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September 28, 2026

**VIA WEB PORTAL & EMAIL**

Crystal Henwood, Clerk of the Board  
Nova Scotia Energy Board  
1601 Lower Water Street, 3<sup>rd</sup> Floor  
P.O. Box 1692, Unit "M"  
Halifax, NS B3J 3S3

Dear Ms. Henwood:

**Re: M12932 - NSPI - Time-Varying Pricing Pilot Program - 2024/25 (Year Four) Evaluation Report - Submissions from Interested Parties**

These are the submissions of the Consumer Advocate (the "CA") regarding the 2024/2025 Evaluation Report for the Time Varying Pricing Program of Nova Scotia Power, prepared in consultation with Theodore Love of Green Energy Economics Group, Consultant to the CA.

**I. SUMMARY**

The Year Four Report for the Time-Varying Pricing ("TVP") Pilot shows the residential tariffs are working as intended: participants shifted load, and they saved money.<sup>1</sup> The CA filed nineteen Information Requests on the Report. Nova Scotia Power Incorporated's ("NS Power") responses were substantive, and on the questions the CA raised about evaluation methods the answers are satisfactory.

The CA supports the TVP Pilot and supports its resumption for the 2026/27 Season. The CA's interest is in expanding the pilot, while making it more effective using key findings from the Evaluation filing with the goal of a permanent TVP offering as soon as possible. Six recommendations follow:

- **Accelerate enrolment.** Electric heating is forecast to rise from 63% to 81% of residential customers by 2036.<sup>2</sup> The customer segment that benefits most from TVP is a segment forecast to expand. NS Power should expand enrolment now instead of deferring to 2027/28.<sup>3</sup> The CA supports one season to stabilize after the cyber incident, and asks NS Power to build the 2027/28 recruitment plan and targets during 2026/27.
- **Expand with equity.** Growth should reach the customers with the least room to absorb a winter bill increase. The approved evaluation plan directs the evaluator to run peak period regressions on

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<sup>1</sup> M12932 N-1, TVP Year Four Report, Appendix A, p. 17 of 157.

<sup>2</sup> NSPI (NSEB) IR-5.

<sup>3</sup> NSPI (SBA) IR-6(c); M12932 N-3, TVP Year Five Report, Appendix B, p. 16 of 79.

low income subsamples.<sup>4</sup> The Year Four Report reports satisfaction by income band, and bill impacts by household income bracket, but no load impacts on that basis.<sup>5</sup> Roughly 11 percent of Year 4 residential applicants who reported their income met the Statistics Canada low-income cut-off.<sup>6</sup> A larger sample makes that analysis possible, and NS Power should report it.

- **Strengthen the evaluation.** Three additions would make the next evaluation materially more useful:
  1. **Measure the system benefit.** After four winters, the record has no aggregate megawatt figure and no monetized value. While NS Power is correct that the approved evaluation plan does not require one,<sup>7</sup> the Board should require both of these values in future evaluation plans.
  2. **Report Small General and General separately.** The combined commercial figure conceals opposite behaviour in the two classes.
  3. **Finish the avoided-cost work.** The recalculation against the August 2024 series remains outstanding.
- **Grow the commercial sample before drawing conclusions.** The commercial results are not yet conclusive, and the reason is enrolment, not necessarily customer behaviour.
- **Improve the first-year customer experience.** Satisfaction rises with time in the programme. If TVP is to scale, it needs early positive experience in the first winter.
- **Keep the enabling-technology and demand-charge work moving.** The Work Plan marks every demand-charge item complete, and revisions to the demand pricing structure appear nowhere in the 2026/27 Work Plan.<sup>8</sup> Enabling technology appears once, as the single line “Technologies that deliver load shifting” under a work plan item marked planned for a technical session NS Power has not scheduled.<sup>9</sup> Both belong in Phase 7, which NS Power identifies as its next opportunity to implement changes.<sup>10</sup>

## II. THE RESIDENTIAL TARIFFS ARE WORKING

Residential TOU participants reduced peak load by 0.16 kW (7.6%), reduced annual energy use by 300 kWh, and saved \$110 per year. Residential CPP participants reduced event load by 0.69 kW (27%), reduced

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<sup>4</sup> M09777, Brattle Group, Load Impact Evaluation Plan of Nova Scotia Power’s Time Varying Pricing (TVP) Pilot, filed 7 October 2021, p. 13.

