested dozens of workbooks in
31		previous engagements and began this engagement with a strong general understanding of
32		what customers need to know to answer the type of specific questions that the OEB has
33		directed utilities, like Hydro One, to ask. The Phase II workbooks move from general
34		background to specific topics and are designed to provide the right balance in the amount of
35		information provided and use non-technical language as much as possible.

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As noted on page 14 of the Customer Engagement Report, the Phase II workbooks included open-ended comment boxes for each specific question to allow customers to provide unrestricted feedback on each individual question. In reviewing this feedback, few customers expressed any concerns with the content or structure of any particular question.

5

As noted on page 16 of the Customer Engagement Report, the Phase II workbooks also provided diagnostic questions at the end of the workbook to assess how well the workbook worked for participants. While results vary by rate class, roughly four out of five had a favourable impression of the Phase II workbook and a similar number said the workbook had the right amount of information. This indicates that Hydro One was able to find the right balance of information, as well as provide an engagement that was favourably received by the customers that took the time to complete the workbook.

13

14 b) Response provided by Innovative

15

16 Please refer to part a)

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1	I	B1 - CA	NADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2			008
3			
4	<u>Re</u>	ference	<u>:</u>
5	Exl	hibit B-1	-1, Section 1.6, Attachment 1, page 6-7
6			
7	Int	terrogat	ory:
8	At	pages 6	and 7, Innovative states that of the nine priorities listed, price was the highest ranked
9	pri	ority. Ini	novative also states that for concrete investment choices, customers give preference
10	to	safety ar	nd reliability.
11			
12			ve's experience, is it common for people to have conflicting priorities depending on
13	ho	w the inf	formation is presented to them?
14			
15			mation can be drawn from conflicting priorities with respect to the actual needs and
16	pre	eference	s of consumers?
17			
18		sponse	-
19	a)	•	ise provided by Innovative:
20			emise that customers have conflicting priorities depending on how the information is
21			curate. The different responses are based on different approaches to measuring
22		differei	nt aspects of priorities.
23		Eirct th	nis issue of customer priorities should be placed in context. In previous decisions, the
24 25			is indicated its preferences for specific, concrete trade-offs tied to specific investment
25			ns. However, that was not possible in the first phase of this engagement where
20			her views were being collected early in the planning process, well before specific
28			nent decisions had been developed.
29			
30		As a re	sult, the Customer Engagement Report notes that, in Phase I, priorities were assessed
31		in three	
32			
33		1.	Rating priorities individually,
34		2.	Ranking priorities relative to each other, and
35		3.	Providing a variety of illustrative choices to see how customer priorities apply to
36			actual distribution and transmission investment choices at this time.

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Customer priorities can be seen as having two dimensions: direction and hierarchy.

The first way of assessing customer priorities shows the direction of priorities. Page 17 of the Customer Engagement Report notes that reliability, affordability and safety were all seen as extremely important.

6

1 2

The second way of assessing customer priorities explores the hierarchy of priorities, relative
to each other, in the abstract. This helps to understand how customers may "break the tie"
among the top three stated priorities of reliability, affordability, and safety. In this case,
relative to other priorities, affordability ranks the highest.

However, previous work by INNOVATIVE showed that when customers consider specific investments, cost becomes less important and benefits such as reliability, environment or safety become higher priorities. As such, Phase I of this engagement also included a third way of testing priorities - illustrative choices to assess whether the trend seen in the past still holds true for Hydro One customers at this time. It did.

17

11

For Phase II of the engagement, the specific investment choices to be included in the Application were available. As a result, when it came to understanding priorities, the Phase II workbooks focused on testing trade-offs in specific investment decisions.

21

22 b) Response provided by Innovative:

Practically, there is no conflict to resolve. The first two approaches to assessing direction and hierarchy are used in the Phase I workbooks to provide guidance to planners before specific investment choices are developed. The Phase II workbooks only include measures of tradeoffs related to specific investment choices. The findings of the second workbook are most relevant to assessing the Application.

