

REDACTED

Request IR-1:

In its letter responding to the Board’s correspondence about the complaint, NS Power noted the following on page 5:

Other options to supply the necessary power were considered and rejected at the planning stage, partly because they would increase congestion at the Oxford / Norwood intersection and would require additional poles on Norwood and possibly Oxford.

(a) Please provide an up-to-date copy of the distribution planning study, including all scenarios evaluated to supply the increased load, along with the final recommendation.

(b) Please highlight all alternative routing options that were considered to serve this new load in KVA within the report.

Response IR-1:

(a) No distribution planning study was prepared for this project. Distribution planning studies are not required for small commercial and residential service upgrades. Instead, the Planner scoping the job evaluates the existing infrastructure and determines whether it can support the increased load being requested. This was the approach taken for [REDACTED].

The customer is upgrading the existing building from a 200-amp service to a 400-amp service to accommodate new apartment units. The existing transformer currently serves 22 buildings along Norwood Street and Seldon Street. Based on the existing load and the requested increase in load, NS Power determined that additional transformation capacity would be required. The options determined to be available to provide the required transformation capacity are discussed in part (b).

Doward – Service Complaint (NSEB M13021)
NSPI Responses to NSEB Information Requests

REDACTED

1 (b) During the site assessment, NS Power identified two feasible options to provide the
2 additional transformation capacity required to serve the increased load associated with the
3 service upgrade at [REDACTED].
4

5 Option 1 (Selected Option)
6

7 The first option was to extend the existing high-voltage line on Norwood Street by one
8 additional span from the Seldon Street intersection. This would allow for the installation
9 of an additional transformer and the transfer of eight buildings, including [REDACTED]
10 Street, from the existing transformer to the new transformer. This option also involved
11 upgrading the size of the secondary conductors on the affected poles to reduce voltage drop
12 and ensure service remains within applicable standards.
13

14 NS Power determined that this option represented the best means of providing the required
15 transformation capacity while bringing the existing infrastructure up to current standards,
16 maintaining the existing streetscape, and minimizing the amount of tree clearing required
17 along Norwood Street. Please refer to the diagram shown on page 1 of Attachment 1
18 illustrating this option.
19

20 Option 2 (Alternate Option)
21

22 The second option was to construct a new high-voltage line across Oxford Street and install
23 a new transformer opposite [REDACTED]
24

25 This option would have involved higher installation costs due to the traffic coordination
26 required to cross Oxford Street and the need to install new conductors in proximity to
27 existing power lines and HRM crosswalk signals. It also would have required significantly
28 more tree clearing, including the complete removal of the two trees located on Norwood
29 Street adjacent to [REDACTED]. Please refer to the diagram shown on page 2 of
30 Attachment 1 illustrating this option.

Doward – Service Complaint (NSEB M13021)
NSPI Responses to NSEB Information Requests

REDACTED

- 1 Based on its assessment of these two options, NS Power determined that Option 1 was the preferred
- 2 solution. Option 1 provided the required transformation capacity while maintaining the existing
- 3 streetscape, minimizing tree clearing and traffic impacts, and avoiding the additional installation
- 4 costs associated with extending a new high-voltage line across Oxford Street.

**Doward DRO Appeal IR-1 Confidential Attachment 1 has
been removed due to confidentiality.**

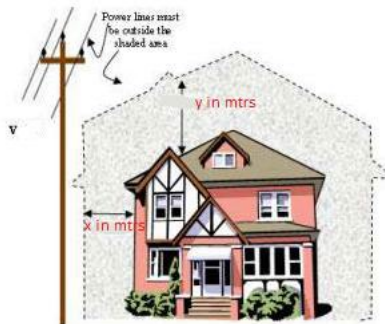
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Request IR-2:

In its letter responding to the Board’s correspondence about the complaint, NS Power noted the following on page 5:

The existing tree(s) and the location stakes are in the HRM right-of-way over the property, and HRM is required to approve any work done on its right-of-way. NS Power included HRM pole permits as part of the construction work order accompanying the renovation order. If HRM approves the permits, then NS Power will be able to place the new poles in the HRM right-of-way to satisfy the electrical requirements for the customer requesting the upgrade.