<sup>5</sup> M12932 N-1, TVP Year Four Report, Appendix B, p. 9 of 67; Appendix E, Attachment 4, pp. 14-15 of 47.

<sup>6</sup> M12932 N-1, TVP Year Four Report, Appendix E, Attachment 4, p. 36 of 47.

<sup>7</sup> NSPI (CA) IR-7.

<sup>8</sup> M12932 N-1, TVP Year Four Report, Attachment 1, pp. 2, 3 and 6 of 9; NSPI (CA) IR-18.

<sup>9</sup> M12932 N-1, TVP Year Four Report, Attachment 1, p. 4 of 9.

<sup>10</sup> M12932 N-3, TVP Year Five Report, Appendix B, p. 16 of 79.

annual energy use by 355 kWh, and saved \$208 per year. All results are statistically significant.<sup>11</sup> Retention was 87% for Domestic TOU and 91% for Domestic CPP.<sup>12</sup> The CA supports continuing both tariffs.

The CA also accepts NS Power's responses to interrogatories on the evaluation methodology. The move to a Linear Mixed Effects Model is within the approved approach, which permits the customer-specific effect to be modelled as either a fixed or a random effect,<sup>13</sup> and NS Power confirms Econoler supported the change.<sup>14</sup> NS Power also identified and corrected an error in the Year Four Report while answering the CA's requests.<sup>15</sup> The CA raises no issue with the Phase 4 methodology.

### III. ELECTRIFICATION MAKES NEW ENROLMENT A PRIORITY

Approximately 63% of residential customers used electricity as their primary heating source in 2025, and NS Power's 10-Year Load Forecast Report projects that number will grow to 81% by 2036.<sup>16</sup> Heating type was the strongest predictor of TVP performance in the record, with participants that had steady electric heat delivering the largest peak reductions — 0.19 kW on TOU and 0.83 kW on CPP, against roughly 0.08 kW and 0.24 kW for steady non-electric participants.<sup>17</sup> NS Power stated that:

... as customers electrify their heating, the positive results from Steady Electric and Electrified customers demonstrate the value of residential TOU and CPP rates as electricity consumption becomes a larger portion of customers' energy budget, both in terms of peak reduction and customer savings.<sup>18</sup>

In the same IR response NS Power confirms that the shift from 63% to 81% of customers primarily heating with electricity "has not been evaluated with respect to potential performance of" the TOU and CPP tariffs.

The Pilot should work towards becoming permanent and be expanded to meet that shift towards heating electrification. Instead, NS Power plans no active recruitment for the 2026/27 Season and has deferred recruitment to 2027/28 so that it can restore the rates and concentrate on existing participants after the 2025 cyber incident.<sup>19</sup> The CA supports a prioritization of restoring systems properly and protecting customer data.

NS Power identifies Phase 7, beginning November 2027, as the point at which it will implement changes drawn from the Phase 4 and Phase 5 evaluations.<sup>20</sup> NS Power should therefore develop the 2027/28 recruitment plan and enrolment targets during 2026/27 — residential and commercial, informed by the electrification forecast, and reaching low-income, renter and multi-unit customers — and file them with the Year Six Report. The Pilot began as a two-year programme ending 31 October 2023 and has continued by

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<sup>11</sup> M12932 N-1, TVP Year Four Report, Appendix A, p. 17 of 157.

<sup>12</sup> M12932 N-1, TVP Year Four Report, Appendix A, Table 6, p. 22 of 157.

<sup>13</sup> M09777, Load Impact Evaluation Plan, p. 13.

<sup>14</sup> NSPI (SBA) IR-4(a).

<sup>15</sup> NSPI (CA) IR-6.