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1	E	32 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2		009
3		
4	Re	ference:
5	Exł	nibit B2-2-1, Section 2.2, Page 5
6		
7	Int	errogatory:
8	At	page 5, HONI states: "As such, making investment decisions based solely on such performance
9	sta	tistics (as opposed to a robust investment approach driven by actual condition assessment)
10	ma	y not address the underlying condition issues impacting performance and posing safety,
11	reli	ability or environmental risks."
12		
13	a)	Does HONI track root cause analysis on outages? For instance, whether an outage was caused
14		by failing equipment, animal contact, weather etc.
15	ل ما	If LIONI does track service would LIONI across that it could use northernoone statistics
16	D)	If HONI does track causes, would HONI agree that it could use performance statistics, normalized by cause to determine investment decisions?
17 18		
18	c)	If HONI does not track causes, how is it able to determine when an asset's condition is likely
20	c,	going to mean that it will fail in the upcoming plan period.
21		
22	Re	sponse:
23		Hydro One does track outage causes.
24	•	
25	b)	Performance statistics, which include outage cause, are lagging indicators of asset condition.
26		Since major assets must be renewed on a predictive basis (based on condition assessment) to
27		avoid run-to-failure scenarios, lagging performance trends cannot reasonably replace
28		condition-based assessments of investment needs.
29		
30	c)	Based on part a), not applicable.

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Witness: JABLONSKY Donna

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1	B2 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY	′ –	
2	010A		
3			
4	Reference:		
5	Exhibit B2-2-1, Section 2.2, Page 14		
6			
7	Interrogatory:		
8	At page 14, HONI states that "As of December 2020, 73 of Hydro One's transformer oil f	illed	
9	transformers that were manufactured pre-1985 require PCB remediation work including retrofills		
10	or replacements. By the end of 2020, it is estimated that 271 transformers still require sampling,		
11	the majority of which are transformer bushings."		
12			
13	a) Given that HONI has known about the requirement to remediate PCB filled transformers	s for	
14	some time, why hasn't more of this work been completed prior to this plan period?		
15			
16	b) Please describe how HONI's spending during the plan period would change if higher t	than	
17	expected levels of PCBs were found in the equipment that remains to be tested.		
18			
19	Response:		
20	a) Please refer to Interrogatory B2-Staff-075 part a).		
21			
22	b) If this situation occurs, Hydro One will reprioritize OM&A work to make sure the	PCB	

remediation is addressed.

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1	B2 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2	010B
3	
4	Reference:
5	Exhibit B2-2-1, Section 2.2, Page 86, Figure 19
6	
7	Interrogatory:
8	a) What were the drivers behind the significant increase in total outage duration in 2020?
9	
10	Response:
11	a) Please see Interrogatory B2-Staff-41.

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Witness: JABLONSKY Donna

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1	E	32 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2		011
3		
4	Re	ference:
5	Exh	ibit B2-2-1, Section 2.2, Page 87
6		
7	Int	errogatory:
8	At	page 87, HONI states that LineVue "is non destructive and allows for a greater number of
9	cor	dition assessments per year and is more cost efficient when compared to removing conductor
10	san	nples for laboratory testing.
11		
12	a)	Please reconcile this statement with the fact that the "needs assessment" category for
13		conductors has increased from 21% in EB-2019-0082 to 27% in this application.
14		
15	Re	sponse:
16	a)	Testing is limited to conductor spans greater than 50 years of age since based on Hydro One's
17		operating experience, conductors less than 50 years of age have a low likelihood of being in a
18		deteriorated condition and are therefore assumed to be in good condition. Since the filing of
19		EB-2019-0082, additional conductors have reached the age of 50 and beyond and therefore
20		require testing for condition assessment. The number of new conductors requiring condition
21		testing outnumbered the conductors that were tested since the filing of EB-2019-0082.

