

Massachusetts Electric Company  
Nantucket Electric Company  
Each d/b/a National Grid  
D.P.U. 23-150  
Exhibit EDF-CLF-JRC-1  
March 29, 2024  
H. O. Tassone

**COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF PUBLIC UTILITIES**

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Petition of Massachusetts Electric Company and )  
Nantucket Electric Company each d/b/a National Grid )  
Pursuant to G.L. c. 164, § 94 and 220 C.M.R. § 5.00 for ) D.P.U. 23-150  
Approval of an Increase in Base Distribution Rates and )  
Approval of a Performance-Based Ratemaking Plan )

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PRE-FILED DIRECT TESTIMONY OF

JOSHUA R. CASTIGLIEGO

ON BEHALF OF

ENVIRONMENTAL DEFENSE FUND  
AND  
CONSERVATION LAW FOUNDATION

March 29, 2024

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1 **I. INTRODUCTION AND WITNESS QUALIFICATIONS**

2 **Q. Mr. Castigliego, please state your full name, business address, and occupation.**

3 A. My name is Joshua R. Castigliego, and I am a Researcher at the Applied Economics Clinic  
4 (AEC). My business address is 6 Liberty Square, PMB 98162, Boston, Massachusetts  
5 02109.

6 **Q. Please describe the Applied Economics Clinic.**

7 A. Based in Massachusetts, AEC is a mission-based non-profit consulting group established  
8 in 2017 that offers expert services in the areas of energy, environment, consumer  
9 protection, and equity from seasoned professionals while providing on-the-job training to  
10 the next generation of technical experts. AEC's clients are primarily public interest  
11 organizations—non-profits, government agencies, and green business associations—who  
12 work on issues related to AEC's areas of expertise. Our work products include expert  
13 testimony, analysis, modeling, policy briefs, and reports, on topics including energy and  
14 emissions forecasting, economic assessment of proposed infrastructure plants, and research  
15 on cutting-edge, flexible energy system resources. AEC's staff is committed to diligent,  
16 transparent, and comprehensible research and analysis.

17 **Q. What is your educational background?**

18 A. I received a Master of Arts in Energy & Environment from Boston University and a  
19 Bachelor of Science in both Mathematics and Physics from Roger Williams University.

1 **Q. Please summarize your professional experience.**

2 A. I have more than five years of professional experience in energy and climate research and  
3 analysis, with a focus on decarbonization and pollution mitigation. I have authored more  
4 than 30 reports and have been published in the journal *Waste Management*. I have also  
5 submitted expert testimony and comments in Kansas, Massachusetts, Minnesota, and  
6 Missouri as well as assisted in the preparation of expert testimony in Connecticut and the  
7 District of Columbia, among other jurisdictions. Prior to joining AEC, I worked as a  
8 Research Fellow at Boston University's Institute for Sustainable Energy, where I led the  
9 *Carbon Free Boston* report's analysis on the emissions impacts associated with Boston's  
10 waste management system to inform the City's decarbonization efforts as it works to  
11 achieve carbon neutrality by 2050.

12 My recent work includes evaluating the need for alternative rate designs to support  
13 electrification by residential customers, examining the net emissions savings benefit of  
14 solar and battery storage facilities, and critiquing electric utility integrated resource plans.  
15 My Curriculum Vitae is attached as Exhibit EDF-CLF-JRC-2.

16 **Q. Have you previously testified before the Massachusetts Department of Public Utilities**  
17 **(DPU)?**

18 A. Yes. I submitted direct testimony in DPU Docket Nos. 21-90 and 21-91.

1 **Q. On whose behalf are you submitting testimony?**

2 A. I am submitting testimony on behalf of the Environmental Defense Fund (EDF) and  
3 Conservation Law Foundation (CLF) (collectively EDF-CLF).

4 **Q. Are you sponsoring any exhibits?**

5 A. Yes, I am sponsoring the following exhibits:

- 6 • Exhibit EDF-CLF-JRC-2: Curriculum Vitae of Mr. Joshua R. Castigliero.

7

8 **Q. What materials did you review in preparing this testimony?**

9 A. Any document upon which I directly relied is cited in my testimony.

1 **II. PURPOSE OF TESTIMONY**

2 **Q. What is the purpose of your testimony?**

3 A. The purpose of my testimony is to assess elements of the Company’s performance-based  
4 ratemaking (PBR) and rate design proposals in Docket No. 23-150, National Grid’s  
5 *Petition for Approval of an Increase in Base Distribution Rates and Approval of a*  
6 *Performance-Based Ratemaking Plan*. I specifically address the Company’s Infrastructure,  
7 Safety, Reliability, and Electrification (ISRE) Mechanism and performance incentive  
8 mechanisms (PIMs, including investment-based “IPIMs” and operating-based PIMs)  
9 included in its proposed PBR framework (which it calls the Comprehensive Performance  
10 and Investment Plan or CPIP). I also assess the Company’s proposed electrification pricing  
11 option and low-income discount rate proposal. Based on these assessments, I provide  
12 recommendations to DPU on the current proposals presented by National Grid on these  
13 topics.

14 **Q. Please summarize your recommendations with respect to the Company’s proposed**  
15 **ISRE Mechanism.**

16 A. I raise concerns related to the transparency and prudence of capital investments to be  
17 recovered through the ISRE Mechanism and urge the DPU to ensure that ratepayers are  
18 sufficiently protected from unnecessary bill impacts resulting from these investments.

1 **Q. Please summarize your recommendations with respect to the Company's proposed**  
2 **performance incentive mechanisms.**

3 A. National Grid's current IPIMs are flawed: They reward the Company for actions that it is  
4 already incentivized to take as well as actions that it is required to take. I recommend that  
5 DPU reject National Grid's proposed IPIMs and instead require National Grid to replace  
6 them with a single reliability IPIM improving reliability in (1) vulnerable communities  
7 with environmental justice populations experiencing worse than average reliability, and (2)  
8 the Company's worst performing feeders. The Company should prioritize vulnerable  
9 communities with environmental justice populations in this metric.

10 In addition, I urge DPU to reject or strengthen the Company's proposed operating-  
11 based PIMs and adopt three additional PIMs: an incremental peak load reduction PIM and  
12 two equity-focused PIMs. National Grid's current operating-based PIMs either seek  
13 rewards for activities that the Company should already be doing without incentive or have  
14 targets that appear easily accomplishable based on recent performance.

15 **Q. Please summarize your recommendations with respect to the Company's**  
16 **electrification pricing proposal.**

17 A. National Grid has an important role to play in facilitating building electrification in its  
18 service territory, but its pricing proposal is poorly designed and premature. I recommend  
19 that DPU reject the Company's proposed electrification pricing option. The Company's  
20 electrification pricing option provides customers with a perverse incentive to increase their

1 electric usage and fails to encourage the adoption of energy-demand-reducing  
2 technologies. In the short term, the Company should focus its attention on the  
3 electrification of low-income customers currently using delivered fuels to heat their homes.  
4 I also recommend that DPU direct the Company to work together with stakeholders to  
5 propose and develop time-varying electrification rates that leverage Advanced Metering  
6 Infrastructure (AMI) as National Grid deploys it. To the extent DPU would like to see  
7 National Grid implement an electrification-friendly rate design in the near term (before the  
8 Company completes AMI deployment), DPU should direct National Grid to propose a  
9 seasonally-differentiated rate design for customers that have actually installed electric heat  
10 pumps.

11 **Q. Please summarize your recommendations with respect to National Grid’s low-income**  
12 **discount rate proposal.**

13 A. Under National Grid’s proposed low-income discount rate, without Low-Income Home  
14 Energy Assistance Program (LIHEAP) distributions, the poorest customers in National  
15 Grid’s service territory will continue to have unaffordable electric bills. I recommend that  
16 DPU order National Grid to design its low-income discount rate such that customers  
17 achieve energy security before (or in the absence of) application of any LIHEAP funding.<sup>1</sup>

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<sup>1</sup> LIHEAP is a federally-funded program that assists eligible low-income households with their energy bills.

1 **Q. Please describe how your testimony is organized.**

2 A. My testimony begins with the policy context relevant to the PBR and rate design proposals  
3 in National Grid's 2023 rate case (see Section III). Next, I provide an overview of the  
4 Company's proposed CPIP (see Section IV) before going on to assess the ISRE Mechanism  
5 (see Section V) and proposed PIMs (see Section VI). Then, I critique two of the Company's  
6 rate design proposals: the proposed electrification pricing option and low-income discount  
7 rate (see Section VII). Finally, I present a summary of my findings and recommendations  
8 related to the Company's proposals as assessed throughout my testimony (see Section  
9 VIII).

10 **III. BACKGROUND ON MASSACHUSETTS' CLIMATE AND ENERGY GOALS**  
11 **AND REGULATIONS**

12 **Q. What do you address in this section of your testimony?**

13 A. In this section of my testimony, I provide an overview of the Commonwealth's climate,  
14 clean energy, and environmental justice goals and describe the affordability challenges  
15 facing National Grid's customers. The purpose of this background information is to place  
16 the PBR and rate design proposals in National Grid's rate case in the context of existing  
17 state policies.

1 **Q. What is the Commonwealth’s current regulatory landscape with respect to**  
2 **greenhouse gas emissions, climate, and clean energy?**

3 A. Massachusetts’ 2008 Global Warming Solutions Act (GWSA) established a 2050 statewide  
4 greenhouse gas emission target of a minimum 80 percent reduction from 1990 levels.<sup>2</sup> In  
5 April 2020, former Governor Baker issued a letter that revised the Commonwealth’s  
6 greenhouse gas emissions target to achieve carbon neutrality by 2050.<sup>3</sup> In March 2021,  
7 GWSA was amended by the *Act Creating a Next-Generation Roadmap for Massachusetts*  
8 *Climate Policy* (2021 Climate Act) to codify the previously announced net zero greenhouse  
9 gas emissions target by 2050 and establish an interim target of achieving at least a 50  
10 percent reduction from 1990 levels by 2030.<sup>4</sup>

11 Building upon the Commonwealth’s Renewable Energy Portfolio Standard  
12 (RPS)—first enforced in 2003—the Massachusetts Department of Environmental  
13 Protection established the Clean Energy Standard (CES), which aims for 80 percent of  
14 electric sales to be procured from clean energy sources by 2050.<sup>5</sup> In August 2022,

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<sup>2</sup> (1) Massachusetts General Laws Chapter 298 (GWSA), Section 3(a) (2008). *An Act Establishing the Global Warming Solutions Act*. Available at: <https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter298>; (2) Mass.gov. N.d. “Global Warming Solutions Act Background.” Available at: <https://www.mass.gov/info-details/global-warming-solutions-act-background>.

<sup>3</sup> Commonwealth of Massachusetts. April 22, 2020. “Press Release: Baker-Polito Administration Issues Letter Establishing Net Zero Emissions Target.” Available at: <https://www.mass.gov/news/baker-polito-administrationissues-letter-establishing-net-zero-emissions-target>.

<sup>4</sup> Massachusetts General Laws Chapter 8, (2021). *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy*. Available at: <https://malegislature.gov/Laws/SessionLaws/Acts/2021/Chapter8>.

<sup>5</sup> Massachusetts Department of Environmental Protection. 2023. *310 CMR 7.75: Clean Energy Standard (CES)*. Available at: <https://www.mass.gov/guides/clean-energy-standard-310-cmr-775>.

1 Massachusetts enacted the *Act Driving Clean Energy and Offshore Wind*, which provides  
2 additional guidance and clarification on how the Commonwealth will work towards  
3 achieving its ambitious climate and clean energy goals.<sup>6</sup> This 2022 Act also created the  
4 Grid Modernization Advisory Council (GMAC) to “increase transparency and stakeholder  
5 engagement in the grid planning process.”<sup>7</sup> GMAC’s primary responsibility was to review  
6 and provide input and recommendations on the electric distribution companies’ electric-  
7 sector modernization plans (ESMPs).<sup>8</sup> The ESMPs are aimed at proactively upgrading the  
8 distribution and transmission systems, as well as promoting timely adoption of renewable  
9 energy resources that will aid in meeting the Commonwealth’s emission reduction goals.<sup>9</sup>  
10 On January 29, 2024, Eversource, National Grid, and Unitil submitted their final ESMPs  
11 to DPU for review in Docket Nos. 24-10, 24-11, and 24-12, respectively.<sup>10</sup>

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<sup>6</sup> Massachusetts General Laws Chapter 179 (2022). *An Act Driving Clean Energy and Offshore Wind*. Available at: <https://malegislature.gov/Laws/SessionLaws/Acts/2022/Chapter179>.

<sup>7</sup> *Id.*

<sup>8</sup> See <https://www.mass.gov/orgs/grid-modernization-advisory-council-gmac>.

<sup>9</sup> Massachusetts General Laws Chapter 179, Section 92(B) (2022). *An Act Driving Clean Energy and Offshore Wind*.

<sup>10</sup> Massachusetts Department of Energy Resources (DOER). N.d. “Electric Sector Modernization Plans (ESMPs) Information and Recommendations.” Available at: <https://www.mass.gov/info-details/electric-sector-modernization-plans-esmps-information-and-recommendations>.

1 **Q. Does the Commonwealth have any additional plans or policies that outline strategies**  
2 **for achieving greenhouse gas emission reductions that are relevant to electric utility**  
3 **rate cases?**

4 A. Yes. In December 2020, the Massachusetts Executive Office of Energy and Environmental  
5 Affairs (EEA) released the *Massachusetts 2050 Decarbonization Roadmap*, outlining  
6 possible pathways to meeting the Commonwealth’s ambitious climate targets.<sup>11</sup> In 2022,  
7 EEA released the *Massachusetts Clean Energy and Climate Plan for 2025 and 2030*  
8 (2025/30 CECP) presenting the planned strategies, policies, and actions that will enable  
9 the Commonwealth to meet its climate and clean energy goals.<sup>12</sup> The 2025/30 CECP  
10 highlights that “[a]chieving Massachusetts’ emissions limits will require the electricity  
11 sector to continue to decarbonize while serving additional demand from the electrification  
12 of heating and transportation.”<sup>13</sup> The 2025/30 CECP goes on to describe the role of electric  
13 utilities in facilitating electrification across their service territories while emphasizing the  
14 importance of affordability:<sup>14</sup>

15 *As a part of the transition toward a clean energy future, the electric*  
16 *utilities will need to evaluate the options for innovative rate structures*  
17 *to help promote EVs and heat pump adoption. The DPU will work with*  
18 *the electric utilities and stakeholders to develop alternative rate*  
19 *structures for customers with electric heating (similar work on electric*

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<sup>11</sup> Massachusetts Executive Office of Energy and Environmental Affairs (EEA). 2020. *Massachusetts 2050 Decarbonization Roadmap*. Available at: <https://www.mass.gov/info-details/ma-decarbonization-roadmap>.

<sup>12</sup> Massachusetts EEA. 2022. *Massachusetts Clean Energy and Climate Plan for 2025 and 2030*. Available at: <https://www.mass.gov/doc/clean-energy-and-climate-plan-for-2025-and-2030/download>.

<sup>13</sup> *Id.* at xiv.

<sup>14</sup> *Id.* at .61.

1            *vehicle charging is ongoing) that would increase incentives for the*  
2            *adoption of clean technologies, while protecting energy-burdened*  
3            *households to ensure that everyone across the Commonwealth can reach*  
4            *equal and fair access to the clean technologies.*

5            The 2025/30 CECP also notes that in order for the Commonwealth to achieve its  
6            emission reduction goals, the electric sector will need to reduce emissions by more than 53  
7            percent from 1990 levels by 2025 and 70 percent by 2030.<sup>15</sup> In December 2022, EEA  
8            established sector-based statewide greenhouse gas emission sub-limits as required by the  
9            2021 Climate Act, where the electric sector is required to reduce emissions by 93 percent  
10           from 1990 levels for the Commonwealth to achieve its 2050 net-zero goal.<sup>16</sup>

11   **Q. Are the Commonwealth’s climate and clean energy goals relevant to this proceeding?**

12   A. Yes. Complying with Massachusetts’ climate and clean energy goals is a basic minimum  
13   standard for utility planning. As called for in the Commonwealth’s 2025/30 CECP, electric  
14   utilities must work alongside DPU and stakeholders to develop electrification-friendly rate  
15   designs to further facilitate the adoption of electrified end-uses, such as electric heat pumps  
16   and electric vehicles.<sup>17</sup> I propose an alternative electrification rate later in my testimony  
17   which directly touches on the requirements of the 2025/2030 CECP. In addition,

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<sup>15</sup> *Id.* at 79.