Board staff understand that two stakes have been positioned where the proposed stub pole and the buried anchor for the overhead guy wire will be installed in the Halifax Regional Municipality (HRM) right-of-way. However, Board staff also understand that, depending on the voltage of the power line, regulations provide x and y value in meters, and the power lines must be outside the shaded area as shown in the image below:



(a) Does NS Power concur with Board staff’s understanding as expressed in the above preamble?

(i) If yes:

(a) Please provide the values of x and y, along with the standards used as reference.

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1 **(b) Please provide the measurements of x and y for the residence, assuming**
2 **that the wall of the house is considered part of the building's**
3 **protuberances.**

4 **(ii) If not:**

5 **(a) Please provide the values of x and y, along with the standards used as**
6 **reference.**

7 **(b) Please provide an envelope drawing that includes the building in**
8 **relation to the proposed installed pole, illustrating how the x and y**
9 **measurements will be taken.**

10 **(c) Please provide the measurements of x and y for the residence, assuming**
11 **that the wall of the house is considered part of the building's**
12 **protuberances.**

13
14 Response IR-2:

15
16 (a)

17 (i) N/A.

18
19 (ii) NS Power does not concur with Board staff's understanding as expressed in the
20 preamble. The CSA and NS Power Distribution Standards prescribe minimum
21 horizontal (x) and vertical (y) clearances between conductors, guys,
22 communications cables, drop wires, and buildings. The applicable clearance
23 requirements depend on the type of facility being assessed, the voltage level,
24 conductor type, span length, and other factors specified in the applicable standard.
25 Accordingly, the minimum clearance requirements cannot be determined solely by
26 reference to the shaded envelope shown in the preamble. The applicable points of
27 measurement and required clearances depend on the particular structure being
28 assessed and the specific provisions of the applicable standard.

29
30 Further, Note D of NS Power Distribution Standard V-4M provides that the

Doward – Service Complaint (NSEB M13021)
NSPI Responses to NSEB Information Requests

NON-CONFIDENTIAL

1 horizontal and vertical clearance requirements are not independent of one another.
2 Where sufficient horizontal clearance exists, the corresponding vertical clearance
3 requirement does not apply. Similarly, where sufficient vertical clearance exists, a
4 reduced horizontal clearance may be permitted. The standard recognizes that the
5 objective is to maintain adequate overall separation between the facility and the
6 building and that substantial clearance in one plane can offset a reduced clearance
7 in the other plane.

8
9 (a- c)

10 Please refer to the table in NS Power's relevant distribution standard,
11 attached as Attachment 1, which sets out the applicable minimum clearance
12 requirements. Measurements referenced below were obtained using a tape
13 measure and a Laser Tech TruPulse L2 rangefinder.

14
15 Proposed Stub Pole and Guy Wire

16
17 The proposed installation adjacent to the Doward residence consists of a 35-
18 foot stub pole and associated guy wire. The stub pole and guy wire will not
19 be energized.

20
21 Under NS Power Distribution Standard V-4M, the applicable clearance
22 requirements for the proposed guy wire are a minimum horizontal clearance
23 of 0.3 metres and a minimum vertical clearance of 0.8 metres. Based on
24 field measurements, the proposed guy wire will be located approximately
25 2.5 metres from the closest point of the building, which substantially
26 exceeds the required horizontal clearance.

27
28 As noted above, Note D of Distribution Standard V-4M provides that where
29 sufficient horizontal clearance exists, the corresponding vertical clearance
30 requirement does not apply. Given that the proposed guy wire will be

Doward – Service Complaint (NSEB M13021)
NSPI Responses to NSEB Information Requests

NON-CONFIDENTIAL

1 approximately 2.5 metres from the building, the proposed installation
2 exceeds the required horizontal clearance by a significant margin and
3 satisfies the applicable clearance requirements.
4