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1	E	32 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -	
2		012	
3			
4	Ref	ference:	
5	Exh	ibit B2-2-1, Section 2.3, Attachment 3, page 5	
6			
7	Int	errogatory:	
8	In t	he prior transmission proceeding, EB-2019-0082, HONI's commissioned Metsco to provide a	
9	report that outlined the average data availability across inputs for several categories for station		
10	роу	ver transformers.	
11			
12	a)	Is HONI aware of the average data availability currently?	
13			
14	b)	If the answer is no, does HONI have any reason to believe it is significantly different than the	
15		data availability in the Metsco report?	
16	_		
17		sponse:	
18	a)	Yes.	
19		Net e d'achte	
20	b)	Not applicable.	

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1	I	32 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2		013
3		
4	Re	ference:
5	Exł	nibit B2-2-1, Section 2.3, Attachment 3, Page 5
6		
7	Int	errogatory:
8	In	its report, EPRI stated that it reviewed 208 transformers that HONI deemed to be in poor
9	cor	ndition. Of those, it found that 36 of those transformers were not in poor or marginal condition
10	bas	sed on their analysis. They guess that HONI likely deemed them to poor condition based on
11	oth	er factors other than the main tank test results.
12		
13	a)	Did HONI ever confirm why, if it all, it determined that these 36 transformers are in poor
14		condition?
15		
16	b)	If so, to the extent that it is not in the evidence, please provide the reason(s) that each
17		transformer is considered to be in poor condition.
18		
19	C)	Of the 36 transformers, is HONI proposing to make system renewal investments in repairing
20		or replacing them during the plan period?
21	.1\	
22	d)	If so, please list which of the 36 transformers have investments planned for the upcoming
23		plan period.
24	e)	Given that HONI makes its determinations of transformer condition based on multiple data
25 26	e)	points (main tank and other considerations) please explain why EPRI was not provided with
20		the data to evaluate these transformers based on all the factors used by HONI.
27		the data to evaluate these transformers based on an the factors used by norm.
29	f)	In EB-2019-0082, EPRI provided a report which found that results between its own analysis
30	.,	and HONI's analysis differed because of data issues such as oil contamination and incorrect
31		data on HONI's part [EB-2019-0082, Exhibit I, Tab 05, Schedule 13, CME IR #13. Are there any
32		instances of data issues such as incorrect data that contribute to EPRI's differing conclusions
33		from HONI on the 36 transformers?

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1 Response:

	-	
2	a)	Yes, it is confirmed.
3		
4	b)	Please see Interrogatory B2-SEC-076.
5		
6	c)	Hydro One plans to replace all 36 transformers.
7		
8	d)	Please see part c).
9		
10	e)	EPRI was provided with data for all 198 transformers in the poor condition category. However,
11		the PTX tool (Transformer Fleet Management software) developed by EPRI is limited to main
12		tank oil analysis only and the other factors were not evaluated by EPRI.
13		
14	f)	There are no data issues. The 36 transformers were deemed to be in poor condition based on
15		factors other than main tank oil analysis as outlined on TSP Section 2.2. pages 12-14.

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1	E	33 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2		014
3		
4	Re	ference:
5	Exh	ibit B3-3-1, Section 3.2, page 3
6		
7	Int	errogatory:
8	At p	page 3, HONI stated: "ESL does not drive replacement decisions. However, it can provide useful
9		ormation at the fleet level for gauging overall asset demographics. ESL sheds light on the
10		ectional magnitude of possible replacement needs (but never to underpin the actual
11	rep	lacements) over the longer term."
12		
13	a)	When developing an application, does HONI use the estimated service life of assets to develop
14		its overall request for funding for specific asset classes?
15	հ)	If the answer to (a) is no please evaluin what light Γ CL choice an assot investments and what
16	b)	If the answer to (a) is no, please explain what light ESL sheds on asset investments and what purpose the Board or parties should put it to in the context of this application
17		purpose the Board or parties should put it to in the context of this application.
18	De	
19	-	sponse:
20	a)	As discussed in DSP Section 3.2, ESL only drives replacement decision for Hydro One's meters.
21		For all other distribution assets, ESL does not drive replacement decisions, therefore it is not
22		used in developing the overall request for funding.
23 24	h)	As noted in part a), the Board and parties should consider the impact of ESL on Hydro One's
24	5)	meter assets. ESL impacts the lifecycle management for meters is described in Exhibit B-3-1
26		Section 3.2 pp. 102-105. The lifecycle maintenance approach to meters is dependent on
27		meter type (wholesale or retail) and the stage in the asset lifecycle (normal service life or end
28		of service life).
28		of service life).