<sup>16</sup> Massachusetts EEA. 2022. *Determination of Statewide Greenhouse Gas Emissions Limit and Sector-Specific Sublimit for 2050*. Available at: <https://www.mass.gov/doc/determination-letter-for-the-2050-cecp/download>.

<sup>17</sup> Massachusetts EEA. 2022. *Massachusetts Clean Energy and Climate Plan for 2025 and 2030*, p. 61. Available at: <https://www.mass.gov/doc/clean-energy-and-climate-plan-for-2025-and-2030/download>.

1 maintaining affordable electric service is a necessary component of an equitable transition  
2 to electrification.

3 **Q. What is the Commonwealth’s definition of “environmental justice”?**

4 A. Updated in 2021, the Commonwealth’s Environmental Justice (EJ) Policy defines  
5 “environmental justice” as follows:

6 *Environmental justice is the equal protection and meaningful*  
7 *involvement of all people and communities with respect to the*  
8 *development, implementation, and enforcement of energy, climate*  
9 *change, environmental laws, regulations, and policies and the equitable*  
10 *distribution of energy and environmental benefits and burdens.*<sup>18</sup>

11 EJ populations are also defined by the Commonwealth’s EJ Policy to refer to  
12 neighborhoods that are “most at risk of being unaware of or unable to participate in  
13 environmental, energy, or climate decision-making.”<sup>19</sup> More specifically, EJ populations  
14 (or EJ communities) are defined as neighborhoods that meet one or more of the following  
15 criteria with respect to household income, race/ethnicity, and English language  
16 proficiency:<sup>20</sup>

- 17 • the annual median household income is less than or equal to 65 percent of the
- 18 statewide median income,
- 19 • minorities comprise 40 percent or more of the population,
- 20 • 25 percent or more of households lack English language proficiency, and/or

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<sup>18</sup> Massachusetts EEA. Updated June 24, 2021. *Environmental Justice Policy of the Executive Office of Energy and Environmental Affairs*, p. 2. Available at: <https://www.mass.gov/doc/environmental-justice-policy6242021-update/download>.

<sup>19</sup> *Id.* at 5.

<sup>20</sup> *Id.* at 6.

- 1 • minorities comprise 25 percent or more of the population and the annual median  
2 household income of the municipality on which the neighborhood is located does  
3 not exceed 150 percent of the statewide median household income.

4 **Q. Please describe the Commonwealth’s requirements related to environmental justice.**

5 A. In 2002, the Massachusetts Executive Office of Environmental Affairs (now the Executive  
6 Office of Energy and Environmental Affairs) established the Commonwealth’s first EJ  
7 Policy<sup>21</sup> to address the disproportionate share of environmental burdens experienced by  
8 people of color and low-income communities and ensure that environmental justice was an  
9 integral part of the decision-making and implementation process of all state programs.<sup>22</sup>

10 In November 2014, former Governor Patrick issued Executive Order No. 552 to  
11 ensure environmental justice efforts remain a current and future priority for the  
12 Commonwealth.<sup>23</sup> Among other provisions, E.O. 552 directed EEA to update its EJ Policy  
13 and instructed EEA and its agencies to develop strategies to promote environmental justice  
14 that are tailored to each agency’s specific authority, mission, and programs.<sup>24</sup>

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<sup>21</sup> Massachusetts Executive Office of Environmental Affairs (EOEA). 2002. *Environmental Justice Policy of the Executive Office of Environmental Affairs*. Available at: <https://www.mass.gov/files/documents/2017/11/29/ej%20policy%202002.pdf>.

<sup>22</sup> Massachusetts EEA. N.d. “Objectives of Environmental Justice.” Available at: <https://www.mass.gov/info-details/objectives-of-environmental-justice>.

<sup>23</sup> Massachusetts Executive Order No. 552 (2014). “Executive Order on Environmental Justice.” Massachusetts Register #1276. Available at: <https://www.mass.gov/doc/executive-order-552-mass-register-1276/download>.

<sup>24</sup> *Id.* at 6.

1           In February 2024, EEA released the Commonwealth’s EJ Strategy, which “consists  
2 of initiatives and programs to advance environmental justice and equity across EEA and  
3 its agencies.”<sup>25</sup> The key components of the Commonwealth’s EJ Strategy include:<sup>26</sup>

- 4           • **Meaningful engagement** to cultivate and strengthen relationships with EJ  
5 communities;
- 6           • **Analyzing impacts** to better understand the implications of specific projects on  
7 EJ communities;
- 8           • **Implement language access plans** to increase accessibility;
- 9           • **Provide staff trainings** to understand environmental justice and equity issues; and  
10           • **Develop metrics** to track progress and identify areas for improvement.

11 **Q. What strategies did DPU develop to prioritize environmental justice?**

12 A. As part of the Commonwealth’s EJ Strategy, DPU, along with other EEA agencies, was  
13 required to develop its own EJ strategies that aim to “promote EJ considerations across the  
14 Department’s proceedings involving EJ communities.”<sup>27</sup> DPU plans to facilitate increased  
15 awareness and public participation in its proceedings by making its notices and other  
16 documentation more accessible, by posting relevant information online, and adopting a  
17 mandated language access plan. In addition, DPU will “[r]equire the distribution

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<sup>25</sup> Massachusetts EEA. February 2024. *Environmental Justice Strategy: Secretariat and agency strategies for proactively promoting environmental justice in the Commonwealth of Massachusetts* (EJ Strategy), p. 2. Available at: <https://www.mass.gov/doc/february-2024-environmental-justice-strategy-english/download>.

<sup>26</sup> *Id.* at 2-3.

<sup>27</sup> *Id.* at 129.

1 companies to provide bill impact analyses on EJ populations in base distribution rate  
2 proceedings” and “track and report on EJ-related performance metrics.”<sup>28</sup>

3 **Q. How else has DPU prioritized environmental justice in its proceedings?**

4 A. In addition to these EJ strategies, DPU has prioritized environmental justice in its most  
5 recent 2022-2024 three-year energy efficiency plan proceedings (DPU Docket Nos. 21-  
6 120 through 21-129). Through these energy efficiency plan proceedings, DPU ordered the  
7 Program Administrators to identify communities for targeted equity investment and  
8 outreach efforts, which are referred to as “Targeted Hard-to-Reach Communities”.<sup>29</sup> These  
9 Targeted Hard-to-Reach Communities represent municipalities within the Commonwealth  
10 that meet the following criteria:<sup>30</sup>

- 11 1. Served by an electric and/or gas Program Administrator;
- 12 2. Contain at least one environmental justice population as defined by the  
13 Commonwealth’s EJ Policy (described in detail above); and
- 14 3. Have historically low participation rates in energy efficiency programs,  
15 where “historically low” participation is less than or equal to a combined  
16 consumption-weighted participation rate of 27 percent.

17 Based on DPU’s criteria, the Program Administrators identified a total of 61  
18 Targeted Hard-to-Reach municipalities across Massachusetts.<sup>31</sup> In National Grid’s service

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<sup>28</sup> *Id.* at 130.

<sup>29</sup> DPU Order. *2022-2024 Three-Year Energy Efficiency Plans*, DPU Docket Nos. 21-120 through DPU 21-129 at 97 (January 31, 2022).

<sup>30</sup> *Id.* at 97-98.

<sup>31</sup> *2022-2024 Three-Year Energy Efficiency Plans*, DPU Docket Nos. 21-120 through DPU 21-129, Addendum to the Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plan 2022-2024, Attachment 1 (June 3, 2022). Available at: <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/15035648>.

1 territory, the combined criteria identified Worcester, Lowell, Lawrence, Fall River,  
2 Brockton, Lynn, and others for targeted investment.

3 **Q. Is affordability a concern for National Grid’s customers?**

4 A. Yes. Energy affordability is an increasingly pressing issue that Massachusetts households  
5 face when choosing how to spend their income. DPU notes that affordability is an  
6 important consideration as “[n]o one should have to struggle with the choice between  
7 buying food or medicine and having to pay their energy bill.”<sup>32</sup>

8 According to a 2020 report by the American Council for an Energy-Efficient  
9 Economy (ACEEE), the vast majority of low- and moderate-income households, minority  
10 households, and renting households across the United States pay more in energy costs (as  
11 a share of their income) than the average household.<sup>33</sup> The share of a household’s income  
12 spent on energy bills is referred to as that household’s “energy burden”, a useful metric for  
13 comparing the affordability issues faced by different households.

14 **Q. Please describe the DPU’s recent Notice of Inquiry into energy burdens and**  
15 **affordability.**

16 A. On January 4, 2024, DPU issued a Notice of Inquiry (NOI) in Docket No. 24-15, *Notice of*  
17 *Inquiry by the Department of Public Utilities on its own Motion into Energy Burden with*

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<sup>32</sup> DPU Docket No. 24-15, February 8, 2024. “Massachusetts Energy Burden Infographic.” Available at:  
<https://www.mass.gov/doc/massachusetts-energy-burden-infographic>.

<sup>33</sup> American Council for an Energy-Efficient Economy (ACEEE). September 2020. “How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burdens across the U.S.”, p. 3. Available at:  
<https://www.aceee.org/research-report/u2006>.

1        *a Focus on Energy Affordability for Residential Ratepayers*, to examine energy burdens  
2        with the intent to improve current programs that address energy affordability.<sup>34</sup> As noted  
3        by DPU in its January 2024 NOI, the Commonwealth’s 2021 Climate Act amended the  
4        Department’s responsibilities to prioritize affordability, equity, and emission reductions in  
5        addition to safety, security, and reliability of service.<sup>35</sup> In Eversource’s most recent electric  
6        rate proceeding in Docket 22-22, DPU’s final order acknowledged the “need for a deeper  
7        understanding of the impact energy costs are having on households,” and further noted that  
8        “a more-in-depth understanding of energy burdens has become essential.”<sup>36</sup>

9                To facilitate a better understanding of energy burdens, DPU directed each electric  
10        distribution company (in directives initiated by its final order in Docket No. 22-22<sup>37</sup>) to  
11        develop a process for tracking and calculating customer energy burdens, which were  
12        reported in supplemental filings in the electric distribution companies’ 2022 annual  
13        reports.<sup>38</sup> Within the January 2024 NOI, DPU noted four current methods for addressing  
14        affordability:<sup>39</sup>

- low-income discount rates,

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<sup>34</sup> DPU Docket No. 24-15. January 4, 2024. *Notice of Inquiry by the Department of Public Utilities on its own Motion into Energy Burden with a Focus on Energy Affordability for Residential Ratepayers* (Affordability NOI), p. 1. Available at: <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18395007>.

<sup>35</sup> *Id.*

<sup>36</sup> DPU Docket No. 22-22. November 30, 2022. *Final Order*, p.472.

<sup>37</sup> *Id.* at 472-473.

<sup>38</sup> The EDCs filed these energy burden reports as supplemental data with their 2022 annual returns. *See generally*: <https://www.mass.gov/info-details/find-an-electriccompany-annual-return> (last visited March 22, 2024).

<sup>39</sup> Affordability NOI at 6-12.

- 1           • arrearage management programs,
- 2           • disconnection protection, and
- 3           • percentage-of-income payment plans.

4           In Docket No. 24-15, DPU’s NOI requested input on the topics of energy burden  
5           and affordability, and received comments submitted by a number of stakeholders,  
6           including: environmental and consumer advocates, community members, municipalities,  
7           and other state agencies.

8   **Q.    Are environmental justice and affordability relevant to this proceeding?**

9   A.    Yes. National Grid’s rate proposal must meet at least the minimum standards required of  
10       the utility with respect to energy affordability and equity. As required by DPU’s EJ  
11       strategies, distribution companies are expected to evaluate bill impacts on EJ populations  
12       and track and report on performance metrics that focus on environmental justice.<sup>40</sup> My  
13       recommendations presented later in this testimony call for new PIMs that would incentivize  
14       National Grid to prioritize its investments and operations on low-income and EJ  
15       communities.

16   **Q.    Beyond affordability, does this rate case impact broader equity concerns for National**  
17       **Grid’s customers?**

18   A.    Yes. Equity is about more than just affordability—it is about the fair distribution of benefits  
19       as well as inclusive processes that enables that distribution. This rate case impacts the

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<sup>40</sup> EJ Strategy at 130.

1 distribution of benefits from National Grid’s spending on infrastructure and programs.

2 EDF-CLF witness Wambui describes those concerns in more detail in her testimony.

3 **IV. OVERVIEW OF NATIONAL GRID’S PERFORMANCE-BASED RATEMAKING**  
4 **(PBR) PROPOSALS**

5 **Q. What do you address in this section of your testimony?**

6 A. In this section of my testimony, I provide an overview of National Grid’s PBR proposals  
7 to summarize the Company’s requests and highlight components that I will assess in more  
8 detail later in my testimony, including the ISRE Mechanism (see Section V) and the  
9 Company’s PIMs (see Section VI).

10 **Q. Please provide a high-level overview of the Company’s PBR proposals.**

11 A. On November 16, 2023, National Grid submitted its petition for DPU to approve an  
12 increase in its base distribution rates together with a proposed PBR plan referred to as  
13 CPIP.<sup>41</sup> National Grid’s CPIP would be in effect during the five-year period between  
14 October 1, 2024 and October 1, 2029.<sup>42</sup> If approved by DPU, National Grid would be  
15 subject to a five-year “stay-out commitment” under which the Company will not file a  
16 petition to increase base distribution rates during that time period.<sup>43</sup>

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<sup>41</sup> DPU Docket No. 23-150. November 16, 2023. *Petition for Approval*. Massachusetts Electric Company and Nantucket Electric Company each d/b/a National Grid. Available at:

<https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18226515>.

<sup>42</sup> Exhibit NG-CPIP-1 at 17-18.

<sup>43</sup> *Id.* at 32:3-9.

1           In its CPIP proposal, National Grid seeks to replace its current comprehensive PBR  
2 model with two separate cost recovery mechanisms: (1) the ISRE Mechanism for recovery  
3 of core capital investments and ESMP-related costs, and (2) the PBR-O Mechanism for  
4 recovery of operating costs. The Company’s proposed CPIP also adopts performance  
5 mechanisms including PIMs (*i.e.*, investment-based “IPIMs” and operating-based PIMs)  
6 and scorecard metrics.

7 **Q. How would the CPIP differ from National Grid’s existing performance-based**  
8 **ratemaking mechanism?**

9 A. Unlike the Company’s current PBR mechanism (approved by the DPU in Docket No. 18-  
10 150), the proposed CPIP takes a “hybrid” approach that recovers investment (ISRE) and  
11 operating costs (PBR-O) separately. According to the Company’s CPIP Panel, the  
12 proposed ISRE Mechanism is structured as a reconciling recovery mechanism that “would  
13 recover the revenue requirement associated with core capital projects and the total revenue  
14 requirement associated with ESMP-related projects.”<sup>44</sup> In contrast, the PBR-O Mechanism  
15 “would operate as an I-X adjustment applied exclusively to [operation and maintenance]  
16 expense, rather than the total revenue requirement as is the case in a traditional PBR  
17 plan.”<sup>45</sup>

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<sup>44</sup> *Id.* at 17:15-17.

<sup>45</sup> *Id.* at 21:9-10.

1 **V. ASSESSMENT OF NATIONAL GRID'S PROPOSED ISRE MECHANISM**

2 **Q. What do you address in this section of your testimony?**

3 A. In this section of my testimony, I discuss the Company's proposed ISRE Mechanism  
4 included as part of its CPIP. Based on my review, I raise concerns related to the  
5 transparency and prudence of capital investments to be recovered through the ISRE  
6 Mechanism and urge the DPU to ensure that ratepayers are sufficiently protected from  
7 unnecessary bill impacts resulting from these investments.

8 **Q. Please summarize National Grid's proposed ISRE Mechanism.**

9 A. As part of its CPIP, National Grid proposes to implement an ISRE Mechanism to allow the  
10 Company to recover the revenue requirements associated with investments (*i.e.*, Core  
11 Investments and ESMP-related costs) placed in service during the five-year period of its  
12 CPIP. As noted above, National Grid proposes to bifurcate its PBR mechanism to include  
13 both the ISRE and PBR-O mechanisms, which will, the utility asserts, work in conjunction  
14 with one another but treat the recovery of capital investments and operating costs  
15 separately.