<sup>16</sup> NSPI (NSEB) IR-5.

<sup>17</sup> M12932 N-1, TVP Year Four Report, Appendix A, p. 17 of 157.

<sup>18</sup> NSPI (NSEB) IR-5(b).

<sup>19</sup> NSPI (SBA) IR-6(c).

<sup>20</sup> M12932 N-3, TVP Year Five Report, Appendix B, p. 16 of 79.

annual extension since.<sup>21</sup> Nothing in the record sets a date for deciding whether these tariffs graduate from pilot status. The CA does not ask the Board to fix that date now, but the Pilot should be building toward it rather than repeating itself.

#### **IV. THE COMMERCIAL RESULTS NEED MORE PARTICIPANTS, NOT MORE ANALYSIS**

Phase 4 produced the first statistically significant commercial results, which NS Power attributes to a larger sample and an improved regression method.<sup>22</sup> Phase 4 evaluated 50 commercial TOU and 28 commercial CPP participants. NS Power set Year Four enrolment targets of 500 TOU and 500 CPP in each of the Small General and General classes. The approved evaluation plan recorded that samples "roughly around 5,000" would be needed to estimate impacts for those classes with residential-grade precision.<sup>23</sup> Importantly, the commercial programme is running at about 5 percent of its enrolment target.

The Small General results are a good example of how under-enrollment makes drawing significant insights difficult. Small General participants showed a load increase during peak periods while General participants reduced load.<sup>24</sup> NS Power says that result "should not be interpreted as a conclusion regarding the broader Small General customer class or the design of the Small General TOU rate."<sup>25</sup> While the CA accepts this conclusion, the underlying issue is that after four winters no conclusion is available based on the size of the sample.

NS Power has identified what works: "business customers are more effectively engaged through targeted, relationship-based approaches, such as direct outreach and engagement with NS Power Commercial Advisors," and it intends to prioritize those methods.<sup>26</sup> The CA supports that and asks that it come with commercial enrolment targets with regular reporting against them.

In M11823, the Board directed that if NS Power's assessment found the demand charge was not a deterrent or the cause of low commercial enrolment, NS Power was to review and improve its customer engagement with commercial rate class customers and to revisit the incentive structure for the commercial TVP tariffs, so that commercial operations and load shifting are not mutually exclusive.<sup>27</sup> NS Power has since concluded that the rate structure and pricing signal ratios, rather than the demand charge, form the primary restriction on load shifting.<sup>28</sup> That conclusion triggers the second part of the direction, to improve customer engagement with commercial rate class customers. NS Power has not identified any tariff, eligibility or screening changes before the Pilot resumes.<sup>29</sup> The CA requests NS Power report on changes or improvements it has made to its customer engagement strategy or incentive structure in the Year Six Report.

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<sup>21</sup> M09777, Load Impact Evaluation Plan, p. 3.

<sup>22</sup> NSPI (SBA) IR-2(a).

<sup>23</sup> M12932 N-1, TVP Year Four Report, Appendix A, p. 127 of 157; NSPI (NSEB) IR-9(c); M09777, Load Impact Evaluation Plan, p. 9.

<sup>24</sup> M12932 N-1, TVP Year Four Report, Appendix A, p. 18 of 157.

<sup>25</sup> NSPI (SBA) IR-3(a).

<sup>26</sup> NSPI (NSEB) IR-9(a).

<sup>27</sup> M11823 Board Directive, reproduced at M12932 N-1, TVP Year Four Report, Attachment 1, p. 6 of 9.

<sup>28</sup> M12932 N-1, TVP Year Four Report, Appendix E, Attachment 4, p. 12 of 47; NSPI (CA) IR-18(c).

<sup>29</sup> NSPI (CA) IR-2.