5 Existing Distribution Facilities
6

7 With respect to the existing energized conductors located adjacent to the
8 residence, Figure 1 (attached as Attachment 2) illustrates the field
9 measurements of the horizontal (x) and vertical (y) clearances between the
10 closest energized conductor and the residence. The measurements indicate
11 that there is approximately 4.1 metres of vertical clearance between the
12 closest energized conductor and the residence.
13

14 As discussed above, Note D of Distribution Standard V-4M recognizes that
15 substantial clearance in one plane may offset a reduced clearance in the
16 other plane. In this case, the existing conductors maintain significant
17 vertical separation from the residence.
18

19 Figure 2 illustrates the application of the applicable clearance requirements
20 and identifies the area in which a building encroachment would occur. Any
21 portion of a building located above and to the left of the red line would
22 encroach upon the applicable clearance envelope. Please note that Figure 2
23 is based on a photograph rather than an engineering drawing. Accordingly,
24 NS Power scaled known dimensions within the image to identify and
25 illustrate the applicable clearance envelope.
26

27 The field measurements and clearance assessment demonstrate that the
28 existing energized conductors maintain adequate separation from the
29 residence. Figure 2 further illustrates that the residence is outside the area

Doward – Service Complaint (NSEB M13021)
NSPI Responses to NSEB Information Requests

NON-CONFIDENTIAL

1 in which an encroachment on the applicable clearance envelope would
2 occur.

MINIMUM CLEARANCE IN METERS FROM CONDUCTOR TO									
GUYS, COMMUNICATION CABLES, AND DROP WIRES					BUILDINGS AND ABOVE GROUND PIPELINES		SIGNS, BILLBOARDS, LAMP AND TRAFFIC SIGN STANDARDS, AND SIMILAR PLANT		
					HORIZONTAL		VERTICAL ^A		
					1	2	3		
					0	0.3	0.3	0.08	0.08
SUPPLY CONDUCTORS					1.0	1.5	2.5	2.5	0.5
0 - 750 V					1.0	1.5	2.5	2.5	0.5
OVER 0.75 TO 22 kV					2.0	1.5	3.5	3.0	2.5

COLUMN 1: MINIMUM HORIZONTAL CLEARANCE TO READILY ACCESSIBLE SURFACE, AS PER CSA C22.3, NO. 1, TABLE 9.
 COLUMN 2: CONDUCTOR SWING BASED ON 76m NON-SHELTERED SPAN.
 COLUMN 3: DESIGN HORIZONTAL CLEARANCE - TOTAL OF COLUMNS 1 AND 2.

NOTES:

- THE VERTICAL CLEARANCES APPLY UNDER CONDITIONS OF MAXIMUM SAG.
- THE HORIZONTAL CLEARANCES ARE FROM THE INITIAL SAG POSITION AND APPLY FOR A MAXIMUM SPAN OF 75 METERS.
- CLEARANCES SHOULD TAKE INTO ACCOUNT THE ACCESS AND USE OF THE STRUCTURE (E.G. ROOFS OF BUILDINGS THAT ARE REGULARLY USED). IF THE ROOF OF A BUILDING IS NORMALLY TRAVERSED BY PEDESTRIANS OR CARS, THE MINIMUM CLEARANCE OVER THE BUILDING SHALL BE IN ACCORDANCE WITH V-3M.
- IF CONDUCTORS HAVE SUFFICIENT HORIZONTAL CLEARANCE FROM THE STRUCTURE THE VERTICAL CLEARANCE TO THE STRUCTURE IS NOT REQUIRED. HORIZONTAL CLEARANCES MAY BE REDUCED IF THERE IS SUFFICIENT VERTICAL CLEARANCE FROM THE STRUCTURE.
- CONDUCTORS HAVING A VOLTAGE OVER 750V ABOVE BUILDINGS SHOULD BE AVOIDED IF OTHER CONSTRUCTION CAN BE CARRIED OUT.
- THERE ARE NO HORIZONTAL CLEARANCES REQUIRED FOR GUYS, COMMUNICATION CABLES, DROP WIRES, AND CABLES ENCLOSED IN EFFECTIVELY GROUNDED METALLIC SHEATHING. HOWEVER, THEY SHOULD NOT ABRASE AGAINST THE BUILDINGS.
- IF THE BUILDING IS FLAT-ROOFED AND WILL ACCUMULATE SNOW, THE VERTICAL CLEARANCE SHOULD BE INCREASED ACCORDINGLY.
- FROM INACCESSIBLE SURFACES OF THE BUILDING THE HORIZONTAL CLEARANCE OF THE SECONDARY CONDUCTORS (0-750V) MAY BE REDUCED TO 1.0 METERS AND THE VERTICAL CLEARANCE TO 900 MILLIMETERS.
- CLEARANCES APPLY TO ANY PART OF A BUILDING INCLUDING BALCONIES, FIRE ESCAPES, ANTENNAS AND THEIR SUPPORTING STRUCTURES, AND OTHER PERMANENT FIXTURES.
- ALL VOLTAGES ARE RMS TO GROUND.
- THE CLEARANCES ARE APPLICABLE TO NONMETALLIC BUILDINGS WHOSE METALLIC PARTS ARE EFFECTIVELY GROUNDED. OTHERWISE A 0.1m/kV INCREMENT MUST BE ADDED.
- ALL CLEARANCES ARE IN METERS.