16 The Company's CPIP Panel asserts that an unprecedented level of investment is  
17 needed to continue to provide safe and reliable service while driving forward the  
18 Commonwealth's electrification and clean energy goals.<sup>46</sup> The CPIP Panel further claims

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<sup>46</sup> *Id.* at 35:10-14.

1 that “the capital investment needs for the Company’s electric distribution system over the  
2 next five years are well beyond historical levels”<sup>47</sup> and “cannot be sufficiently funded  
3 through traditional cost-of-service ratemaking, nor a historical-trend based PBR  
4 mechanism.”<sup>48</sup> According to National Grid’s CPIP Panel, the proposed ISRE Mechanism  
5 is intended to reduce regulatory lag and allow for the timely and adequate recovery of  
6 capital investments:

7 *Thus, the ISRE Mechanism will support the implementation of the*  
8 *Company’s five-year capital plan with funding through timely and*  
9 *adequate recovery of: (1) Core Investments necessary to provide*  
10 *continuing safe and reliable electric distribution service to the*  
11 *Company’s customers; and (2) ESMP total revenue requirements*  
12 *necessary to support the Commonwealth’s clean energy and*  
13 *electrification requirements and expectations.*<sup>49</sup>

14 **Q. Please describe the Company’s Core Investments and ESMP-related costs.**

15 A. The Company has identified five work areas as a part of its Core Investments: (1) customer  
16 connects and public requirement, (2) system capacity and performance, (3) asset condition,  
17 (4) damage/failure, and (5) non-infrastructure. Together, the Company’s Core Investments  
18 are estimated to require a five-year total investment of roughly \$4 billion with costs  
19 increasing annually by 17 percent on average over the course of the five-year CPIP  
20 period.<sup>50</sup>

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<sup>47</sup> *Id.* at 35:9-10.

<sup>48</sup> *Id.* at 35:15-17.

<sup>49</sup> *Id.* at 20:1-5.

<sup>50</sup> *Id.* at 60-61.

1           In addition to the Core Investments, the Company’s ESMP is estimated to include  
2           nearly \$2 billion in capital investments and another \$450 million in operating expenses in  
3           the areas of (1) network infrastructure, (2) platform/technology, (3) customer programs,  
4           and (4) electric vehicle charging programs.<sup>51</sup>

5   **Q.   Please summarize your concerns regarding National Grid’s proposed ISRE**  
6   **Mechanism.**

7   A.   I have three major concerns with the Company’s proposed ISRE Mechanism related to  
8   transparency and prudence of costs:

- 9           1.   ESMP-costs are being reviewed in a separate proceeding, which does not  
10           facilitate a full assessment of affordability impacts associated with the cost  
11           recovery sought within the Company’s 2023 rate case;
- 12           2.   The Company’s level of investment for its Core Investments represents a  
13           rapid increase over the five-year CPIP period (in comparison to historical  
14           spending) that is unprecedented and should be adequately justified; and
- 15           3.   Deferring a prudence review of the Company’s capital spending (especially  
16           at such unprecedented levels) to a three-month reconciliation filing does not  
17           provide sufficient time for DPU or intervenors to conduct a comprehensive  
18           review of those investments.

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<sup>51</sup> DPU Docket No. 24-11. January 29, 2024. *Petition of National Grid for Approval by the Department of Public Utilities of its Electric Sector Modernization Plan*. “Future Grid Plan (Part 4)”, pp. 358-362. Submitted by Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid. Available at: <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18552718>.

1 **Q. Does National Grid seek approval of its ESMP-related costs in this rate case**  
2 **proceeding?**

3 A. No. The Company filed its ESMP for DPU’s review on January 29, 2024, in Docket No.  
4 24-11, *Petition of Massachusetts Electric Company and Nantucket Electric Company d/b/a*  
5 *National Grid, pursuant to G.L. c. 164, § 92B, for approval by the Department of Public*  
6 *Utilities of its Electric Sector Modernization Plan.*<sup>52</sup> The investments and other costs  
7 associated with the Company’s ESMP are under review in Docket No. 24-11 and are not  
8 included as part of the Company’s petition in its 2023 rate case.

9 **Q. Does the review of ESMP-related costs in a separate proceeding raise any concerns?**

10 A. Yes. Since the ESMP-related costs are currently under review in a separate proceeding,  
11 DPU and other intervenors are unable to evaluate the full extent of ratepayer impacts  
12 (especially as they relate to energy affordability) within the context of this rate case  
13 proceeding. This separation of approvals leaves ratepayers, and especially low- and  
14 moderate-income households, vulnerable to a total bill increase (rate case plus ESMP) that  
15 exceeds the limits of affordability.

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<sup>52</sup> DPU Docket No. 24-11. January 29, 2024. *Petition of Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid, pursuant to G.L. c. 164, § 92B, for approval by the Department of Public Utilities of its Electric Sector Modernization Plan.* Available at: <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18551181>.

1 **Q. What level of investment is associated with the Company’s “Core Investments” in its**  
2 **CPIP?**

3 A. The Company estimates that it will need to invest approximately \$4 billion in Core  
4 Investments during the five-year CPIP period, which averages out to roughly \$790 million  
5 per year (see Figure 1).<sup>53</sup> National Grid itself notes that level of investment is  
6 unprecedented.<sup>54</sup> The Company expects its Core Investments to increase by 42 percent  
7 between the test year and the start date of its CPIP, from \$395 million in FY 2023 to \$577  
8 million in FY 2025.<sup>55</sup> During the five-year CPIP period, these Core Investments will  
9 continue to grow by 17 percent annually until reaching \$954 million in FY 2029.<sup>56</sup>

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<sup>53</sup> Exhibit NG-CPIP-1 at 60:1-4.

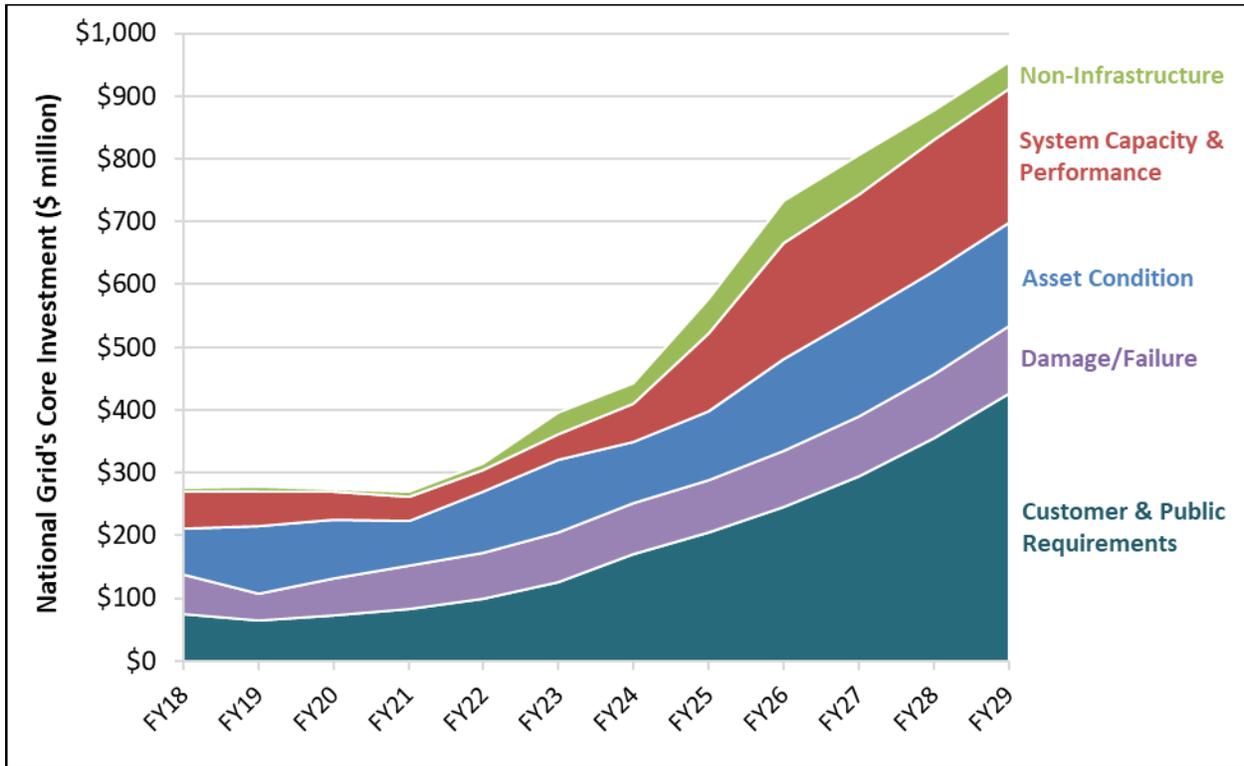
<sup>54</sup> *Id.* at 36:3-7 and 62:1-9.

<sup>55</sup> *Id.* at 60-61.

<sup>56</sup> *Id.* at 61:1-3.

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**Figure 1: National Grid’s historical and proposed Core Investments<sup>57</sup>**



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When comparing these cost forecasts to historical spending, the Company’s CPIP Panel asserts that “to maintain the same level of reliability to customers today, it will require unprecedented levels of capital spend to provide safe and reliable electric distribution service.”<sup>58</sup>

<sup>57</sup> *Id.*, Table 3 at 60 and Table 4 at 61.

<sup>58</sup> *Id.* at 62:1-2.

1 **Q. Do you have any concerns related to National Grid’s proposed Core Investments?**

2 A. Yes. Although DPU has approved PBR plans in the past, it is important to highlight (as the  
3 Company does itself) that National Grid’s proposed ISRE Mechanism (through which it  
4 would recover its Core Investments) is unique compared to other PBR mechanisms  
5 implemented in Massachusetts. Specifically, the proposed ISRE Mechanism is based on  
6 cost forecasts instead of the almost universally used practices of indexing to historical  
7 spending or a “test year”. Given that the Company’s proposed ISRE Mechanism is a new  
8 approach to PBR cost recovery, it is incumbent on National Grid to justify the level of  
9 investment being proposed in this rate case proceeding and demonstrate how the benefits  
10 of these investments will be distributed amongst its customers, especially those that face  
11 affordability challenges like low-income individuals and other historically marginalized  
12 populations. I recommend DPU examine the proposed ISRE Mechanism and the associated  
13 Core Investments with a critical eye to ensure that ratepayers are sufficiently protected  
14 from unnecessary bill impacts.

15 **Q. How will National Grid administer the reconciliation filings for its ISRE Mechanism?**

16 A. The Company will submit its reconciliation filing for the ISRE Mechanism on June 15 of  
17 each year, requesting recovery of capital investments placed in-service in the previous  
18 calendar year.<sup>59</sup> The Company will also report on its performance against the IPIMs and

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<sup>59</sup> *Id.* at 38:4-6.

1 whether the investment recovery cap is necessary to cover its level of investment in the  
2 previous year. Any rate changes determined in the ISRE Mechanism reconciliation filings  
3 will be effective as of October 1 of that year.

4 **Q. Do you have any concerns with the reconciliation filings for the ISRE Mechanism?**

5 A. Yes. My primary concerns regarding the reconciliation filings are timeframe and  
6 stakeholder intervention. The Company's CPIP Panel highlights that DPU will conduct a  
7 prudence review at the time of the reconciliation filing, proceedings which resolve within  
8 three months:<sup>60</sup>

9 *All capital projects will be subject to the Department's prudence review*  
10 *either at the time of the annual reconciliation filings for the ISRE*  
11 *Mechanism, or in the Company's next base-rate proceeding – as*  
12 *preferred by the Department.*

13 This means that in a three-month period the following things must happen:

- 14 • Stakeholders intervene (pending DPU's approval);
- 15 • Company's materials reviewed by DPU and intervenors;
- 16 • Company's capital spending analyzed by staff and third-party experts;
- 17 • Discovery requests and responses;
- 18 • Testimony filed;
- 19 • Evidentiary Hearing (if applicable);
- 20 • Briefs submitted; and
- 21 • Order issued by DPU.

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<sup>60</sup> *Id.* at 20-21.

1 I am concerned whether there will be enough time for DPU to conduct a  
2 comprehensive prudence review in the timeframe allowed by the reconciliation filings,  
3 especially since the level of investment proposed by National Grid is unprecedented  
4 compared to the Company’s historical spending. It is also not clear that stakeholders would  
5 have the same opportunity to intervene and provide input on the Company’s capital  
6 spending as they would in a formal rate case proceeding.

7 In setting the procedural schedule for the current proceeding, DPU “gave careful  
8 consideration to several important factors, including allowing the necessary time to  
9 develop a complete evidentiary record, affording all current and potential parties a  
10 reasonable time to conduct discovery and file testimony and exhibits, and reserving  
11 sufficient time for deliberation by the Commission.”<sup>61</sup> DPU should hold the same standards  
12 for a prudence review of National Grid’s capital spending associated with its ISRE  
13 Mechanism and allow sufficient time for a comprehensive review. DPU must hold the  
14 Company accountable to ensure that unnecessary investments are not being passed along  
15 to ratepayers due to insufficient time for appropriate review and input.

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<sup>61</sup> DPU Docket No. 23-150. January 18, 2024. *Procedural Notice*, p.1.

1 **VI. ASSESSMENT OF NATIONAL GRID'S PROPOSED PERFORMANCE**  
2 **INCENTIVE MECHANISMS**

3 **Q. What do you address in this section of your testimony?**

4 A. In this section of my testimony, I address the Company's proposed performance  
5 mechanisms, including its investment-based IPIMs and its operating-based PIMs. National  
6 Grid proposes four IPIMs and five PIMs as part of its CPIP. I recommend that (1) National  
7 Grid replace its proposed IPIMs with a single reliability IPIM; (2) DPU reject National  
8 Grid's Increased Enrollment in Low-Income Discount PIM, Fleet Electrification PIM,  
9 Digital Customer Engagement PIM, and MWs of DER Interconnected PIM; (3) National  
10 Grid increase the targets of its First Call Resolution PIM; and (4) National Grid develop  
11 and propose an Incremental PLR PIM and two equity-focused PIMs related to low-income  
12 delivered fuels electrification and workforce diversity.

13 1. DPU's Criteria for Evaluating Proposed Performance Incentives

14 **Q. Does DPU have standards that it uses to evaluate proposed performance incentives?**

15 A. Yes, DPU articulated its standards for approving performance incentives in National Grid's  
16 last rate case in which the Department rejected all the Company's proposed metrics. DPU  
17 follows a two-prong test to determine whether performance incentives are appropriate.<sup>62</sup>

18 *In making its determination of whether a PIM is appropriate, the*  
19 *Department relies on a two-prong test: (1) whether the PIM satisfies*

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<sup>62</sup> DPU Docket No. 18-150. September 20, 2019. *Order*, p. 120. Available at:  
<https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/11262053>.

1                   *certain threshold principles; and (2) whether the PIM meets the design*  
2                   *guidelines.*

3           DPU first evaluates performance incentives against the “threshold principles”, which  
4           assess whether the PIM (1) advances specific public policy goals, and (2) promotes  
5           activities that are clearly outside of the distribution company’s public service obligation.<sup>63</sup>  
6           DPU’s final order in Docket No. 18-150 flags that “performance incentives are generally  
7           not appropriate where the affected activity is within the distribution company’s public  
8           service obligation.”<sup>64</sup>

9                   If a performance incentive satisfies these threshold principles, DPU then considers  
10           whether the proposed incentive mechanism meets appropriate design guidelines, which  
11           states that a performance incentive must:

12                   *(1) be designed to encourage program performance that best achieves*  
13                   *the Commonwealth’s energy goals;*

14                   *(2) be designed to enable a comparison of (i) clearly defined goals and*  
15                   *activities that can be sufficiently monitored, quantified, and verified after*  
16                   *the fact to (ii) the cost of achieving the target to the potential quantifiable*  
17                   *benefits;*

18                   *(3) be available only for activities where the distribution company plays*  
19                   *a distinct and clear role in bringing about the desired outcome;*

20                   *(4) be consistent across all electric and gas distribution companies,*  
21                   *where possible, with deviations across companies clearly justified;*

22                   *(5) be created to avoid perverse incentives; and*

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<sup>63</sup> *Id.* at 121.

