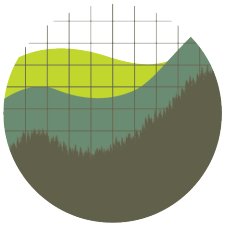

Institute *for*
Policy Integrity
NEW YORK UNIVERSITY SCHOOL OF LAW

August 5, 2020

VIA EMAIL

Aida Camacho-Welch, Secretary
Board of Public Utilities
44 South Clinton Avenue, 9th Floor
Post Office Box 350
Trenton, New Jersey 08625-0350

Dockets: QO19010040, QO20060389 — New Jersey Energy Efficiency Transition

Subject: Institute for Policy Integrity Comments on New Jersey Cost Test Straw Proposal

Dear Secretary Camacho-Welch:

The Institute for Policy Integrity at New York University School of Law[1] (Policy Integrity) appreciates the opportunity to submit these comments to the New Jersey Board of Public Utilities (BPU) in response to its July 24, 2020 Notice regarding a public stakeholder meeting and invitation for written comments in the above-captioned proceeding. Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy.

Thank you for your consideration of the attached comments.

Respectfully,

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[1] This document does not purport to present the views of New York University School of Law.

Institute for Policy Integrity Comments on New Jersey Cost Test Straw Proposal

The New Jersey Board of Public Utilities (BPU)'s July 24, 2020 Notice invites written comments on a straw proposal for the benefit-cost test that BPU would employ pursuant to the 2018 Clean Energy Act, which requires energy efficiency (EE) and peak demand reduction (PDR) programs to satisfy a benefit-cost test.[2] For the reasons discussed below, Policy Integrity encourages BPU to consider making two changes to that straw proposal:

- The New Jersey Cost Test should include avoided greenhouse gas emissions among the non-energy benefits it credits to EE and PDR projects; and
- BPU should adopt a tool and methodology for assessing the benefit of avoided local air pollutants that is more sensitive than those identified in the straw proposal.

1. Introduction

BPU's establishment of the New Jersey Cost Test responds to the provision of the Clean Energy Act of 2018 quoted in BPU's July 24, 2020 Notice,[3] but BPU's specification of that test should also be consistent with the fundamental objective of emissions reduction established by New Jersey's Global Warming Response Act (GWRA).[4] Practically speaking, this means that BPU's approach to assessing the benefits and costs of investments in EE and PDR at the portfolio level should recognize and value those investments' ability to avoid emissions. Given that the New Jersey Cost Test will, without question, steer investments in EE and other energy resources, it would be a mistake—logically, economically, and administratively—to ignore those investments' greenhouse gas emissions impacts. BPU should also take care to craft a test that not only reflects such investments' emissions impacts, but does so accurately. And so, Policy Integrity encourages BPU to incorporate a measure of greenhouse gas emissions avoidance into the test, and to consider using a tool for measuring avoided local air pollution that can capture more granular levels of emissions than the tool listed in the straw proposal. Each of these is discussed in turn in the sections that follow.

2. The New Jersey Cost Test Should Value Avoided Greenhouse Gas Emissions and Can Readily Do So

BPU is currently working to organize multiple aspects of state energy policy around the linked objectives of energy transition and greenhouse emissions reduction.[5] The need to coordinate multiple and diverse efforts around these objectives argues strongly for recognizing and seeking to capture the value of avoiding greenhouse gas emissions wherever doing so is legally valid and administratively feasible—as it is with respect to the New Jersey Cost Test. Programs that fail to

[2] N.J.S.A. 48:3-87.9(d)(2).

[3] 2018 N.J. Laws c.17; N.J. STAT. ANN. § 48:3-87.8.

[4] 2007 N.J. Laws c.112; *see also* N.J. STAT. ANN. §§ 26:2C-39 to -41 (prescribing features of greenhouse gas monitoring and reporting program).

[5] *See, e.g.*, Press Release, NJBPU Issues Draft Guidance Document for Second Offshore Wind Solicitation (July 22, 2020); Press Release, NJBPU Approves Comprehensive Energy Efficiency Program (June 10, 2020); Press Release, NJBPU Launches Investigation to Ensure State's Clean Energy Future Despite Federal Regulation that Favors Fossil Fuels (Mar. 27, 2020).

recognize that value will be less likely to compensate it accurately, or at all. And recognition of that value by some but not all state programs runs the risk of administrative and economic incoherence. In the case of the New Jersey Cost Test, incorporating a social cost of greenhouse gases would ensure the effects of greenhouse gas emissions are weighed alongside other relevant effects in a way that allows for comparison. Importantly, once the BPU has quantified expected emissions in a given instance (or many), it can use a readily available tool, the Interagency Working Group's social cost of greenhouse gases, [6] to determine the monetary value of greenhouse gas emissions involved. New Jersey law has recognized this federally developed social cost as a valid estimate of the value of avoiding greenhouse gas emissions,[7] and the metric is serviceable for program, portfolio, and project-based valuations.[8] Therefore, the administrative burden of incorporating this value into the New Jersey Cost Test is likely to be counterbalanced, and maybe wholly outweighed, by the advantages of doing so.