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1	I	33 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2		015
3		
4	Re	ference:
5	Exł	nibit B3-3-1, Section 3.3, Attachment 2, page 13
6		
7	Int	errogatory:
8	At	page 13, CNUC stated: "To assist in funding the high hazard tree removal rate,
9	Hy	dro One reduced herbicide use, pausing roadside brush and most spray work."
10		
11	a)	Did HONI complete a cost benefit analysis regarding pausing herbicide use an increasing high
12		hazard tree removal?
13	ل م)	Ware any other analyzes completed on this trade off. If so places describe
14	D)	Were any other analyses completed on this trade-off. If so, please describe.
15 16	Ro	sponse:
		No, a detailed cost benefit analysis was not performed on reducing herbicide use as part of
17	a)	
18 19		pausing brush control. The OCP strategy is focused on clearing a backlog of vegetation defects to improve reliability. Delaying strategic brush control to cycle 2 of OCP was deemed
20		acceptable as there was minimal impact on ROW access, while allowing for more vegetation
20		defects to be managed. Other additional analyses was not necessary to pause brush control
21		until cycle 2 of OCP given the urgent need to address the large number of vegetation defects.
22		and cycle 2 of oct given the digent need to address the large number of vegetation delects.
24	b)	There were no additional analyses completed on this trade off.

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1	E	33 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2		016
3		
4	Ref	ference:
5	Exh	ibit B3-3-1, Section 3.3, Attachment 3, Page 21
6		
7	Int	errogatory:
8	At ı	page 21, Clear Path Utility Solutions stated that one of the drivers of variances from forecast
9	cos	ts was new technology deployment. Specifically, the Forestry Technology Enablement Project
10	con	tributed \$5M to notification and \$5M to execution costs.
11		
12	a)	Will the FTEP provide cost savings, or are the variances listed by Clear Path Utility Solutions
13		net of any cost savings?
14		
15	b)	If there will be cost savings, please indicate the total amount of cost savings, when they will
16		be reaped by HONI, and how this application incorporates those savings.
17	2	If there will not be cost savings, please explain the reason for investment in the FTEP.
18	C)	In there will not be cost savings, please explain the reason for investment in the FTEP.
19	Do	
20		sponse: The verificance listed by Clear Dath Utility Solutions were one time casts incurred within the
21	a)	The variances listed by Clear Path Utility Solutions were one-time costs incurred within the OCP program in 2019 and net of any cost savings.
22 23		OCP program in 2019 and net of any cost savings.
23	b)	The FTEP solution did not provide direct cost savings.
25	5,	
26	c)	Hydro One had to implement this technology change as part of the OCP strategy
27	•	implementation for the following reasons:
28		• To replace the 15-year-old legacy Forestry Management System that was outdated
29		and had very minimal capability. The software was well beyond its end of life without
30		any upgrade or product support capability.
31		• The legacy system could not support most of the new data collection and processes
32		that Hydro One wanted to implement as part of the OCP strategy.
33		• Without an end-to-end solution, Hydro One estimated an additional \$2.8 million of
34		additional FTE's would be required to complete necessary data collection using the
35		existing tools and processes and successfully implement the OCP approach. This was
36		identified as an additional cost avoidance opportunity.