<sup>64</sup> *Id.* at 120-121.

1                   (6) ensure that the distribution company is not rewarded for the same  
2                   action through another mechanism.<sup>65</sup>

3                   2. National Grid’s Proposed Investment-Based IPIMs

4     **Q. Please summarize National Grid’s proposed IPIMs.**

5     A. As part of its CPIP, National Grid proposes to include IPIMs that it says are necessary to  
6           “hold the Company accountable for the delivery of capital projects recovered through the  
7           ISRE mechanism.”<sup>66</sup> The Company views the IPIMs as a way to ensure that (1) its  
8           investments requested for recovery through the proposed ISRE Mechanism are completed  
9           and (2) that it will be rewarded if it exceeds its expected investment-related performance.  
10          To that end, National Grid proposes four IPIMs with the stated goal of tracking how  
11          successful the Company is in installing specific technologies and whether its investments  
12          produce meaningful reductions in outages. Specifically, National Grid proposes:

- 13           1. *FLISR Deployment IPIM*: incentivizes National Grid to deploy Fault  
14           Location, Isolation, and Service Restoration (FLISR) technology at an  
15           accelerated rate;
- 16           2. *URD Direct Buried Cable Replacement IPIM*: rewards the Company for  
17           improving the reliability of underground assets for customers experiencing  
18           multiple outages by replacing underground cable;
- 19           3. *Overhead Hardening for Resiliency IPIM*: encourages National Grid to  
20           harden overhead assets to enhance resiliency by installing tree-resistant  
21           conductor in vulnerable areas; and
- 22           4. *Service Quality Metrics Extension IPIM*: incentivizes the Company to  
23           increase overall System Average Interruption Duration Index (SAIDI)  
24           performance standards above current requirements.

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<sup>65</sup> *Id.* at 121-122.

<sup>66</sup> Exhibit NG-AEB-1 at 63:10-12.

1           The first three IPIMs reward the Company for installing specific types of  
2           technology across its five-year spending plan: namely, FLISR schemes on eligible feeders,  
3           underground cable in areas with high outage rates, and tree-resistant conductor for feeders  
4           with vulnerable mainline sections, respectively. The last IPIM measures whether National  
5           Grid produces a reduction in SAIDI, a measure of outage duration, across its service  
6           territory over the next five years. The Company proposes varying rewards for the metrics  
7           and a maximum possible reward of \$54.6 million across all IPIMs from 2025-2029.<sup>67</sup>

8   **Q.   At a high level, please describe your concerns with National Grid’s proposed IPIMs.**

9   A.   National Grid’s IPIMs all suffer from the same fundamental problem: The Company has  
10   an ongoing public service obligation to provide the reliability these metrics create. DPU  
11   has recognized that performance incentives are not appropriate where the affected activity  
12   is within a distribution company’s public service obligation, finding that “[a]s part of their  
13   public service obligation, distribution companies are responsible for providing low-cost  
14   and **reliable** service to customers.”<sup>68</sup> National Grid has a clear obligation to provide  
15   reliable service to its customers. It is, therefore, inappropriate (as proposed by National  
16   Grid) to further incentivize the Company to improve reliability, an obligation that falls  
17   squarely within its public service obligation.

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<sup>67</sup> Exhibit NG-CPIP-1 at 134:4-5.

<sup>68</sup> DPU Docket No. 18-150. September 20, 2019. *Order*, p.122. (emphasis added).

1           Moreover, the Company’s IPIMs are inappropriate because they reward the  
2           Company for pursuing activities that it is already incentivized to perform. The Company’s  
3           first three IPIMs (FLISR Deployment, Direct Buried Cable, Overhead Hardening)  
4           incentivize it to install technologies that enhance reliability. National Grid, however, will  
5           already add these technology investments to its rate base and collect a 10.5 percent return  
6           (as recommended by the Company<sup>69</sup>) on the resulting investment. The Company provides  
7           no justification for why it would need yet more financial incentive to install modern  
8           technologies that promote reliability. Similarly, National Grid’s fourth IPIM (Service  
9           Quality Metrics) also duplicates an existing financial incentive. The same capital  
10          investments that improve reliability and SAIDI scores also generate a return for the  
11          Company.

12   **Q.   Do National Grid’s proposed IPIMs result in “double dipping” of incentives in any**  
13   **other ways?**

14   A.   Yes. The Company’s IPIMs are also faulty because its Service Quality Metrics IPIM  
15   improperly rewards National Grid again for the same actions undertaken in the first three  
16   IPIMs. National Grid’s capital investments related to the first three IPIMs aim to improve  
17   reliability by making technological enhancements, thus improving the Company’s SAIDI  
18   score. However, the Company is proposing to be rewarded for the resulting SAIDI

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<sup>69</sup> Exhibit NG-AEB-1 at 79.

1 improvements through its fourth IPIM (Service Quality Metrics). Thus, the Company  
2 proposes to receive two incentives for the same underlying behavior.

3 **Q. Do you have any additional concerns with proposed IPIMs?**

4 A. Yes. I have several specific concerns with individual IPIMs regarding whether the  
5 Company's proposed targets are (1) ambitious enough and (2) based on robust historical  
6 data.

7 **Q. Please describe your additional concerns with the URD Direct Buried Cable  
8 Replacement IPIM.**

9 A. National Grid's URD Direct Buried Cable Replacement target is not ambitious. In recent  
10 years the Company has already exceeded the 70 percent pass rate<sup>70</sup> target it proposed for  
11 this IPIM, reaching 72 percent in 2019 and 74 percent in 2022.<sup>71</sup> For context, the proposed  
12 incentive threshold (*i.e.*, the upper end of the Company's proposed deadband) is 80 percent.

13 In this rate case, National Grid requests significant additional spending to pursue  
14 distribution investments above what DPU allotted it in previous rate case cycles. If DPU  
15 approves the Company's request for significant additional revenue to pursue distribution  
16 system investments, the Department should not also accept performance targets that do not  
17 represent an ambitious improvement above past performance. It is unclear why National

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<sup>70</sup> Based on National Grid's testimony, a "pass rate" can be described as the percentage of fused protective devices that are not tripped (or "operated") due to an outage caused by a direct buried cable fault. *See* Exhibit NG-CPIP-1 at 140-141.

<sup>71</sup> National Grid Response to Information Request EDF-CLF-1-20.

1 Grid would ask its customers to provide financial incentives for performance that it has  
2 already achieved or exceeded. DPU should reject the URD Direct Buried Cable  
3 Replacement IPIM: National Grid already receives a rate of return for these investments,  
4 these investments fall under the Company's public service obligation, and the target set for  
5 this metric has already been achieved in previous years.

6 **Q. Please describe your additional concerns with the FLISR Deployment IPIM.**

7 A. National Grid's FLISR Deployment target is not ambitious. The FLISR Deployment IPIM  
8 suffers from the same problem as the URD Direct Buried Cable Replacement IPIM: It  
9 proposes a target that the Company has already exceeded. The proposed FLISR  
10 Deployment IPIM sets a target of installing 30 schemes per year. In 2024, the Company  
11 projects that it will deploy 33 FLISR schemes.<sup>72</sup> DPU should reject the FLISR Deployment  
12 IPIM: National Grid already receives a rate of return for these investments, these  
13 investments fall under the Company's public service obligation, and the target set for this  
14 metric is below the number of schemes projected to be deployed in 2024.

15 **Q. If DPU does not reject the URD Direct Buried Cable Replacement IPIM and FLISR**  
16 **Deployment IPIM, how should it modify those IPIMs?**

17 A. If DPU does not reject the URD Direct Buried Cable Replacement and FLISR Deployment  
18 IPIMs, I recommend that the Company be required to increase the performance targets

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<sup>72</sup> *Id.*

1 such that they account for the additional spending National Grid proposes to obtain through  
2 this rate case. The revised target should be above and beyond what the Company has  
3 achieved in recent years. Alternatively, the Department could replace the annual IPIM  
4 targets with cumulative goals to account for prior year performance. That way, if the  
5 Company underperforms in one year, it would be required to make up for it in the following  
6 year. For example, if the Company deploys 25 FLISR schemes in 2025 instead of the  
7 targeted 30 schemes, its 2026 target would be 60 cumulative schemes deployed, and the  
8 Company would need to install 35 schemes in 2026 to keep pace with its targets.

9 **Q. Please describe your additional concerns with the Overhead Hardening for Resiliency**  
10 **IPIM.**

11 A. National Grid's Overhead Hardening for Resiliency is not based on robust historical data.  
12 National Grid has failed to provide data sufficient to assess whether or not the proposed  
13 target set for the Overhead Hardening for Resiliency IPIM is appropriately challenging for  
14 use as an IPIM. The Company proposes a cumulative goal of 50 miles of installed tree-  
15 resistant conductor by 2029 but does not provide any evidence demonstrating how many  
16 miles of conductor it can install in a year. National Grid states that this is a new program,  
17 and as a result, it does not have historical performance data that it can use to set a

1 performance target.<sup>73</sup> The Company also declined to provide projections of how many  
2 miles it believed it would install each year in response to an information request.<sup>74</sup>

3 The lack of data leaves both stakeholders and DPU unable to determine whether 50  
4 miles is a sufficiently aggressive goal. DPU should reject the Overhead Hardening for  
5 Resiliency IPIM: National Grid already receives a rate of return for these investments,  
6 these investments fall under the Company's public service obligation, and the Company  
7 has failed to provide any context in which its proposed metric can be assessed.

8 **Q. Please describe your additional concerns with the Service Quality Metrics Extension**  
9 **IPIM.**

10 A. National Grid's proposed Service Quality Metrics Extension IPIM rewards behavior that  
11 DPU has been enforcing through a penalty-only structure.<sup>75</sup> The Service Quality Metrics  
12 Extension IPIM proposes to extend the service quality standards established by the  
13 Department in DPU 12-120-D and to thereby achieve further reductions in SAIDI by an  
14 additional 6.61 minutes (see Table 1).<sup>76</sup> In that proceeding, the Department extended its  
15 long-standing precedent of applying a penalty for reductions in systemwide SAIDI and  
16 System Average Interruption Frequency Index (SAIFI) performance below DPU

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<sup>73</sup> *Id.*

<sup>74</sup> *Id.*

<sup>75</sup> *Investigation by the Department of Public Utilities*, DPU Docket No. 12-120-D, Attachment A. *Service Quality Guidelines* at 13 (December 18, 2015). Available at:

<https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/9212101>.

<sup>76</sup> National Grid commits in NG-CPIP-1 to also reducing System Average Interruption Frequency Index (SAIFI) but only proposes an incentive for further reductions in SAIDI. NG-CPIP-1 at 150:9-151:15.

1 benchmarks but shifted the performance targets from (1) preventing performance  
2 deterioration to (2) requiring improvements in service quality.

3 DPU ordered National Grid to achieve additional systemwide performance  
4 reductions until 2025 according to a specified glide path (shown in Table 1 below) and then  
5 maintain that level of performance going forward until further revised by the Department  
6 or receive a penalty.<sup>77</sup>

7 **Table 1: National Grid’s system quality metrics glide path for reduction of SAIDI/SAIFI<sup>78</sup>**

<b>Year in Effect</b>	<b>Minimum SAIDI (minutes)</b>	<b>Minimum SAIFI</b>
2016-2018	153.981	1.431
2019-2021	147.371	1.402
2022-2024	140.762	1.372
2025-2027	134.152	1.343
2028+ (extension proposed by the Company)	127.542	1.314

8  
9

*Source note: Reproduced from Exhibit NG-CPIP-1 at 151.*

10 On this basis, it seems clear that DPU views the increasingly strict systemwide  
11 service requirements as something that it should enforce through penalties only, and not  
12 rewards.

13 In addition, adopting the Service Quality Metrics Extension IPIM at this time would  
14 create complications concerning how to distribute rewards and penalties if DPU decided

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<sup>77</sup> Investigation by the Department of Public Utilities, DPU Docket No. 12-120-D, Attachment A. *Service Quality Guidelines* at 13 (December 18, 2015).

<sup>78</sup> Exhibit NG-CPIP-1 at 151:1-2.

1 to issue another set of systemwide service quality guidelines in a subsequent docket  
2 applying to all electric distribution companies in the Commonwealth. Through its  
3 investigation in DPU 12-120-D, DPU established the most recent system quality glide path  
4 to be “in effect starting in 2025 and remain in effect **until revised by the Department.**”<sup>79</sup>  
5 DPU should reject the Service Quality Metrics Extension IPIM: National Grid already  
6 receives a rate of return for these investments; these investments fall under the Company’s  
7 public service obligation; and the metric itself may be subject to revisions by DPU outside  
8 of this rate case that would render it moot.

9 3. Proposed Modification to the Company’s IPIMs

10 **Q. Do you recommend any modifications to the Company’s proposed IPIMs?**

11 A. Yes. My recommendation is to replace the four IPIMs that National Grid proposes with a  
12 single reliability incentive mechanism that directly prioritizes and targets investments in  
13 communities with environmental justice populations and whose residents experience high  
14 incidences of service interruptions. To that end, I recommend that National Grid propose a  
15 metric that incentivizes the Company to improve reliability in (1) vulnerable communities  
16 with environmental justice populations experiencing worse than average reliability (*e.g.*,  
17 SAIDI and SAIFI), and (2) the Company’s worst performing feeders. First and foremost,  
18 the Company should build into this metric a component which incentivizes National Grid

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<sup>79</sup> *Investigation by the Department of Public Utilities*, DPU Docket No. 12-120-D, Attachment A. *Service Quality Guidelines*. at 13 (December 18, 2015) (emphasis added).

1 to improve reliability in communities with environmental justice populations and whose  
2 residents experience high incidences of service interruptions and/or are disproportionately  
3 affected by their impacts (*e.g.*, older populations or those that rely on medical  
4 equipment/refrigerated medicines) that have historically suffered from disinvestment.  
5 These communities may be analogous to the Targeted Hard-to-Reach Communities  
6 characterized by DPU in the 2022-2024 three-year energy efficiency plans (Docket Nos.  
7 21-120 through 21-129), which were identified to enable targeted energy efficiency  
8 investment and outreach strategies within municipalities with environmental justice  
9 populations and historically low participation rates. I would also encourage National Grid  
10 to incorporate into this metric a mechanism which incentivizes it to improve performance  
11 on its worst-performing feeders.

12 **Q. Please describe the benefits of your proposed replacement reliability IPIM.**

13 A. DPU can address the issues I have identified with National Grid's IPIMs by eliminating  
14 the proposed technology-specific IPIMs and replacing them with single, technology-  
15 neutral reliability IPIM that focuses specifically on improving SAIDI and SAIFI in  
16 vulnerable communities. A metric that focuses on promoting reliability in designated  
17 communities would be technology-agnostic in that National Grid would be able to select  
18 whatever technology it deems most appropriate to enhance reliability. This structure  
19 eliminates the double incentive inherent in the Company's technology-specific IPIMs.  
20 Moreover, by targeting disadvantaged communities, the Company would not add an

1 additional reward onto the systemwide service quality guidelines that have historically  
2 utilized a penalty-only structure and would not interfere with any future DPU order  
3 directing further decreases in SAIDI and SAIFI across utility service territories.

4 While the Company already has an ongoing public service obligation to increase  
5 reliability in its service territory, the revised reliability IPIM would direct National Grid's  
6 attention to areas that have historically suffered from disinvestment.

7 **Q. Are you proposing specific targets, a deadband, an incentive or penalty structure, or**  
8 **incentive or penalty cap for your revised reliability IPIM?**

9 A. No. I encourage National Grid to propose a reasonable structure for the revised reliability  
10 IPIM in its rebuttal testimony addressing my concerns discussed in this testimony. The  
11 performance incentive should mirror the goals of the Service Quality Metrics Extension  
12 IPIM, which seeks to further reduce SAIDI and SAIFI against an established baseline.  
13 National Grid has access to data to recommend a robust metric that would drive meaningful  
14 reliability enhancements in disadvantaged communities.