## V. EVALUATION SHOULD MEASURE THE SYSTEM BENEFIT

NS Power confirmed it does quantify aggregate peak load reduction in megawatts or its value in dollars, and that “[c]onsistent with the Board-approved EM&V Plans, these metrics are not included within the scope of the TVP evaluation.”<sup>30</sup> The same plan describes the Pilot's purpose as reducing “the operation costs of the current electricity infrastructure” and helping “to defer the capital costs of building new infrastructure in the future,” and describes EM&V plans as “roadmaps for maximizing the learnings from pilot or program deployments” that “aim to clearly articulate the goals of the program.”<sup>31</sup> NS Power has yet to produce a figure for the system benefit the Pilot delivers. Additionally, NS Power has not reported avoided costs: the recalculation against the August 2024 DSM avoided cost series remains outstanding, deferred to Technical Session 2 of the 2026/27 Work Plan.<sup>32</sup>

The CA asks the Board to require NS Power to provide the following additional information:

1. Aggregate peak reduction in megawatts calculated on actual enrolment,
2. A dollar valuation of that reduction against the current avoided cost series.
3. Small General and General results reported separately. The approved plan already directs the evaluator to estimate peak period regressions on subsamples including “similar business types.”<sup>33</sup>

## VI. FOCUS ON FIRST YEAR SATISFACTION

While retention is strong, the CA notes that, when it comes to utility rate retention, there is a considerable amount of inertia on the part of the customer. According to research published by the United States Department of Energy, enrolment on a rate is sticky, and very few customers move off a rate once they are on it, whatever they think of it.<sup>34</sup> Retention may therefore only indicate that customers have not acted, not that they are necessarily satisfied.

Narrative Research reports that “Year 4 participants (recent joiners) report the lowest satisfaction, likely because they have not experienced the financial benefit of a full year's participation,”<sup>35</sup> and sets out the gradient for TOU: top-four-box satisfaction of 83% for Year 1 participants, 80% for Year 2, 69% for Year 3 and 56% for those who joined in the fall of 2024.<sup>36</sup> On the same survey, “fewer than one-half of ToU participants now agree the power bill they received was as expected.”<sup>37</sup> Overall, only 31.7% of participants gave the Pilot a 9 or 10, and only 25.1% of Year 4 TOU participants did.<sup>38</sup>

The CA does not believe that scores under 8 are “top scores,” but setting that point aside, the primary concern is the one NS Power's consultant identifies: that the first year is the weakest part of the customer experience. That matters more as the Pilot scales, because at any given time most participants will be in

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<sup>30</sup> NSPI (CA) IR-7.

<sup>31</sup> M09777, Load Impact Evaluation Plan, p. 2.

<sup>32</sup> NSPI (CA) IR-8.

<sup>33</sup> M09777, Load Impact Evaluation Plan, p. 13.

<sup>34</sup> Cappers, et al., “Time-of-Use as a Default Rate for Residential Customers: Issues and Insights,” Lawrence Berkeley National Laboratory, LBNL-1005704, June 2016, p. 12. Available at <https://emp.lbl.gov/publications/time-use-default-rate-residential>

<sup>35</sup> M12932 N-1, TVP Year Four Report, Appendix B, p. 9 of 67.

<sup>36</sup> M12932 N-1, TVP Year Four Report, Appendix B, p. 13 of 67.

<sup>37</sup> M12932 N-1, TVP Year Four Report, Appendix B, p. 9 of 67.

<sup>38</sup> NSPI (CA) IR-13, Attachment 1, Table 24b.

their first year, as was the example for this evaluation where 872 of the 1,332 TOU respondents in this survey were in their first year.<sup>39</sup> The cause is partly structural rather than a matter of waiting: residential TOU loads its cost into the winter and returns the benefit over the following summer, so every new participant meets the least favourable season first.

The CA asks NS Power to report, before the Pilot resumes, what it will do to improve the first-year experience — bill presentation and savings comparisons, onboarding, and plain disclosure at enrolment of the winter and non-winter bill profile. The survey points to one measure that already works: participants who use MyEnergy Insights give higher satisfaction scores than those who do not.<sup>40</sup> Promoting this service further is a straightforward step the CA supports.