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1

1	E	3 - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY -
2		017
3		
4	<u>Ref</u>	erence:
5	Exh	ibit B3-3-1, Section 3.1, Page 2
6		
7	Inte	errogatory:
8	At p	page 2, HONI describes the AMI 2.0 investment. HONI states that it will spend \$558 million to
9	rep	lace HONI's existing smart meters.
10		
11	a)	Please confirm what percentage of smart meters currently do not operate as smart meters
12		(i.e., cannot get reliable cellular service to relay data or other issues).
13		
14	b)	Please describe what benefits ratepayers get, if any, from smart meters that aren't able to
15		communicate with the network, or otherwise do not function as intended, compared to non-
16		smart meters.
17		What does HONI actimate the cast of replacement for these smart maters to be taking into
18	c)	What does HONI estimate the cost of replacement for those smart meters to be, taking into consideration, <i>inter alia</i> , specific attributes such as their remote locations?
19 20		consideration, <i>inter una</i> , specific attributes such as their remote locations:
20	d)	HONI states in its evidence that the move to AMI 2.0 will allow more meters to communicate
22	ч,	with the network, and act as smart meters. Has HONI done any analysis on how many more
23		meters it expects to work once they install AMI 2.0 as opposed to the 1.0 meters? If so, please
24		provide it. If not, why not.
25		
26	Res	sponse:
27		The percentage of AMI 1.0 meters that currently do not operate as smart meters (do not
28	,	communicate reliably enough to enable customer Time-of-Use billing) is approximately 6.5%
29		(88,000 out of a total of 1.35M eligible meters).
30		
31	b)	Apart from the accurate measurement of customer electricity usage, customers without
32		reliable network communication receive no additional benefit.
33		
34	c)	Hydro One has not assessed the cost to mass replace only the population of meters that are
35		not reliably communicating. However, given the nature of mass replacing meters (resources
36		focused on replacing all meters in a geographic area) and given Hydro One's predominantly
37		low-density service territory (meters that are not communicating are not necessarily in

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remote areas), Hydro One estimates that the cost to replace this population of meters would
 be approximately equal to the cost of mass replacing any meter which would be equal to the
 meter and labour costs (i.e., 6.5% of approximately \$389 million).

- 3 4
- 5

6

d) Yes, Hydro One has done analysis to estimate the number of meters it expects to reliably communicate to enable Time-of-Use billing (i.e., operate as smart meters) as a result of the implementation of AMI 2.0.

7 8

19

21

22 23

26

First, and most importantly as identified in D-SR-12 Section C.3, AMI 2.0 will employ a 9 communication network utilizing the 900 MHz frequency band (as opposed to the 2.4 GHz 10 band utilized by AMI 1.0). The 900 MHz band has the advantage of improved range even with 11 obstacles (e.g., foliage, hills, buildings, etc.). This is because radio signals with longer 12 wavelengths travel a greater distance and penetrate through and around objects better than 13 signals with shorter wavelengths. More specifically, the wavelength of the radio signal is 14 inversely proportional to the frequency and therefore the wavelength for a 900 MHz device 15 is longer (λ =0.33 meters) than that of a 2.4 GHz (λ =0.125 meters) device. Employing the Friis 16 transmission equation below shows that a 900 MHz module will have 2.64 times more range 17 than that of a 2.4 GHz module. 18

- Friis Path Loss = $20^* \log(4^*\pi^*r/\lambda) dB$ (Eq. 1), where
 - r = distance between transmitter and receiver
 - λ = wavelength

24	Friis Path Loss for 900 MHz =	20* log(4*π*r1/ 0.33)
24	Friis Path Loss for 900 MHz =	20* log(4*π*r1/ 0.33)

²⁵ Friis Path Loss for 2.4 GHz= 20* log(4*π*r2/ 0.125)

```
27 Setting both equations to be equal to determine ratio for equal path loss:
```

- 28 $20^* \log(4^* \pi^* r 1/0.33) = 20^* \log(4^* \pi^* r 2/0.125)$
- 29 20* log(38.01799r1) = 20* log(100.531r2)
- 30 20* log(38.01799r1) / 20* log(100.531r2) = 1
- 31 log(38.01799r1) / log(100.531r2) = 1
- ³² log100.531r2 (38.01799r1) = 1
- 33 100.531r2^1 = 38.01799r1
- ³⁴ 100.531 / 38.01799 = r1 / r2
- 35 r1/r2 = 2.64