15 4. National Grid's Proposed Operating-Based PIMs

16 **Q. Please summarize the Company's proposed operating-based PIMs.**

17 A. In addition to the IPIMs, National Grid also proposes operating-based PIMs, which relate  
18 to the Company's operating functions, and not to the investments it proposes recovery  
19 mechanisms for in this proceeding. National Grid proposes five PIMs related to its  
20 operational performance:

- 1            1.     *Increased Enrollment in Low-Income Discount Program PIM*: encourages  
2            National Grid to increase outreach and enrollment of low-income customers  
3            in the Company’s low-income discount rate;
- 4            2.     *Fleet Electrification PIM*: rewards the Company for electrifying the light-  
5            duty vehicles in its vehicle fleet;
- 6            3.     *First Call Resolution PIM*: incentivizes National Grid to resolve customer  
7            inquiries during an initial call;
- 8            4.     *Digital Customer Engagement PIM*: rewards the Company for increasing  
9            the number of digital customer engagement transactions; and
- 10          5.     *MWs of DER Interconnected PIM*: encourages National Grid to increase the  
11          deployment of solar and storage projects interconnected to its distribution  
12          system.

13            Like with the IPIMs, the Company proposes varying rewards for the metrics and a  
14          maximum possible reward of \$16.035 million across all PIMs from 2025-2029.<sup>80</sup>

15   **Q.    Do you have concerns with the Company’s PIMs?**

16   A.    Yes, I have specific concerns with each of the Company’s proposed PIMs. These concerns  
17          lead me to recommend that DPU:

- 18            •    reject the Increased Enrollment in Low-Income Discount PIM, Fleet Electrification  
19            PIM, Digital Customer Engagement PIM, and MWs of DER Interconnected PIM;
- 20            •    increase the targets of its First Call Resolution PIM;
- 21            •    approve an Incremental Peak Load Reduction PIM to replace the MWs of DER  
22            Interconnected PIM; and
- 23            •    approve equity-focused PIMs.

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<sup>80</sup> Exhibit NG-CPIP-1 at 134:4-5.

1 **Q. Please describe your concerns with the proposed Increased Enrollment in Low-**  
2 **Income Discount Program PIM.**

3 A. I have two critiques of this metric. First, enrolling customers in its low-income discount  
4 rate (Rate R-2) is part of National Grid's public service obligation and the Company should  
5 not require any additional incentives to enroll customers. Customers who qualify for Rate  
6 R-2 have incomes significantly below the state median and are positioned to benefit the  
7 most from rate relief. The \$4 billion in enhanced capital investments and associated return  
8 on equity proposed by the Company in this proceeding will only exacerbate that  
9 affordability crisis. National Grid should not receive an incentive to do the right thing to  
10 implement its own rate design. By enrolling these customers in Rate R-2, National Grid  
11 will significantly reduce their energy burdens and provide customers greater ability to  
12 afford necessities such as food, medicine, and heating and cooling. I strongly recommend  
13 that the Department reject the metric in its entirety.

14 Second, National Grid's performance target for this PIM is much too low given the  
15 changes it proposes to Rate R-2 in this rate case. As discussed in greater detail below,  
16 National Grid proposes to enhance its existing low-income discount rate, to which I  
17 recommend additional modifications that would provide further bill relief for the poorest  
18 customers. These improvements to the design of Rate R-2 can be expected to incentivize  
19 more customers to enroll in the rate structure. And yet, the Company proposes an  
20 enrollment target of 4,650 customers per year, a goal it has significantly surpassed in recent

1 years. For example, in 2021, National Grid enrolled 9,091 customers in Rate R-2 and 8,033  
2 customers in 2023, nearly double its proposed enrollment goal.<sup>81</sup> Moreover, if the  
3 Company achieves its maximum performance cap in each year of the plan cycle, it will  
4 have only enrolled 50.8 percent of the eligible population into Rate R-2.<sup>82</sup> The design  
5 improvements to Rate R-2 will increase enrollments; an additional incentive to the  
6 Company would be duplicative. Thus, if the Department does not reject this PIM, it should  
7 increase the performance target to recognize National Grid's past performance levels and  
8 the increase in enrollment that should occur due to the improved structure of Rate R-2.

9 **Q. Please describe your concerns with the proposed Fleet Electrification PIM.**

10 A. DPU should reject this PIM because customers should not pay to reward National Grid for  
11 electrifying its own fleet. The Company should instead electrify its fleet over time by  
12 requesting operations and maintenance (O&M) spending for this fleet replacement as it  
13 retires existing vehicles. The Company should not seek an additional reward for performing  
14 standard O&M activities with very limited (or non-existent) customer benefits and  
15 greenhouse gas benefits that are very small in scale.

16 National Grid also already has a clear incentive to pursue fleet electrification. It has  
17 made public a Company-wide goal of achieving 100 percent fleet electrification by 2030 in

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<sup>81</sup> *Id.* at 178:12-13.

<sup>82</sup> National Grid Response to Information Request EDF-CLF-1-22.

1 its plan to achieve net zero emissions by 2050.<sup>83</sup> National Grid should pursue fleet  
2 electrification, without incentive, to further serve its stated goals and meet shareholder  
3 expectations. The Department should reject this PIM.

4 It is also important to note that National Grid proposes to electrify only a small  
5 portion of its total fleet. Through this performance mechanism, National Grid proposes to  
6 electrify only the light-duty vehicles included in its fleet (255 vehicles out of its total fleet  
7 size of 1,227 vehicles). The Company does not propose to electrify its medium-duty and  
8 heavy-duty vehicles even though an increasing number of these vehicle types enter the  
9 market each year.<sup>84</sup>

10 **Q. Please describe your concerns with the proposed First Call Resolution PIM.**

11 A. The First Call Resolution PIM does not provide a robust enough target given the  
12 Company's prior performance. The metric sets a goal of 70 percent first-call resolution but  
13 National Grid achieved 68 percent resolution in 2022 and 72 percent in 2023.<sup>85</sup> Raising the  
14 level of first-call resolutions is an important objective, but National Grid's performance

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<sup>83</sup> *Our Plan: National Grid Net Zero by 2050*, National Grid. Available at:  
<https://www.nationalgridus.com/media/pdfs/our-company/netzeroby2050plan.pdf> (last visited Mar. 18, 2024).

<sup>84</sup> (1) Mordor Intelligence. *Medium and Heavy Commercial Vehicles Industry Size & Share Analysis - Growth Trends & Forecasts (2024 - 2029)*. Available at: <https://www.mordorintelligence.com/industry-reports/medium-and-heavy-duty-commercial-vehicles-market>; (2) S&P Global Mobility. 2023. "Commercial Vehicle forecast: MDHD truck market coasts through '24, then accelerates as new emissions standards loom." Available at: <https://www.spglobal.com/mobility/en/research-analysis/commercial-vehicle-forecast-mdhd-truck-market-coasts.html>.

<sup>85</sup> National Grid Response to Information Request EDF-CLF-1-20.

1 targets should, at a minimum, exceed current performance levels. I strongly recommend  
2 that the Company propose a higher first-call resolution target in its rebuttal testimony.

3 **Q. Please describe your concerns with the proposed Digital Customer Engagement PIM.**

4 A. I have two concerns related to this performance metric. First, the Company’s Digital  
5 Customer Engagement PIM resembles the Customer Ease PIM that DPU rejected in  
6 National Grid’s last rate case. Under that prior metric, National Grid proposed to receive a  
7 reward if its “customer ease” score—as measured by a survey which asked customers  
8 “[h]ow easy it is to do business with National Grid”—exceeded a baseline score.<sup>86</sup> The  
9 Company identified improving customer service as the behavior it would pursue to increase  
10 this score. The Department found that National Grid’s public service obligation  
11 encompassed the customer interactive elements of the PIM and correspondingly rejected  
12 it.<sup>87</sup>

13 The Company couches the necessity of its proposed Digital Customer Engagement  
14 PIM in similar language as to what it used to justify the Customer Ease PIM. For example,  
15 National Grid asserts that the Digital Customer Engagement PIM is appropriate because it  
16 will allow customers to utilize “digital self-service tools to conduct transactions through  
17 their channel of choice.”<sup>88</sup> And the Company proposes to count a digital customer  
18 transaction when customers engage in actions such as making a payment, enrolling in a

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<sup>86</sup> DPU Docket No. 18-150. September 20, 2019. *Order*, pp.77-78.

<sup>87</sup> *Id.* at 122-123.

<sup>88</sup> Exhibit NG-CPIP-1 at 193:19-20.

1 payment plan, or stopping service through a preferred channel.<sup>89</sup> Under the logic set forth  
2 in the last rate case, allowing customers to use their preferred channel of choice to interact  
3 with the Company to resolve discrete issues appears to fall within National Grid’s public  
4 service obligation. As stated by the Department in that prior rate case, it “expects  
5 companies to satisfy service quality expectations in the course of their day-to-day business  
6 operations.”<sup>90</sup> I recommend that the Department reject the Digital Customer Engagement  
7 PIM.

8 I am also concerned that the goal for this metric is not robust enough given prior  
9 performance. Much like with the First Call Resolution PIM, National Grid already has  
10 performance commensurate with its target of 10,000,000 transactions each year. The  
11 Company achieved 4,354,255 digital customer engagement transactions across the last five  
12 months of 2022, and 7,012,126 for the first eight months of 2023.<sup>91</sup> Scaled over twelve  
13 months, those figures are 10,450,212 for 2022 and 10,518,189 for 2023. If DPU approves  
14 this metric, it should require a goal higher than National Grid’s current performance.

15 **Q. Please describe your concerns with the proposed MWs of DER Interconnected PIM.**

16 A. The proposed MWs of DER Interconnect PIM would reward National Grid for the uptake  
17 of distributed energy resources (DERs) in its service territory—an activity that the  
18 Company has very little to do with. If the Company believes that DER adoption is driven

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<sup>89</sup> National Grid Response to Information Request EDF-CLF-3-3.

<sup>90</sup> DPU Docket No. 18-150. September 20, 2019. *Order*, p.122.

<sup>91</sup> National Grid Response to Information Request EDF-CLF-1-15.

1 by its own actions and not by the cost of DER systems; available state, federal, and utility  
2 incentives; and applicable net metering/DER compensation policies it should make that  
3 case (citing appropriate evidence) in its rebuttal filing.

4 DPU has stated that it will only approve PIMs related to “activities where the  
5 distribution company plays a distinct and clear role in bringing about the desired  
6 outcome.”<sup>92</sup> As described in greater detail below, DPU previously rejected a peak load  
7 reduction metric proposed by National Grid where much of the load reduction would have  
8 resulted from DER interconnection because DER adoption was not something the  
9 Company could control. I recommend that the Department reject this incentive mechanism  
10 and instead approve a replacement metric, discussed below, to focus on reductions to peak  
11 load.

12 5. Proposed Incremental Peak Load Reduction PIM

13 **Q. Do you recommend a replacement to the proposed MWs of DER Interconnected**  
14 **PIM?**

15 A. Yes. I recommend that DPU require the Company to adopt an Incremental Peak Load  
16 Reduction (PLR) PIM. An Incremental PLR PIM would accelerate the deployment of  
17 DERs, such as customer-owned solar PV and battery storage systems, in National Grid’s  
18 service territory (reflecting the stated aim of the Company’s MWs of DER Interconnected

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<sup>92</sup> DPU Docket No. 18-150. September 20, 2019. *Order*, p.121.

1 PIM proposal). Unlike the Company’s proposal, however, the Incremental PLR PIM would  
2 incentivize the Company to proactively implement programs that deliver benefits to  
3 ratepayers, rather than offering rewards to the Company for DER deployment driven by  
4 market forces and other factors largely outside of its control.

5 **Q. At a high level, how would an Incremental PLR PIM function?**

6 A. An Incremental PLR PIM would aim to drive incremental peak load reductions on National  
7 Grid’s system beyond business-as-usual load reductions (*i.e.*, load reductions already  
8 expected to occur through National Grid’s current slate of load reduction programs, which,  
9 in 2023, delivered a combined total of 2,807 MW of load reductions during system peak<sup>93</sup>).  
10 National Grid would achieve the targets of an Incremental PLR PIM by deploying new  
11 programs that decrease peak electricity demand or shift demand from peak to off-peak  
12 periods, including demand response, energy efficiency, customer-owned solar, customer-  
13 owned battery energy storage, and electric vehicle managed charging or vehicle-to-grid  
14 integration programs.

15 An Incremental PLR PIM would advance important public policy goals, such as  
16 enhancing affordability and supporting electrification in accordance with the  
17 Commonwealth’s climate and clean energy goals. Further, DPU has recognized in Docket  
18 No. 18-150 that “company actions taken specifically to reduce system peak demand are

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<sup>93</sup> National Grid Response to Information Request EDF-CLF-3-15, Attachment.

1 outside a distribution company’s public service obligation.”<sup>94</sup> More broadly, the  
2 Department has acknowledged “an incentive mechanism designed to drive Company  
3 actions that directly and measurably reduce system peak demand can satisfy the threshold  
4 principles.”<sup>95</sup>

5 **Q. What is the value of peak load reduction vis-à-vis the Commonwealth’s prioritization**  
6 **of electrification efforts?**

7 A. Electrification of the buildings and transportation sectors in Massachusetts will not only  
8 cause increases in electric demand but will also drive increases in peak load. National  
9 Grid’s ESMP forecasts show that the Company’s peak demand will “more than double” by  
10 2050, from a summer peak of 4.9 GW in 2023 to a winter peak of 10.7 GW in 2050.<sup>96</sup>  
11 According to the Company, “[t]his increase in load is primarily driven by beneficial  
12 electrification in the transportation and heating sectors.”<sup>97</sup> The proliferation of large energy  
13 users such as data centers could further increase the Company’s peak demand. As I discuss  
14 above, the Company proposes to significantly accelerate its infrastructure investments over

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<sup>94</sup> DPU Docket No. 18-150. September 20, 2019. *Order*, p.123.

<sup>95</sup> *Id.*

<sup>96</sup> DPU Docket No. 24-11. January 29, 2024. *Petition of National Grid for Approval by the Department of Public Utilities of its Electric Sector Modernization Plan*. “Future Grid Plan (Part 1)”, p. 13. Submitted by Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid. Available at: <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18552715>.

<sup>97</sup> DPU Docket No. 24-11. January 29, 2024. *Petition of National Grid for Approval by the Department of Public Utilities of its Electric Sector Modernization Plan*. “Future Grid Plan (Part 3)”, p. 390. Submitted by Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid. Available at: <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18552718>.

1 the next five years, in part to meet its forecasted peak demand.<sup>98</sup> As the Company  
2 acknowledges, load reduction programs can help mitigate peak load<sup>99</sup> and thereby reduce  
3 the costs (*i.e.* energy, capacity, transmission, and distribution costs) the Company incurs to  
4 serve peak load.

5 **Q. Please explain how an Incremental PLR PIM would meet DPU’s design guidelines.**

6 A. As discussed above, DPU’s design guidelines must be met for a PIM to be approved:<sup>100</sup>

7 Design guideline #1: “*be designed to encourage program performance*  
8 *that best achieves the Commonwealth’s energy goals[.]*”

9 An Incremental PLR PIM meets design guideline #1 because, as the Department has  
10 previously recognized, Company-led system peak reduction actions “can advance public  
11 policy goals of the Commonwealth, including reducing GHG emissions[.]”<sup>101</sup>

12 Design guideline #2: “*be designed to enable a comparison of (i) clearly*  
13 *defined goals and activities that can be sufficiently monitored,*  
14 *quantified, and verified after the fact to (ii) the cost of achieving the*  
15 *target to the potential quantifiable benefits[.]*”

16 An Incremental PLR PIM meets design guideline #2 because the goals, activities, and costs  
17 associated with incremental solar, storage, efficiency, demand response, and electric  
18 vehicle programs can be monitored and compared via evaluation, measurement, and

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<sup>98</sup> DPU Docket No. 24-11. January 29, 2024. *Petition of National Grid for Approval by the Department of Public Utilities of its Electric Sector Modernization Plan*. “Future Grid Plan (Part 1)”, p. 20. Submitted by Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid.

<sup>99</sup> *Id.* at 27.

<sup>100</sup> DPU Docket No. 18-150. September 20, 2019. *Order*, p.121.

<sup>101</sup> *Id.* at 123.

1 verification (EM&V) activities and periodic compliance filings. These filings would be  
2 similar to the process for monitoring the costs and benefits associated with National Grid’s  
3 existing energy efficiency and demand response programs.