NS Power equips Customer Care agents with an estimation tool that generates estimated bill comparisons across the TOU and CPP options from a customer's usage profile and typical load shifting behaviour, and its analytics team models bill impacts under different rate scenarios for commercial customers.<sup>41</sup> Today a customer receives that estimate only by telephoning and asking for it. Giving every applicant a personalized estimate at enrolment, and a comparison against the standard rate after the first winter, would set expectations at the point where the survey shows they break. The Board directed NS Power in M11823 to communicate with participants so as to “set their bill savings expectations appropriately to ensure the Pilot can maintain enrollment, produce high-quality results and protect the trust of NS Power customers.”<sup>42</sup> The CA recommends that NS Power should take that direction and work towards improving the customer experience to drive future enrollment and set expectations for first year participants.

## VII. ENABLING TECHNOLOGY AND COORDINATION WITH EFFICIENCY ONE

The largest improvement measured in Phase 4 came from pairing a TVP tariff with enabling technology. For residential TOU, “[s]ignificant enhancements to load reduction (+0.40 kW) occurred where technology (i.e. Eco Shift + smart device) were present”; for residential CPP the figure is 0.46 kW.<sup>43</sup> Against a base TOU reduction of 0.16 kW, the technology effect is larger than the tariff effect.

That overlap happened without targeted efforts to create it. NS Power confirms that “existing and prospective” TOU and CPP participants “were not directly targeted with Eco Shift-specific marketing,” that EfficiencyOne did not target TVP participants either, and that “[a]t this time, there are no specific plans for combined- or cross-marketing activities.”<sup>44</sup> Meanwhile only three in ten participants have installed any energy-efficient or smart technology since joining.<sup>45</sup>

The CA agrees with NS Power's position that the tariffs should be accessible “without specialized equipment or controls.”<sup>46</sup> That said, NS Power should still encourage use of enabling technology for those who want to use it, delivered jointly with EfficiencyOne. With EfficiencyOne's 2027-2031 DSM Plan before the Board in M12780, and NS Power stating that it “looks forward to continuing its collaboration

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<sup>39</sup> NSPI (CA) IR-13, Attachment 1, Table 24b.

<sup>40</sup> M12932 N-1, TVP Year Four Report, Appendix B, p. 13 of 67.

<sup>41</sup> M12932 N-1, TVP Year Four Report, Appendix A, pp. 156-157 of 157.

<sup>42</sup> M11823 Board Directive, reproduced at M12932 N-1, TVP Year Four Report, Attachment 1, p. 8 of 9.

<sup>43</sup> M12932 N-1, TVP Year Four Report, Appendix A, p. 17 of 157.

<sup>44</sup> NSPI (CA) IR-12.

<sup>45</sup> M12932 N-1, TVP Year Four Report, Appendix B, p. 9 of 67.

<sup>46</sup> NSPI (CA) IR-11.

with E1,<sup>47</sup> the coordination should be given substance: a joint cross-promotion plan before the season starts, and reporting of cross-enrolment and its measured load effect in each evaluation.

E1's 2027-2031 DSM Plan holds Residential Demand Response at existing levels with no new installations, and states that E1 does not intend to enroll new customers in the Eco Shift pathway during 2027-2031.<sup>48</sup> E1 designed that plan before NS Power filed the Year Four Report on 30 June 2026, so the evidence that pairing Eco Shift with a TVP tariff more than doubles the load reduction was not before the parties in M12780. In light of that evidence, the CA supports additional engagement between the TVP tariff participants and E1's programs, and asks the Board to direct NS Power and E1 to coordinate TVP and Eco Shift in this matter and in M12780.

