

1 **Q. Has Newfoundland Power evaluated any non-wires alternatives options, such**  
2 **as wind or solar and battery combinations, as an alternative or supplement to**  
3 **transformer replacement? If so, please detail the conclusion(s) and provide**  
4 **any analyses. If not, please provide the rationale for not doing so.**  
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6 A. Newfoundland Power has not evaluated the use of a non-wires alternative as an  
7 alternative or supplement to the replacement of MUN-T2.  
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9 Non-wires alternatives, such as battery storage, can be implemented to reduce load at a  
10 given power transformer, substation or distribution feeder to avoid exceeding capacity  
11 ratings, which might otherwise require necessary infrastructure upgrades. Non-wires  
12 alternatives are not typically pursued to replace damaged or deteriorated infrastructure.<sup>1</sup>  
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14 Newfoundland Power has commenced assessing non-wires alternatives for certain  
15 applications where it may be cost-effective, such as projects to address overload  
16 conditions on individual distribution feeders.<sup>2</sup> Based on information currently available,  
17 a non-wires alternative would not be cost-effective as an alternative to replace MUN-T2.  
18 For example, the cost to implement a battery storage solution to provide backup for  
19 Memorial Substation is approximately \$4.5 million per hour of required backup.<sup>3</sup> This  
20 does not include engineering, land procurement, site preparation, battery system  
21 installation or interconnection to the distribution system. There are also operational  
22 limitations to installing battery storage systems as a result of the amount of land  
23 required to accommodate their size.<sup>4</sup>

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<sup>1</sup> California's *Distribution Infrastructure Deferral Framework* recognizes that non-wires alternatives are not capable of addressing specific utility infrastructure projects such as the repair or replacement of damaged/deteriorated infrastructure, non-capacity related reliability issues and dedicated infrastructure required to serve customers. These types of projects would require pursuing traditional poles and wires solutions. See *Distribution Infrastructure Deferral Framework and Distribution Deferral Advisory Group* meeting, December 12, 2016, presentation by Pacific Gas and Electric, San Diego Gas and Electric and Southern California Edison.

<sup>2</sup> See Newfoundland Power's *2023 Capital Budget Application, report 1.2 Feeder Additions for Load Growth*.

<sup>3</sup> If both power transformers MUN-T1 and MUN-T2 were out of service, approximately half the load can be transferred to Long Pond ("LPD") Substation. There remains approximately 10 MVA which cannot be transferred to LPD Substation. To provide backup to the remaining load that cannot be transferred, a 10 MW battery storage system would be required. The preliminary procurement cost of this solution is \$4,490,000 per hour of backup required based on current battery storage costs of \$449/kWh obtained from *Cost Projections for Utility-Scale Battery Storage: 2021 Update*, June 2021, prepared for the National Renewable Energy Laboratory by Cole et al. This does not include operating and maintenance costs. For a backup requirement of four hours, the preliminary procurement cost increases to \$17,960,000.

<sup>4</sup> For example, the unit dimensions for the Tesla Megapack are 23.5 ft x 5.3 ft x 8.3 ft. When considering clearances and allowances for control modules, the required space for a 10 MW/40 MWh battery system is approximately 5,000 sqft.