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- 1 In a mesh network, the 2.64 times extended range allows for meters to reliably communicate
- 2 further distances which will increase the number of meters that will reliably communicate for
- 3 Time-of-Use billing. This extended range is illustrated in the figure below.
- 4

5



The conversion of this improved range into the number of additional meters which will
reliably communicate under AMI 2.0, however, is difficult to quantify with certainty given the
nature of the service territory (topography and foliage cover) and Hydro One's experience.
Nevertheless, AMI 2.0 RFP respondents submit an approximately 50% improvement (41,000
meters) on the 88,000 meters currently not covered by network (see response to a) above).
This improvement, it should be noted, is with 50% less network equipment than AMI 1.0
which substantiates our assertion above of improved network range.

14

Considering the information above and Hydro One's experience in extending reliable network reach to customers, Hydro One has taken a conservative approach and estimates an additional 25,000 meters (30% of the current 88,000 non-time-of-use meters) will reliably communicate under the AMI 2.0 network. Filed: 2021-11-29 EB-2021-0110 Exhibit I Tab 4 Schedule B3-CME-017 Page 4 of 4

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1

1	Ε·	- CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 018
2		
3	Re	ference:
4	Exh	nibit E-6-1, Schedule 1, Attachment 1, Page 7
5		
6	<u>Int</u>	errogatory:
7	At	page 7, Mercer discusses how an organization that deploys a cost effective and efficient work
8	tea	m to any project will generally save costs.
9		
10	a)	In Mercer's view, does the opposite hold true? If an organization were to deploy an ineffective
11		or cost inefficient work team, would that generally cause additional costs?
12		
13	b)	Would this potential inefficiency be captured as part of Mercer's report?
14	_	
15		sponse:
16	a)	Response provided by Mercer:
17		In Mercer's view, the opposite generally does hold true. An organization that deploys
18		ineffective or cost inefficient work teams on a project will likely incur additional costs, all other
19		relevant factors being equal. These relevant factors may include: work site location and
20		conditions; the availability of optimal skills, equipment, and materials; and flexibility to plan
21		and schedule the work in advance, for example.
22	L.)	
23	D)	Response provided by Mercer:
24		The Mercer Study does not and was not intended to measure the cost effectiveness or
25		efficiency of work teams.

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1

1	Ε·	CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 019
2		
3	Re	ference:
4	Exh	ibit E-6-1, Attachment 1, Page 8
5		
6	_	errogatory:
7	At	page 8, Mercer describes the impact of high morale and loyalty in terms of costs.
8		
9	a)	Please provide a reference in the evidence to HONI's employees' morale and loyalty.
10 11	b)	Has HONI's employees' morale and loyalty been compared to that of the comparator group?
11	5)	If so, please provide that analysis.
13		
14	Re	sponse:
15	a)	Response from Hydro One:
16	,	
17		The statement in Exhibit E-06-01 Attachment 1 in the Mercer Benchmarking Study at page 8
18		refers to the fact that market aligned compensation results in increased employee morale and
19		loyalty which contributes to lower turnover rates. Hydro One's turnover (excluding
20		retirements) ranges from 1% to 2% which aligned with the statement from the study.
21		
22		Response from Mercer:
23		
24		Low turnover rates are often correlated with positive employee morale and loyalty, as
25		discussed in the Compensation Benchmarking Study. Other inferences to HONI's employees'
26		morale and loyalty can include common industry effectiveness metrics including strong health
27		and safety records, low talent acquisition costs (i.e. hiring, sourcing, training), and industry
28 29		leading CAIDI & SAIDI scores. These metrics signal the benefits of having a tenured and/or highly competent workforce.
30		inginy competent workforce.
31	b)	Response from Mercer:
32	,	
33		HONI's employees' morale and loyalty has not been compared to that of the comparator
34		group.