DISTRIBUTION STANDARDS



MINIMUM CONDUCTOR CLEARANCES FROM BUILDINGS

DATE:	1984-06-01	REV DATE:	2022-05-20
DRAWN:	M. HALASZ	STD NO:	V-4M
APPROVED:		SHT NO:	1 OF 1

Figure 1:



Figure 2:



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Request IR-3:

In its letter responding to the Board’s correspondence about the complaint, NS Power noted the following on page 6:

With respect to the crosswalk lights and streetlights on Oxford Street, that infrastructure is owned and operated by HRM, and NS Power has no input into the placement or intensity of the lights. Any concerns about the lighting should be addressed by HRM.

(a) Is there any streetlight installed on the electrical pole owned by the NS Power near the complainant’s property?

(i) If yes, did NS Power install the streetlight mentioned above?

(ii) If yes, please provide the mounting height and luminance level of the streetlight.

(b) What agreement exists between HRM and NS Power regarding the installation of streetlights on the utility’s poles?

(c) Please explain and provide a copy of the standard that NS Power currently follows for the installation of streetlights on its poles, including how these installations meet all applicable requirements related to mounting height and luminance levels under the relevant CSA standards and applicable Utility Standards.

Response IR-3:

(a) Yes. There is a streetlight attached to an NS Power pole located near the complainant's property.

(i) No. This is a Halifax Regional Municipality (HRM) installed streetlight. HRM is responsible for the installation, replacement, upgrade, maintenance, repair, removal, and transfer of its streetlights attached to NS Power utility poles.

Doward – Service Complaint (NSEB M13021)
NSPI Responses to NSEB Information Requests

NON-CONFIDENTIAL

1 (ii) NS Power does not maintain information regarding the mounting height or
2 luminance level of this HRM-owned streetlight. HRM would be the appropriate
3 source for information regarding the mounting height, luminance level, and lighting
4 design of the fixture.
5

6 (b) HRM owns the streetlights attached to NS Power utility poles within its municipal
7 boundaries, and those streetlights remain the property of HRM. The agreement between
8 HRM and NS Power is that HRM is responsible, at its sole cost and expense, for the
9 installation, replacement, upgrade, maintenance, repair, removal, and transfer of its
10 streetlights, while NS Power owns and maintains the utility poles and electric facilities to
11 which the streetlights are attached.
12

13 (c) The streetlight identified in part (a) is owned and maintained by the HRM. As set out above,
14 HRM is responsible for the installation, replacement, upgrade, maintenance, repair,
15 removal, and transfer of its streetlights, while NS Power owns and maintains the utility
16 poles and electric facilities to which those streetlights are attached. NS Power does not
17 maintain information regarding the mounting height, luminance level, or lighting design of
18 this HRM-owned streetlight. Questions regarding those matters should therefore be
19 directed to HRM.