### **VIII. DEMAND CHARGES: IMPROVEMENTS THAT DO NOT HAVE TO WAIT FOR THE NEW BILLING SYSTEM**

The multi-unit residential building ("MURB") TOU tariff does not have a demand charge, and NS Power observed no change in monthly demand among its participants.<sup>49</sup> With ten buildings in the sample that finding cannot be generalised to the other tariffs, and NS Power does not generalise it.<sup>50</sup> The question remains open, and it was raised in the original TVP proceeding, where the CA's consultants at that time put before the Board the proposition that a demand charge on smaller customers operates effectively as a fixed charge and reduces the incentive to respond to the energy price signal, and designed an energy-only CPP rate for General customers that has not been piloted.<sup>51</sup>

NS Power's answers state that revisions to the demand pricing structure "were not identified as an area for review" and are "not currently included in the 2026/27 Work Plan"; that no scope, timeline or cost exists for a time-differentiated demand charge; that it expects to file a Customer Information System replacement application with the Board in 2026; and that it has not decided against eliminating or restructuring non-coincident demand charges.<sup>52</sup> NS Power also plans no modelling of demand charge removal.<sup>53</sup> The Work Plan bears this out: it lists four demand-charge items and marks all four complete.<sup>54</sup>

While a new billing system may be required for time-differentiated demand charges, understanding what the demand charge does today can still be examined. The CA suggests that the 2026/27 Work Plan should analyse where demand charges apply across the TVP tariffs, what they add to the bill of a participating customer who shifts load, and whether NS Power could reduce or remove any of them before it completes the CIS replacement.

### **IX. RECOMMENDATIONS**

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<sup>47</sup> NSPI (CA) IR-10.

<sup>48</sup> M12780, E1 2027-2031 DSM Plan, Appendix A – Preferred Plan, pp. 76-77, quoted at M12780 Synapse (E1) IR-52, 7 May 2026.

<sup>49</sup> M12932 N-1, TVP Year Four Report, Appendix A, p. 15 of 157.

<sup>50</sup> M12932 N-1, TVP Year Four Report, Appendix A, Table 6, p. 22 of 157; NSPI (CA) IR-4.

<sup>51</sup> M09777, Evidence of J. Wilson and P. Chernick on behalf of the Consumer Advocate, 22 February 2021, pp. 35-36, and p. 6, fn. 8.

<sup>52</sup> NSPI (CA) IR-18.

<sup>53</sup> NSPI (NSEB) IR-8.

<sup>54</sup> M12932 N-1, TVP Year Four Report, Attachment 1, pp. 2, 3 and 6 of 9.

In consultation with Green Energy Economics Group, the CA recommends that the Board:

1. Confirm the resumption of the TVP Pilot for the 2026/27 Season, and endorse continuation of the residential TOU and CPP tariffs on their current terms;
2. Direct NS Power to develop, during the 2026/27 Season, a recruitment plan and enrolment targets for the 2027/28 Season covering residential and commercial customers, informed by the electrification forecast and reaching low-income, renter and multi-unit customers, and to file that plan with the Year Six Report;
3. Direct that the evaluation plan for the next reporting year add (a) aggregate peak load reduction in megawatts calculated on actual enrolment, and (b) the value of that reduction against the current DSM avoided cost series;
4. Direct NS Power to complete the avoided-cost recalculation against the August 2024 series and to report a certain date for doing so;
5. Direct that Small General and General results be reported separately in future evaluation reports;
6. Direct that future evaluation reports state enrolment, and load and bill impacts, for low-income participants as the sample permits;
7. Direct NS Power to report, before the Pilot resumes, the steps it will take to improve first-year participant satisfaction, including a personalised bill estimate at enrolment, a comparison against the standard rate after the first winter, onboarding, and disclosure of the winter and non-winter bill profile;
8. Direct NS Power and EfficiencyOne to file a joint cross-promotion plan for TVP and Eco Shift, to coordinate the two programmes in this matter and in M12780, and to report cross-enrolment and its measured load impact in each evaluation report;
9. Direct that the 2026/27 Work Plan include an analysis of where demand charges apply across the TVP tariffs, their effect on a participating customer who shifts load, and whether any could be reduced or removed in advance of the Customer Information System replacement.
10. Direct NS Power to report, in the Year Six Report, the review of commercial customer engagement and of the commercial TVP incentive structure required by the Board's direction in M11823.

We thank the Board for the opportunity to make these submissions.

Yours truly,

**PINK LARKIN**



David Roberts,  
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DJR/hd  
cc. Participant List