4 Design guideline #3: “*be available only for activities where the*  
5 *distribution company plays a distinct and clear role in bringing about*  
6 *the desired outcome[.]”*

7 An Incremental PLR PIM meets guideline (3) because by rewarding National Grid for  
8 deploying new peak load reduction programs, the Company would by definition play a  
9 distinct and clear role in bringing about the desired outcomes of the PIM.

10 Design guideline #4: “*be consistent across all electric and gas*  
11 *distribution companies, where possible, with deviations across*  
12 *companies clearly justified[.]”*

13 An Incremental PLR PIM could meet guideline (4) if the Department determines a similar  
14 PIM should be adopted in the other electric and gas distribution company service  
15 territories.

16 Design guideline #5: “*be created to avoid perverse incentives[.]”*

17 An Incremental PLR PIM meets guideline (5) because it does not create perverse  
18 incentives—its incentives are aligned with the Commonwealth’s policy goals.

19 Design guideline #6: “*ensure that the distribution company is not*  
20 *rewarded for the same action through another mechanism.”*

21 Finally, an Incremental PLR PIM meets guideline (6) because National Grid is not  
22 rewarded for incremental peak load reductions delivered through new programs by any  
23 existing mechanism.

1 **Q. DPU rejected a proposed Peak Reduction PIM in National Grid’s most recent rate**  
2 **case. Why should it adopt an Incremental PLR PIM here?**

3 A. I do not read the Department’s order in the last rate case as “shutting the door” on a PLR  
4 PIM. If anything, the Department appears to have recognized the potential of a PIM that  
5 encourages reductions in the Company’s peak load, while rejecting the specific proposal  
6 National Grid advanced because of certain defects in that proposal’s adherence to design  
7 guidelines. I believe an Incremental PLR PIM could cure each of those defects.<sup>102</sup>

8 **Q. Please describe the defects in the Peak Reduction PIM proposed by National Grid in**  
9 **its most recent rate case.**

10 A. According to DPU’s order in that case, National Grid’s proposal was deficient in several  
11 ways:<sup>103</sup>

- 12 1. Almost all of the Company’s proposed peak reduction would have  
13 originated from an increase in the rate of the Company’s interconnection  
14 activities, and therefore, the Company would not have had a “distinct and  
15 clear role” in bringing about peak reduction;
- 16 2. The Company would already be rewarded with forward capacity market net  
17 revenue sharing on customer-owned assets under certain circumstances;
- 18 3. The proposed PIM would have provided a perverse incentive to the  
19 Company because if the Company earned the performance incentive on an  
20 energy efficiency customer’s asset, that customer would have been  
21 restricted from participating in the active demand response program under  
22 the Company’s proposed energy efficiency plan; and
- 23 4. The activities encouraged by the proposed PIM were not activities that  
24 could be sufficiently monitored, quantified, and verified because, under the

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<sup>102</sup> *Id.* at 124.

<sup>103</sup> *Id.*

1 proposed structure, a significant percentage of the asset output would be  
2 estimated, not measured or verified.

3 **Q. Is it possible for an Incremental PLR PIM to avoid those defects?**

4 A. Yes, I believe it is. An Incremental PLR PIM that encourages the Company to develop and  
5 implement incremental peak load reduction programs (rather than be associated with the  
6 Company's current program offerings) would avoid each of the deficiencies identified by  
7 DPU in National Grid's prior proposal. A well-designed Incremental PLR PIM would  
8 incentivize the Company to design and propose new energy efficiency, demand response,  
9 customer-owned solar, customer-owned storage, and electric vehicle managed charging or  
10 vehicle-to-grid integration programs that ensure: (1) the Company receives no other  
11 incentives for load reductions achieved through those incremental programs, (2) customer  
12 participation in incremental programs does not preclude the same customers from  
13 participating in other DER programs, and (3) the incremental programs undergo robust  
14 EM&V.

15 **Q. Has National Grid implemented a PLR PIM outside of Massachusetts?**

16 A. Yes, National Grid's New York affiliate has implemented a PIM that incentivizes the  
17 Company to deliver coincident electric system peak reductions.<sup>104</sup> I also understand the

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<sup>104</sup> See New York Public Service Commission Case 20-E-0380, 20-G-0381 and 19-M-0133, Order Adopting Terms of Joint Proposal, Establishing Rate Plans and Reporting Requirements, Appendix 7 at 5 (Jan. 20, 2022).

1 Company had previously implemented a mechanism in Massachusetts that incentivized the  
2 Company to achieve peak demand savings, but that mechanism is no longer active.<sup>105</sup>

3 **Q. What do you recommend with respect to an Incremental PLR PIM?**

4 A. I recommend that in its rebuttal testimony National Grid develop and propose an  
5 Incremental PLR PIM to replace its MWs of DER Interconnected PIM, consistent with the  
6 design recommendations in my testimony. I do not offer specific targets, penalties, or  
7 incentives for an Incremental PLR PIM at this time. However, I recommend National Grid  
8 develop a baseline based on several years of historic peak demand data and target  
9 significant year-over-year improvement over that baseline, which should also be presented  
10 in its rebuttal testimony.

11 If National Grid does not develop an Incremental PLR PIM, I recommend the  
12 Department order the Company to adopt one, and direct National Grid to work with  
13 stakeholders to develop and propose specific targets, incentives, and penalties for that PIM  
14 via a subsequent filing.

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<sup>105</sup> See DPU Order. *2019-2021 Three-Year Energy Efficiency Plans*, DPU Docket No. 18-110 through DPU Docket No. 18-119 at 95-97 (January 29, 2019) Available at: <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/10317070> (approving an incentive mechanism for active demand reduction for electric Program Administrators, including National Grid, for the 2019-2021 Three-Year Energy Efficiency Plan).

1           6. Proposed Equity PIMs

2   **Q.    Do you recommend that DPU require National Grid to adopt any other new PIMs?**

3   A.    Yes. I recommend that DPU require National Grid to adopt one or more PIMs that  
4       incentivize the Company to improve energy affordability and equity in its service territory.

5   **Q.    Do you believe performance incentives can encourage National Grid to improve  
6       energy affordability and equity in its service territory?**

7   A.    Yes. PIMs can be an effective tool to encourage utilities to improve their performance in  
8       areas that, while aligned with the Commonwealth’s policy goals, do not represent either a  
9       traditional utility obligation or an obvious business case for the utility. As noted in Section  
10      III above, the Commonwealth’s 2021 Climate Act amended the Department’s  
11      responsibilities to prioritize affordability, equity, and emission reductions in addition to  
12      safety, security, and reliability of service.

13           In its ESMP commitment, National Grid professes multiple times the importance  
14      of advancing a clean energy transition that centers energy equity and environmental justice:  
15      “Where the above projects have a potential impact on [environmental justice communities],  
16      the Company is committed to ensuring that each community has a voice as energy  
17      infrastructure projects are developed.”<sup>106</sup> Equity-focused PIMs would incentivize National  
18      Grid to align its business model with its professed commitment. As discussed by EDF-CLF

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<sup>106</sup> DPU Docket No. 24-11. January 29, 2024. *Petition of National Grid for Approval by the Department of Public Utilities of its Electric Sector Modernization Plan*. “Future Grid Plan (Part 4)”, pp. 311, 317, 322, 329, 335, and 341. Submitted by Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid..

1 witness Wambui, additional equity-focused PIMs are necessary to ensure that the benefits  
2 of National Grid’s investments and programs are fairly distributed.<sup>107</sup>

3 **Q. Do you recommend any specific PIM targeted at improving energy equity in National**  
4 **Grid’s service territory?**

5 A. Yes. I recommend that National Grid adopt a “Low-Income Delivered Fuels Customer  
6 Electrification” PIM. I also recommend that the Company develop a “Workforce  
7 Diversity” PIM to further align its commitment to equity with its own operations and  
8 workforce.

9 **Q. Please provide an overview of the Low-Income Delivered Fuels Customer**  
10 **Electrification PIM.**

11 A. A “Low-Income Delivered Fuels Customer Electrification” PIM would encourage  
12 National Grid to install electric heat pumps for its low-income customers who currently  
13 use delivered fuels (such as heating oil or propane) for home heating.

14 **Q. Please describe the objective and structure of the Low-Income Delivered Fuels**  
15 **Customer Electrification PIM.**

16 A. The goal of this metric is to incentivize National Grid to perform more heat pump  
17 installations for low-income customers through its energy efficiency plan. Under the plan,  
18 the Company provides no cost heat pumps for customers who qualify for Rate R-2.<sup>108</sup> As

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<sup>107</sup> See Exhibit EDF-CLF-MW-1.

<sup>108</sup> National Grid Response to Information Request EDF-CLF-1-8.

1 of now, National Grid only performs heat pump installation for customers who utilize  
2 delivered fuels for their heating source.<sup>109</sup> However, only a fraction of the Company’s total  
3 heat pump installations are for low-income households. From 2019 to 2023, National Grid  
4 performed installed over 14,000 heat pumps, as can be seen in Table 2 below.

5 **Table 2: National Grid’s Total Heat Pump Installations<sup>110</sup>**

Type of Replacement		# of Heat Pump Installations
Fuel Oil	Partial	7,976
	Full	4,416
Propane	Partial	1,288
	Full	474
<b>TOTAL</b>		<b>14,154</b>

6  
7 Of this total, 636 of the Fuel Oil conversions were for income-eligible customers  
8 (*i.e.*, customers who because of their income qualify for an incentive) and 70 of the propane  
9 conversions.<sup>111</sup> In other words, roughly 5 percent of the Company’s Fuel Oil conversions  
10 were for income-eligible customers and 4 percent of its propane conversions. The objective  
11 of the Low-Income Delivered Fuels PIM is to increase the number of conversions  
12 performed by National Grid for low-income customers.

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<sup>109</sup> See, e.g., National Grid Response to Information Request EDF-CLF-3-7.

<sup>110</sup> *Id.*

<sup>111</sup> National Grid Response to Information Request EDF-CLF-3-9.

1 **Q. Please describe why this metric promotes equity.**

2 A. In Massachusetts, the cost of residential heating using delivered fuels is significantly higher  
3 than the cost of electric heating via electric heat pumps.<sup>112</sup> According to the Massachusetts  
4 Department of Energy Resources, heating with delivered fuels is roughly \$8 to \$18 more  
5 expensive than electric air-source heat pumps (ASHPs) on a per MMBtu<sup>113</sup> basis.<sup>114</sup> The  
6 Low-Income Delivered Fuels Customer Electrification PIM aims to reduce National Grid  
7 customers' energy costs associated with residential fuel combustion by transitioning  
8 customers to home heating using more efficient, electric ASHPs. The Low-Income  
9 Delivered Fuels Customer Electrification PIM will also align with the Commonwealth's  
10 climate and clean energy goals as it would incentivize National Grid to promote building  
11 electrification within its service territory.

12 Since heating with electric heat pumps is less costly than heating with delivered  
13 fuels, electrification would reduce the energy burden of customers currently using  
14 delivered fuels—especially for low-income customers who face energy affordability  
15 challenges.

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<sup>112</sup> See *Massachusetts Household Heating Costs for the 2023/2024 Winter Heating Season*, Massachusetts Department of Energy Resources. Available at: <https://www.mass.gov/info-details/massachusetts-household-heating-costs> (last visited Mar. 25, 2024).

<sup>113</sup> “MMBtu” stands for million British thermal unit (Btu). A Btu serves as a universal measure of heating requirements (i.e., how much “heat” is needed to warm a building), allowing easy comparison across various fuel options. (Technically, a Btu is the quantity of heat required to raise the temperature of one pound of water by 1 degree Fahrenheit.)

<sup>114</sup> See *Massachusetts Household Heating Costs for the 2023/2024 Winter Heating Season*, Massachusetts Department of Energy Resources. Available at: <https://www.mass.gov/info-details/massachusetts-household-heating-costs> (last visited Mar. 25, 2024).

1 **Q. On what metric would the Low-Income Delivered Fuels Customer Electrification**  
2 **PIM be based?**

3 A. I recommend that the Low-Income Delivered Fuels Customer Electrification PIM reward  
4 National Grid for achieving a target number of heat pump conversions for the Company's  
5 low-income customers transitioning from delivered fuels to electric heat pumps through its  
6 energy efficiency plan.

7 **Q. Do you propose specific targets, penalties, and incentives for the Low-Income**  
8 **Delivered Fuels Customer Electrification PIM?**

9 A. I do not. I expect there are many reasonable, effective ways to structure a Low-Income  
10 Delivered Fuels Customer Electrification PIM, and I am open to more than one approach.  
11 With that said, assuming the PIM sets a reward based on the number of National Grid low-  
12 income customers transitioning from delivered fuels to ASHPs for residential heating  
13 purposes on an annual basis, I would recommend National Grid develop a robust baseline  
14 based on at least five years of historic data (*i.e.*, average number of low-income customers  
15 converting from delivered fuels to ASHPs for home heating in National Grid's service  
16 territory on an annual basis over the past five years), and target significant year-over-year  
17 improvement from that baseline.

1 **Q. What do you recommend regarding a Low-Income Delivered Fuels Customers**  
2 **Electrification PIM?**

3 A. I recommend National Grid develop and propose a Low-Income Delivered Fuels Customer  
4 Electrification PIM in its rebuttal testimony, consistent with the design recommendations  
5 in my testimony. If the Company declines to do so, I recommend the Department order  
6 National Grid to adopt a Low-Income Delivered Fuels Customer Electrification PIM, and  
7 direct National Grid to work with stakeholders to develop and propose specific targets,  
8 incentives, and penalties for that PIM via a compliance filing.

9 **Q. Do you have any additional comments about the Low-Income Delivered Fuels**  
10 **Customer Electrification PIM?**

11 A. Yes. I understand that DPU can and does approve performance metrics governing the Mass  
12 Save Program Administrators' three-year energy efficiency plans. I recommend that the  
13 Commission approve a metric like the Low-Income Delivered Fuels Customer  
14 Electrification PIM either in this proceeding, or in the proceeding where it approves the  
15 2025-2027 three-year plan. I do not support the metric being adopted in both dockets  
16 because that would create "double counting" where the Company would receive two  
17 incentives for the same underlying behavior.

18 **Q. Please provide an overview of a "Workforce Diversity" PIM.**

19 A. A Workforce Diversity PIM would encourage National Grid to increase the diversity of its  
20 workforce by hiring a greater proportion of underrepresented identities, including but not

1 limited to people who identify as: women; Black, Indigenous, and people of color  
2 (BIPOC); LGBTQIA+; returning citizens (formerly incarcerated individuals); and persons  
3 with disabilities.

4 **Q. How might increasing the diversity of National Grid’s workforce align the**  
5 **Company’s commitment to equity with its own operations?**

6 A. As I have discussed in this testimony, National Grid proposes to significantly ramp up  
7 spending on its distribution system over the next five years and with that increased  
8 spending expects increased hiring. The Company states that its ESMP-related investments  
9 (referred to as its *Future Grid Plan*) “will result in increased economic activity on the order  
10 of \$1.1 billion and create an additional 8,700 jobs throughout the Commonwealth.”<sup>115</sup> By  
11 increasing the diversity of its hires, National Grid can help ensure the employment benefits  
12 associated with its spending are equitably distributed.

13 **Q. On what metric would the Workforce Diversity PIM be based?**

14 A. I recommend a Workforce Diversity PIM that rewards the Company based on achieving a  
15 targeted share of underrepresented identities (as listed above) in its total hires, on an annual  
16 basis.

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<sup>115</sup> See DPU Docket No. 24-11. January 29, 2024. *Petition of National Grid for Approval by the Department of Public Utilities of its Electric Sector Modernization Plan*. “Future Grid Plan (Part 5)”, pp. 465-476. Submitted by Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid. Available at: <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18552719>.

1 **Q. Do you propose targets, penalties, and incentives for the Workforce Diversity PIM?**

2 A. I do not. I recommend National Grid develop a baseline based on at least five years of  
3 historic data (*i.e.*, average workforce diversity over the past five years), and target  
4 significant year-over-year improvement over that baseline.