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1

1	E - CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 020
2	
3	Reference:
4	Exhibit E-6-1, Attachment 1, Page 8
5	
6	Interrogatory:
7	At page 8, Mercer describes the impact of unionized work forces, and states that the comparator
8	group has unionized and non-unionized organizations.
9	
10	a) Of the comparator group for the study, how many of the participant organizations are
11	unionized and how many are non-unionized?
12	
13	Response:
14	a) Response from Mercer:
15	
16	For the organizations that participated in the study, 19 have a unionized workforce and 1 does
17	not have a unionized workforce in Canada. However, of the 19 organizations that have a
18	unionized workforce, 3 did not match any of their unionized jobs in the study.
19	
20	When looking specifically at the representation of unionized matches for the benchmark jobs,
21	Mercer notes that across the list of 23 unionized Hydro One Energy Professional and Trades
22	and Technical jobs, peer group data for 16 of them included data from non-unionized
23	employees.

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Witness: LILA Sabrin, MERCER

1

1	Ε·	- CANADIAN MANUFACTURERS AND EXPORTERS INTERROGATORY - 021
2		
3	Re	ference:
4	Exh	nibit E-6-1, Attachment 1, Page 26
5		
6	Int	errogatory:
7	At	page 26, Mercer's table shows that for Energy Professionals, HONI's compensation compared
8	to	the market average has been increasing, from 5% in 2008 to 10% in 2020.
9		
10	a)	Please describe the drivers of the increase from 2008 to 2020 and if HONI believes that those
11		drivers will continue to drive a further increase in compensation above market average
12		through the plan term.
13		
14	_	sponse:
15	a)	Response from Mercer:
16		By way of clarification, the results of the 2020 Study are 11% above P50 for Energy
17		Professionals and not 10% as stated in the question (which represents an improvement
18		compared to the 2017 Study result of 12%).
19		A number of componenties claments contribute to the position of Under Oro's Frenzy
20		A number of compensation elements contribute to the position of Hydro One's Energy
21		Professional group's total compensation relative to the market. We note that given the unionized nature of the Energy Professional workforce and the criticality of the services they
22 23		provide, it may be challenging for Hydro One to negotiate changes to the compensation
23		program in comparison to other organizations. Similarly, it is important to note that Hydro
25		One's relative total compensation position is impacted by both its negotiated compensation
26		actions and by compensation actions taken in the market.
27		
28		Three primary drivers are the following:
29		1. Higher than market median base salaries - Base salaries "flow through" other
30		compensation elements, pension and certain benefits, so that higher than market
31		base salaries drive even high market positioning for total compensation.
32 33		 Other non-pension post-retirement employee benefits (aka OPEB) - Organizations have made efforts to either eliminate or make reductions to their Retiree benefits.
33 34		As such, the provision of OPEB within Hydro One contributes to the above market
35		median positioning for total compensation.
36		3. Pension - Many participating organizations have, over time, reduced the value of
37		pension arrangements. The design and value of the comparable Hydro One Energy
38 20		Professional pension plans have not changed significantly (cost savings) over the same period leading to higher relative values for Hydro One when compared to the
39		same period leading to higher relative values for hydro one when compared to the

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	market We also note that the 2005 above to the defined herefit remains also only
1	market. We also note that the 2005 change to the defined benefit pension plan only
2	affected newly hired employees.
3	
4	Response from Hydro One:
5	The confidential labour relations strategy (Exhibit E-6-1, Attachment 5) speaks to Hydro
6	One's collective bargaining plans to address the drivers identified above over the rate
7	period. The Mercer forecast (Exhibit E-06-01, Attachment 1.1) offers insights on how the
8	market position of the energy professionals may be impacted by certain bargaining
9	outcomes, as well as the natural delay in seeing the effect of changes to compensation
10	elements, such as pension changes, which only impact future service.
11	
12	As noted by Mercer above in respect of the Energy Professional group of employees, we also
13	note that the benchmarking results improved somewhat between the 2017 and 2020 Study.
14	Hydro One will continue to pursue further progress in upcoming rounds of bargaining over
15	the rate period in respect of the Energy Professional group. Further, on an overall (all
16	employee groups) total compensation basis, Mercer forecasts improvement in Hydro One's
17	benchmarking results as of the end of the rate period (2027) compared to 2020 as shown in
18	Exhibit E-06-01, Attachment 1.1.