5 **Q. What do you recommend regarding the Workforce Diversity PIM?**

6 A. I recommend National Grid develop and propose a Workforce Diversity PIM in its rebuttal  
7 testimony, consistent with the design recommendations in my testimony. If the Company  
8 declines to do so, I recommend the Department order National Grid to adopt the Workforce  
9 Diversity PIM, and direct the Company to work with stakeholders to develop and propose  
10 specific targets, incentives, and penalties for that PIM via a compliance filing.

11 **Q. Would the equity-focused PIMs you recommend satisfy DPU's review criteria for new  
12 PIMs?**

13 A. Yes. Tables 3 and 4 below summarize the Low-Income Delivered Fuels Customer  
14 Electrification PIM and Workforce Diversity PIM satisfaction of DPU's threshold  
15 principles (see Table 3) and design guidelines (see Table 4) for new PIMs.

1 **Table 3: Evaluating threshold principles of proposed equity-focused PIMs**

Threshold Principles	Low-Income Delivered Fuels Customer Electrification PIM	Workforce Diversity PIM
<b>Principle #1.</b> Does the PIM positively influence distribution company behavior in the advancement of important public policy goals?	<b>Yes.</b> Reducing greenhouse gas emissions related to delivered fuel combustion and improving energy affordability for low-income customers are important public policy goals.	<b>Yes.</b> Improving energy equity and workforce diversity is an important public policy goal.
<b>Principle #2.</b> Is the activity encouraged by the PIM clearly outside a distribution company's public service obligation?	<b>Yes.</b> Addressing energy affordability and equity is outside of the Company's traditional public service obligation.	<b>Yes.</b> Addressing equity is outside of the Company's traditional public service obligation.

2  
3 **Table 4: Evaluating design guidelines of proposed equity-focused PIMs**

Design Guidelines	Low-Income Delivered Fuels Customer Electrification PIM	Workforce Diversity PIM
<b>Guideline #1.</b> Is the PIM designed to encourage program performance that best achieves the Commonwealth's energy goals?	<b>Yes,</b> accelerating the electrification of low-income customers using delivered fuels is consistent with the Commonwealth's energy goals.	<b>Yes,</b> improving energy equity is consistent with the Commonwealth's energy goals.
<b>Guideline #2.</b> Is the PIM designed to enable a comparison of (i) clearly defined goals and activities that can be sufficiently monitored, quantified, and verified after the fact to (ii) the cost of achieving the target to the potential quantifiable benefits?	<b>Yes,</b> the PIM is capable of robust EM&V.	<b>Yes,</b> the PIM is capable of robust EM&V.
<b>Guideline #3.</b> Is the PIM available only for activities where the distribution company plays a distinct and clear role in bringing about the desired outcome?	<b>Yes,</b> National Grid would play a distinct and clear role in encouraging low-income delivered fuels customers to adopt heat pumps.	<b>Yes,</b> National Grid would play a distinct and clear role in improving its workforce diversity.
<b>Guideline #4.</b> Is the PIM consistent across all electric and gas distribution companies?	The Department could adopt a similar PIM for other electric and gas distribution companies.	The Department could adopt a similar PIM for other electric and gas distribution companies.
<b>Guideline #5.</b> Does the PIM avoid perverse incentives?	<b>Yes,</b> the PIM would not create perverse incentives.	<b>Yes,</b> the PIM would not create perverse incentives.
<b>Guideline #6.</b> Does the PIM ensure that the distribution company is not rewarded for the same action through another mechanism?	<b>Yes,</b> National Grid would not be rewarded for the electrification of delivered fuel customers through another incentive mechanism.	<b>Yes,</b> National Grid would not be rewarded for improving its workforce diversity through another incentive mechanism.

4

1           7. Summary of Recommendations Regarding Company’s Proposed IPIMs and PIMs

2   **Q.    Please summarize your recommendations to DPU with respect to National Grid’s**  
3   **proposed IPIMs and PIMs.**

4   A.    My recommendations are as follows:

- 5           • National Grid should replace its proposed IPIMs with a single reliability IPIM that  
6           targets disadvantaged communities throughout the Company’s service territory.  
7           The Company should develop and propose a reasonable structure for the revised  
8           reliability IPIM in its rebuttal testimony.
- 9           • DPU should reject National Grid’s Increased Enrollment in Low-Income Discount  
10          PIM, Fleet Electrification PIM, Digital Customer Engagement PIM, and MWs of  
11          DER Interconnected PIM because the activities rewarded by these PIM either are  
12          inappropriate for a metric or addressed by the Company’s public service obligation.
- 13          • National Grid should increase the targets of its First Call Resolution PIM to  
14          recognize past prior achievement.
- 15          • National Grid should develop and propose an Incremental PLR PIM in its rebuttal  
16          testimony to incentivize the Company to reduce its load through actions within its  
17          control (in place of National Grid’s MWs of DER Interconnected PIM).
- 18          • National Grid should develop and propose a Low-Income Delivered Fuels  
19          Customer Electrification PIM and a Workforce Diversity PIM in its rebuttal  
20          testimony that aligns with the guidelines I set forth above to ensure a more equitable  
21          energy transition.

1 **VII. ASSESSMENT OF NATIONAL GRID'S RATE DESIGN PROPOSALS**

2 **Q. What do you address in this section of your testimony?**

3 A. In this section of my testimony, I address two of the Company's rate design proposals: its  
4 electrification pricing option and its low-income discounts. I evaluate whether or not the  
5 Company's rate design proposals should be approved or modified by DPU. I find that DPU  
6 should (1) reject the electrification pricing option, and (2) direct the Company to modify  
7 its low-income discounts to resolve affordability issues I discuss in more detail below.

8 1. Electrification Pricing Option

9 **Q. Please describe National Grid's proposed electrification pricing option.**

10 A. National Grid is proposing a voluntary, opt-in pricing option that will convert the base  
11 distribution charge from a \$0.06647 per kWh volumetric charge to a \$38.15 per month  
12 fixed charge for participating Rate R-1<sup>116</sup> customers<sup>117</sup> as a part of its electrification pricing  
13 option.<sup>118</sup> That fixed charge would be in addition to the fixed residential customer charge  
14 (the Company proposes to increase that charge to \$11.00 per month in this proceeding<sup>119</sup>).

15 The Company asserts that residential customers with above average energy use  
16 (*i.e.*, higher than 574 kWh per month)—including those with electric heat pumps and other  
17 electrification technologies—will stand to reduce their electric bills by participating in this

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<sup>116</sup> The Company's residential rate for non-low-income customers.

<sup>117</sup> Exhibit NG-CP-1 at 55:1-3.

<sup>118</sup> *Id.* at 55:17.

<sup>119</sup> Exhibit NG-PP-1 at 28:1-2.

1 option.<sup>120</sup> The Company believes this new pricing option will support electrification in its  
2 service territory.<sup>121</sup>

3 *“...the purpose of the Electrification Pricing proposal is to encourage*  
4 *adoption and use of heat electrification technologies by making it more*  
5 *economical to do so, in support of the Commonwealth’s electrification*  
6 *goals.”*

7 In response to a discovery request submitted by EDF-CLF, the Company further  
8 explains that “[a]lthough all Rate R-1 customers are eligible to opt into Electrification  
9 Pricing, the Company plans to proactively market the option to customers with heat pumps  
10 and home EV charging.”<sup>122</sup>

11 **Q. How does National Grid propose to recover the costs associated with its electrification**  
12 **pricing option?**

13 A. National Grid expects to recover the revenue shortfall associated with its electrification  
14 pricing option through its Revenue Decoupling Mechanism.<sup>123</sup> That means customers who  
15 are either not eligible for, or otherwise do not participate in, the electrification pricing  
16 option would likely experience bill increases as a result of electrification pricing. In  
17 addition, this means that those opting into the pricing option will experience less savings

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<sup>120</sup> Exhibit NG-PP-1 at 26:3-4; Exhibit NG-CP-1 at 56:19-57:1.

<sup>121</sup> Exhibit NG-CP-1 at 59:8-11.

<sup>122</sup> National Grid Response to Information Request EDF-CLF-2-20(c).

<sup>123</sup> Exhibit NG-PP-1 at 30:3-4.

1 than the Company purports since these customers will also experience additional costs on  
2 their bills due to the Revenue Decoupling Mechanism:<sup>124</sup>

3 *Because Electrification Pricing will be offered as a policy-driven pricing*  
4 *option under the existing Rate R-1 rate class, savings to customers who*  
5 *opt in will be recovered through the Revenue Decoupling Mechanism*  
6 *("RDM") and allocated to each rate class according to the appropriate*  
7 *distribution revenue allocators.*

8 The Company estimates that if 100 percent of all customers with above average  
9 monthly usage (*i.e.*, higher than 574 kWh) opt in to electrification pricing (which the  
10 Company acknowledges is unlikely), a non-participating Rate R-1 or R-2 customer with  
11 an average usage of 600 kWh per month would experience a 4.1 percent increase in their  
12 bill, which amounts to \$108 annually.<sup>125</sup> If only 30 percent of those customers opt in, the  
13 bill increase would be 1.2 percent, or an annual increase of \$32.<sup>126</sup>

14 **Q. At a high level, please summarize your concerns regarding the Company's proposed**  
15 **electrification pricing option.**

16 A. Rapid building electrification, including electrification of current residential end-uses, is  
17 necessary to support the Commonwealth's climate and clean energy goals. National Grid  
18 has an important role to play in accelerating building electrification in its service territory,  
19 including by providing innovative rate designs and programs that enable its customers to  
20 make cost-effective electrification choices. That being said, I have several concerns

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<sup>124</sup> Exhibit NG-CP-1 at 58:6-9.

<sup>125</sup> *Id.* at 58:9-59:1.

<sup>126</sup> *Id.* at 59:4-7.

1 regarding National Grid’s proposed electrification pricing option including (1) whether it  
2 will be able to sufficiently support electrification efforts and (2) its potential impacts on  
3 Rate R-2 customers.

4 First, the pricing option as proposed is overly broad. It is available not only to  
5 customers making incremental electrification investments (*i.e.*, investments motivated by  
6 the pricing option), but to all customers with above-average electric usage—including  
7 customers who have already invested in electrification technologies, as well as customers  
8 who do not make any electrification choices. This feature of the proposal not only dampens  
9 its likely impact on the rate of electrification in National Grid’s service territory, but also  
10 has significant equity implications.

11 Second, to the extent National Grid’s customers with higher-than-average electric  
12 usage are more likely to be more affluent, the proposed pricing option (and associated  
13 revenue shortfall) may result in the Company shifting costs from customers with lower-  
14 than-average monthly usage to customers with higher-than-average monthly usage (and,  
15 therefore, potential from less affluent to more affluent customers). That equity concern is  
16 exacerbated by the Company’s decision to exclude Rate R-2 customers from participating  
17 in the electrification pricing option (unless those customers switch to Rate R-1).<sup>127</sup> National  
18 Grid projects that the average R-2 customer’s annual bill will increase by \$32 if 30 percent

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<sup>127</sup> *Id.* at 59:19-20.

1 of eligible Rate R-1 customers with the potential to save money under the pricing option  
2 enroll in the program.<sup>128</sup>

3 **Q. Why does the Company propose to exclude Rate R-2 customers from the**  
4 **electrification pricing option?**

5 A. The Company suggests that the low-income discounts and electrification pricing option  
6 have a similar impact: both provide customers with savings that increase with each  
7 incremental kWh of usage.<sup>129</sup>

8 *The proposed Electrification Pricing option serves to address this*  
9 *problem by effectively providing a volumetric discount where savings*  
10 *relative to the default rate increase with each incremental kWh of usage.*  
11 *Because the Rate R-2 discount is a percentage of the total bill, it provides*  
12 *the same effect of savings increasing with each incremental kWh of*  
13 *usage, thereby reducing the cost per kWh of usage.*

14 While low-income discounts and the electrification pricing option both clearly  
15 provide bill savings to customers, the Company has not demonstrated why it cannot layer  
16 electrification-friendly rate design on top of the low-income discount (the primary purpose  
17 of which is to reduce low-income customers' energy burden, notwithstanding their  
18 electrification choices). In other words, the fact that low-income customers on Rate R-2  
19 already receive financial relief through the Company's low-income discounts should not  
20 preclude their eligibility to participate in the electrification pricing option being offered to  
21 Rate R-1 customers. The two types of discounts are unrelated and the purpose of the

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<sup>128</sup> National Grid Response to Information Request EDF-CLF-2-22.

<sup>129</sup> National Grid Response to Information Request LI-NG-1-8(c).

1           electrification pricing option is to create an incentive for customers to adopt electrification  
2           measures. Excluding Rate R-2 customers means that low-income customers will be  
3           excluded from financial incentivizes to electrify.

4   **Q.   Do you have concerns regarding the effect of the proposed electrification pricing**  
5   **option on investment in energy-demand-reducing technologies?**

6   A.   Yes. I am concerned about the impacts that the electrification pricing option might have on  
7   participating customers' incentive to invest in energy-demand-reducing technologies.

8           As National Grid points out, participants in the electrification pricing option will  
9   continue to pay several other volumetric charges (the Company estimates Rate R-1  
10   customers opting-in to electrification pricing will pay about 28 cents per kWh in charges  
11   other than base distribution rates). Nevertheless, I am concerned that the electrification  
12   pricing proposal may inadvertently dampen participating customers' incentive to invest in  
13   energy-demand-reducing technologies, such as energy efficiency, in parallel with  
14   electrification (energy-demand-increasing and peak-load-increasing) technologies. This  
15   pricing plan would render the distribution portion of participants' bills less sensitive to  
16   usage. To that end, National Grid stated in response to discovery that it had not analyzed  
17   whether customers taking the electrification pricing option would have an incentive to  
18   reduce their volumetric charges.<sup>130</sup> Essentially, if the electrification pricing option were

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<sup>130</sup> National Grid Response to Information Request EDF-CLF-1-4.

1 adopted, a participating Rate R-1 customer may have an incentive to drive up their electric  
2 consumption (either by installing an electrification technology or otherwise).

3 **Q. Do you have any concerns regarding the effects of the Company’s electrification**  
4 **pricing proposal on peak load?**

5 A. Yes. I am concerned the electrification pricing proposal fails to incentivize customers to  
6 shift electricity use to outside of peak hours, and therefore may contribute to increasing the  
7 Company’s peak load (and related stress on the grid).

8 EDF-CLF asked National Grid how it will encourage customers participating in the  
9 electrification pricing option to use electricity outside of peak hours.<sup>131</sup> National Grid’s  
10 response indicates that it is working towards completion of its AMI deployment plan by  
11 late 2027, and explained that AMI deployment will enable implementation of time-varying  
12 and demand-based rate designs for residential customers that will “send efficient, grid-  
13 beneficial price signals, reduce the operating costs of electric heat and electric vehicle  
14 charging, and improve overall fairness across customers and their end uses.”<sup>132</sup> If the  
15 Company intends to take measures to encourage its customers participating in  
16 electrification pricing to use electricity outside of peak hours in advance of AMI  
17 deployment, it should provide information regarding those measures in its rebuttal.

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<sup>131</sup> National Grid Response to Information Request EDF-CLF-1-5.

<sup>132</sup> *Id.*

1           My concern is that the timing of the AMI deployment (which will not be completed  
2           until late 2027) could inadvertently result in National Grid’s electrification pricing option  
3           participants adding electric load (via the installation of electrification technologies or  
4           otherwise) during peak hours. This outcome will raise customers’ electric bills because  
5           peak load tends to drive capacity, transmission, distribution, and other costs.

6   **Q. To your knowledge, has any other Massachusetts utility proposed a rate design**  
7   **intended to promote electrification?**

8   A. Yes. Fitchburg Gas and Electric Light Company (Unitil) has proposed a residential heat  
9   pump rate in its pending rate case, Docket No. 23-80.

10 **Q. Please summarize Unitil’s proposed residential heat pump rate.**

11 A. My limited review of Unitil’s proposal indicates that Unitil has proposed a rate design that  
12 is seasonally-differentiated (*i.e.*, the rate is different in the summer and in the winter). All  
13 residential customers installing heat pumps, including low-income customers, would be  
14 eligible for Unitil’s heat pump rate. The customer charge and summer volumetric charge  
15 would be set at the same level as the ordinary residential rates (Unitil Residential RD-1  
16 rate), whereas the winter volumetric charge would be significantly discounted (by 64  
17 percent) relative to the Residential RD-1 volumetric charge.<sup>133</sup>

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<sup>133</sup> D.P.U. Docket No. 23-80, Exhibit Unitil-JDT-1 at 24:14-25:2.

1 **Q. How does Until’s proposed residential heat pump rate compare with National Grid’s**  
2 **proposed electrification pricing option?**

3 A. In my view, Until’s proposal includes several advantages. First, Until’s proposal does not  
4 appear to exclude low-income customers. Second, Until’s proposal appears to  
5 appropriately focus on customers who have actually installed electric heat pumps, rather  
6 than being available to all customers with above-average electric consumption. Third,  
7 Until’s proposal is seasonally-differentiated, encouraging heat pump usage during the  
8 winter season. Fourth, Until’s proposal retains a stronger efficiency and conservation  
9 incentive, because customers participating in the heat pump rate would retain volumetric  
10 delivery service charges (albeit discounted charges).

11 **Q. In light of those concerns, what do you recommend to DPU with respect to the**  
12 **Company’s proposed electrification pricing option?**

13 A. I recommend that DPU reject National Grid’s proposed electrification pricing option and  
14 instruct the Company to instead focus in the near-term (until late 2027 when AMI is  
15 deployed) on the electrification of customers currently using delivered fuels to heat their  
16 homes, using the Low-Income Delivered Fuels Electrification PIM that I discussed earlier  
17 in my testimony. I also recommend DPU direct the Company to collaborate with  
18 stakeholders to develop (and propose) a time-varying electrification rate that leverages

1 AMI as it is deployed. The Company has yet to commit to offering such a rate after its  
2 deployment of AMI.<sup>134</sup>

3 If the DPU wants National Grid to implement an electrification-friendly rate design  
4 in the near term (before the Company completes AMI deployment), DPU should direct  
5 National Grid to propose a rate design that reflects the characteristics of Unital's pending  
6 heat pump rate proposal. The rate would be seasonally-differentiated, available only to  
7 customers who have installed electric heat pumps, include low-income customers, and  
8 retain volumetric delivery charges.

9 2. Low-Income Discount Rate Proposal

10 **Q. Please describe the Company's proposed low-income discount rate proposal.**

11 A. Massachusetts requires distribution companies to provide discounted rates for low-income  
12 customers comparable to the low-income discount rate received from total bills for rates in  
13 effect prior to March 1, 1998.<sup>135</sup> Under that requirement, National Grid maintains a low-  
14 income discount rate, which it calls Rate R-2, which currently provides a total bill discount  
15 of 32 percent for customers at or below 60 percent of state median income (SMI). In this  
16 proceeding, National Grid seeks approval of a tiered low-income discount rate which  
17 provides varying levels of total bill discount based on level of income with the following  
18 tiers:

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<sup>134</sup> National Grid Response to Information Request EDF-CLF-2-21.

<sup>135</sup> G.L. c. 164, § 1F.

- 1 i. 55 percent discount for households with incomes between 0 and 15 percent of SMI.
- 2 ii. 49 percent discount for households with incomes between 15 and 20 percent of SMI.
- 3 iii. 44 percent discount for households with incomes between 20 and 30 percent of SMI.
- 4 iv. 36 percent discount for households with incomes between 30 and 40 percent of SMI.
- 5 v. 32 percent discount for households with incomes between 40 and 60 percent of
- 6 SMI.<sup>136</sup>

7 National Grid states that its goal in modifying its existing R-2 rate structure is to  
8 ensure that all customers with average electric consumption spend no more than 3.4 percent  
9 of their household income on their electric bills.<sup>137</sup> National Grid explains that recent  
10 literature has found that customers are negatively impacted when they pay more than six  
11 percent of their household income on their total energy bills (*i.e.*, both natural gas and  
12 electricity).<sup>138</sup> Six percent is a common marker of energy burden where researchers  
13 consider customers who pay more than that for electric and natural gas service to be energy  
14 insecure.<sup>139</sup> National Grid determined the 3.4 percent energy burden target by applying the

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<sup>136</sup> National Grid presents the income tiers in Exhibit NG-CP-1 in both SMI and Federal Poverty Level (FPL). Exhibit NG-CP-1 at 28:3-13. The Company presents the data in this way because the relationship between FPL and SMI varies by size of household where the FPL increases with household size. National Grid Response to Information Request EDF-CLF-1-20. I present the data in SMI for simplicity and utilize National Grid's conversion of FPL to SMI based on weighted average household size. National Grid Response to Information Request EDF-CLF-1-20.

<sup>137</sup> Exhibit NG-CP-1 at 27:19-28:2.

<sup>138</sup> *Id.* at 29:14-17.

<sup>139</sup> See Oak Ridge National Laboratory's literature review: Brown, Marilyn Ann, Anmol Soni, Melissa Voss Lapsa, and Katie Southworth. "Low-income energy affordability: Conclusions from a literature review." (2020). Available at: <https://www.osti.gov/biblio/1607178>.

1 percentage that households with both natural gas and electric service pay towards  
2 electricity as part of their total energy bills (*i.e.*, 56 percent). This target was set based on  
3 the share of a low-income customer's energy bills spent on electricity versus gas after  
4 LIHEAP distributions are made.<sup>140</sup>

5 **Q. At a high level, what is your reaction to the Company's proposed low-income discount**  
6 **rate?**

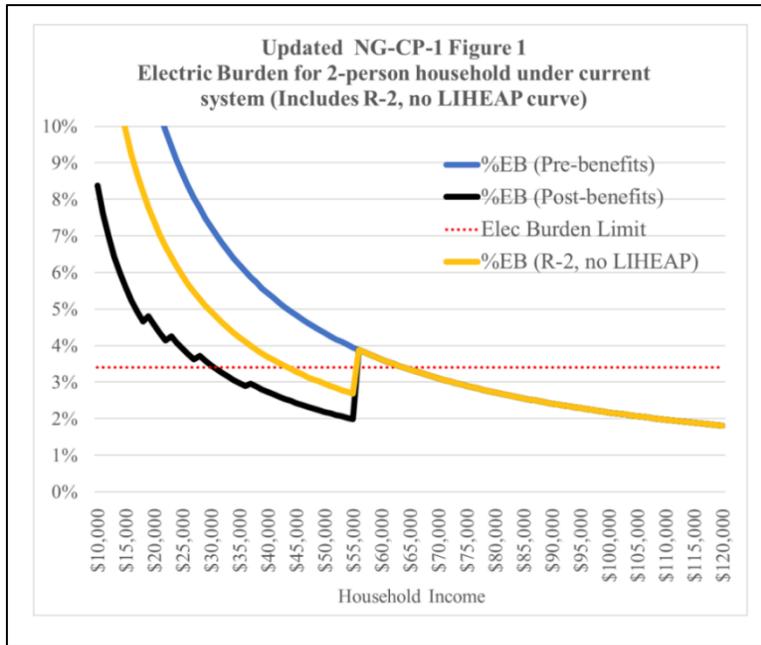
7 A. I agree with the structure of an income-tiered discount rate and with the aim of ensuring  
8 that no customer is energy burdened. National Grid's proposed Rate R-2's structure,  
9 however, would result in some of the poorest customers in National Grid's service territory  
10 remaining energy burdened. National Grid's own analysis demonstrates this (see Figures  
11 2 and 3 below).

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<sup>140</sup> Exhibit NG-CP-1 at 28:19-21

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**Figure 2: Current Rate R-2 Energy Burden<sup>141</sup>**

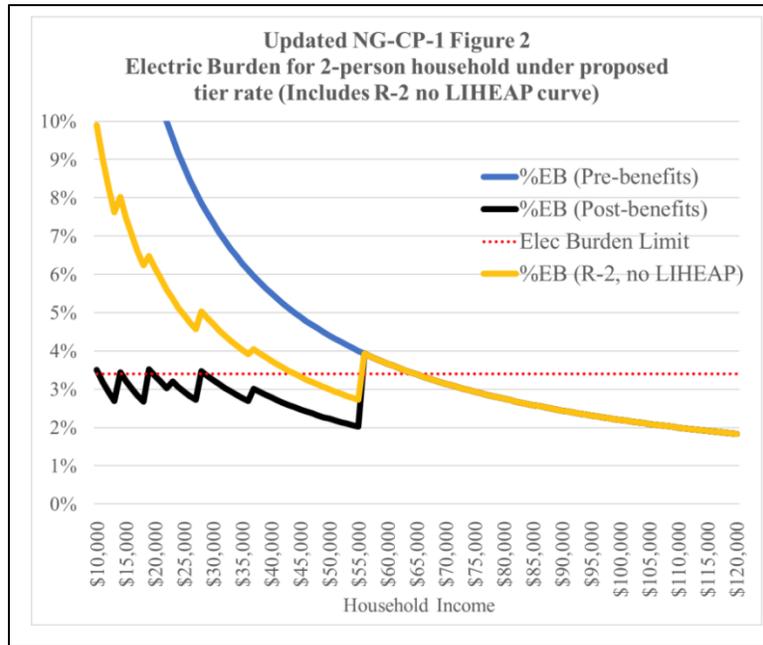


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<sup>141</sup> Reproduced from National Grid Response to Information Request EDF-CLF-1-29.

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**Figure 3: Proposed Rate R-2 Energy Burden<sup>142</sup>**



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The figures show that National Grid’s customers are less energy insecure under National Grid’s revised proposal, but under both the current and proposed Rate R-2, the Company’s poorest customers do not achieve energy affordability without a LIHEAP distribution. Figure 3 shows that under National Grid’s revised Rate R-2 that customers in a 2-person household with household incomes below \$40,000 will not meet the 3.4 percent energy burden goal without a LIHEAP distribution.

LIHEAP benefits, however, are not available consistently in every year. As a federally-funded program, LIHEAP operates with a limited budget that requires

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<sup>142</sup> *Id.*

1 Congressional authorization. Once its budget is depleted, LIHEAP cannot provide  
2 households with further assistance until the next Congressional authorization. With that,  
3 customers cannot count on receiving LIHEAP assistance every year since it is possible to  
4 miss the window to apply for benefits without notice.

5 National Grid has a maximum of 58,273 customers receiving a LIHEAP payment  
6 during 2023<sup>143</sup> compared to the Company's total enrollment of nearly 154,000 customers  
7 in Rate R-2 as of December 2023.<sup>144</sup> Some customers receiving LIHEAP assistance may  
8 take service under Rate R-1, and not Rate R-2. Even ignoring that complication, it is clear  
9 that fewer than 38 percent of the Company's Rate R-2 customers received LIHEAP  
10 payments in 2023. Based on that fact, National Grid's proposed low-income discounts do  
11 not provide true energy affordability to its Rate R-2 customers.

12 **Q. What do you recommend to DPU with respect to the Company's proposed low-**  
13 **income discount rate?**

14 A. I recommend that DPU require National Grid to reconfigure its proposed Rate R-2 in its  
15 rebuttal testimony such that all customers pay no more than 3.4 percent of their household  
16 income for electricity bills without an assumption of LIHEAP distribution. To do this, the  
17 Company should provide greater percentage discounts for customers at the lowest end of

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<sup>143</sup> National Grid Response to Information Request EDF-CLF-1-28 (providing LIHEAP enrollment); National Grid Response to Information Request EDF-CLF-1-26 (National Grid explains that its customers received 58,273 LIHEAP payments in 2023. This does not translate to the number of customers who received a LIHEAP distribution because customers can receive two LIHEAP payments during a single year).

<sup>144</sup> National Grid Response to Information Request EDF-CLF-2-19.

1 the income spectrum. DPU should order this reduction because a large number of National  
2 Grid's customers have low household incomes and will struggle with affordability without  
3 this change. For example, National Grid estimates that over 37,000 households in its  
4 service territory fall into the lowest income bracket (between 0 and 15 percent SMI) and  
5 qualify for the 55 percent reduction on rates proposed by the Company under Rate R-2.<sup>145</sup>

6 However, I also note that a low-income discount rate designed based on my  
7 recommendation will not guarantee that all National Grid customers will be able to afford  
8 their utility service. To that end, I encourage DPU to consider and adopt pathways in  
9 Docket No. 24-15 (Affordability NOI) that preserve affordability for individuals who do  
10 not qualify for Rate R-2 or LIHEAP because their household income is too high, but  
11 nevertheless pay high electricity bills.

12 **VIII. RECOMMENDATIONS**

13 **Q. Please summarize your recommendations with respect to the Company's proposed**  
14 **ISRE Mechanism.**

15 A. In this testimony, I raise concerns related to the transparency and prudence of the capital  
16 investments National Grid proposes to be recovered through the ISRE Mechanism, and I  
17 urge the DPU to ensure that ratepayers are sufficiently protected from unnecessary bill

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<sup>145</sup> National Grid Response to Information Request EDF-CLF-1-28.

1 impacts resulting from these investments. I specifically raise three major concerns with the  
2 Company's proposed ISRE Mechanism:

- 3 1. ESMP-costs are being reviewed in a separate proceeding, which does not  
4 facilitate a full assessment of affordability impacts associated with the cost  
5 recovery sought within the Company's 2023 rate case;
- 6 2. The Company's level of investment for its Core Investments represents a  
7 rapid increase over the five-year CPIP period (in comparison to historical  
8 spending) that is unprecedented and should be adequately justified; and
- 9 3. Deferring a prudence review of the Company's capital spending (especially  
10 at such unprecedented levels) to a three-month reconciliation filing does not  
11 provide sufficient time for DPU or intervenors to conduct a comprehensive  
12 review of those investments.

13 **Q. Please summarize your recommendations with respect to the Company's proposed**  
14 **performance incentive mechanisms.**

15 A. National Grid's current IPIMs are flawed: They reward the Company for actions that it is  
16 already incentivized to take as well as actions that it is required to take. I recommend that  
17 DPU reject National Grid's proposed IPIMs and instead require National Grid to propose  
18 and adopt a single reliability IPIM improving reliability in (1) vulnerable communities with  
19 environmental justice populations experiencing worse than average reliability, and (2) the  
20 Company's worst performing feeders. The Company should prioritize vulnerable  
21 communities with environmental justice populations in this metric.

22 In addition, I recommend that DPU reject National Grid's Increased Enrollment in  
23 Low-Income Discount PIM, Fleet Electrification PIM, Digital Customer Engagement PIM,  
24 and MWs of DER Interconnected PIM, and direct the Company to strengthen the targets

1 for its First Call Resolution PIM. National Grid's current operating-based PIMs either seek  
2 rewards for activities that the Company should already be doing without incentive or have  
3 targets that appear easily accomplishable based on recent performance. Finally, I  
4 recommend that National Grid develop and propose an Incremental PLR PIM and two  
5 equity-focused PIMs related to electrification of homes currently heating with delivered  
6 fuels and workforce diversity.

7 **Q. Please summarize your recommendations with respect to the Company's**  
8 **electrification pricing proposal.**

9 A. National Grid has an important role to play in facilitating building electrification in its  
10 service territory, but its pricing proposal is poorly designed and premature. I recommend  
11 that DPU reject the Company's proposed electrification pricing option. The Company's  
12 electrification pricing option provides customers with a perverse incentive to increase their  
13 electric usage and fails to encourage the adoption of energy-reducing technologies. In the  
14 short term, the Company should focus its attention on the electrification of customers  
15 currently using delivered fuels to heat their homes. I also recommend that DPU direct the  
16 Company to work together with stakeholders to propose and develop time-varying  
17 electrification rates that leverage AMI as National Grid deploys it. If the DPU believes that  
18 National Grid should have an electrification pricing proposal at this time, I recommend that  
19 the Company implement an electrification-friendly rate design similar to the one proposed  
20 by Unitil that is seasonally-differentiated, available to all customers who have installed

1 electric heat pumps, includes low-income customers, and retains volumetric delivery  
2 charges.

3 **Q. Please summarize your recommendations with respect to National Grid’s low-income**  
4 **discount rate proposal.**

5 A. Under National Grid’s proposed low-income discount rate, without LIHEAP assistance,  
6 the poorest customers in National Grid’s service territory will have unaffordable electric  
7 bills. I recommend that DPU order National Grid to design its low-income discount rate  
8 such that customers achieve energy security before (or in the absence of) application of  
9 any LIHEAP funding.

10 **IX. CONCLUSION**

11 **Q. Does this conclude your direct testimony?**

12 A. Yes, it does.