Before turning to why and how to value avoided greenhouse gas emissions, we first note three important points already made in this proceeding by other parties—points that BPU should consider seriously because of how much they weigh against finalizing the straw proposal version of the New Jersey Cost Test as is. First, greenhouse gas emissions reductions are not just a statutory obligation, but a policy priority for state agencies.[9] Second, incorporating avoided greenhouse gas emissions into cost-benefit analyses of EE and PDR project portfolios would not be a wholly novel task for BPU, which has commissioned similar analyses for years.[10] And third, investing in EE and PDR can be an effective greenhouse gas emissions reduction strategy.[11]

That third point bears emphasis and elaboration for at least two reasons. First, BPU's own *New Jersey Cost Test Proposal* seems to indicate that EE and PDR's demonstrated efficacy for reducing emissions is sufficient grounds to incorporate a greenhouse gas emissions value into the New Jersey Cost Test:

> Emissions of compounds such as mercury and greenhouse gases like methane and carbon dioxide (CO2) are known to cause air quality impacts affecting human health and other

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[6] Interagency Working Group on Social Cost of Carbon, Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (Feb. 2010) [hereinafter "IWG SCC TSD"], https://perma.cc/VTD5-VBL3.

[7] N.J. STAT. ANN. § 48:3-87.3 (b)(8) (determining that the "social cost of carbon, as calculated by the U.S. Interagency Working Group on the Social Cost of Carbon in its August 2016 Technical Update, is an accepted measure of the cost of carbon emissions").

[8] *See* ILIANA PAUL, PETER HOWARD & JASON A. SCHWARTZ, THE SOCIAL COST OF GREENHOUSE GASES AND STATE POLICY 26–27 (2017), https://policyintegrity.org/files/publications/SCC_State_Guidance.pdf.

[9] *See generally* NEW JERSEY, 2019 ENERGY MASTER PLAN: PATHWAY TO 2050 (2020).

[10] *See, e.g.*, Rutgers Ctr. for Green Building, Energy Efficiency Cost-Benefit Analysis Avoided Cost Assumptions--Technical Memorandum (May 1, 2019), https://perma.cc/X83U-8DEU ("This memo provides the inputs and methods utilized to update the avoided cost assumptions for integration into cost-benefit analyses of the New Jersey Clean Energy Program. . . . These potential avoided costs will be investigated by RCGB, in consultation with BPU and TRC staff."); RUTGERS CTR. FOR ENERGY, ECON. & ENVTL. POL'Y (for N.J. BPU), COST-BENEFIT ANALYSIS OF THE NEW JERSEY CLEAN ENERGY PROGRAM ENERGY EFFICIENCY PROGRAMS: FY 2013 THROUGH FY 2015 SUMMARY REPORT 14–16 (2016), https://perma.cc/T4AJ-RUTS.

[11] RACHEL GOLD ET AL., AM. COUNCIL FOR AN ENERGY EFFICIENT ECON., PERFORMANCE INCENTIVE MECHANISMS FOR STRATEGIC DEMAND REDUCTION 1–4 (2020); *see also* RACHEL GOLD, ANNIE GILLEO & WESTON BERG, AM. COUNCIL FOR AN ENERGY EFFICIENT ECON., NEXT GENERATION ENERGY EFFICIENCY RESOURCE STANDARDS (2019).

> environmental impacts like global warming. To the extent that emissions of harmful pollutants are avoided by installation of EE measures and conservation through changes in behavior, Staff recommends that benefits resulting from avoided emissions also be included in the NJCT.[12]

And second, the ability of EE and PDR investments to reduce greenhouse gas emissions often *depends upon* policy design.[13] Thus, BPU should not ask whether EE and PDR can help reduce emissions as though the answer to that question does not depend BPU's own policies. Rather, BPU should recognize that it can—or can fail to—steer those investments towards emissions-reducing functions using policy tools like the New Jersey Cost Test.[14]

a. *Why* the Test Should Value Greenhouse Gas Emissions

Incorporating the value of greenhouse gas emissions reductions into the New Jersey Cost Test would advance the interests of New Jersey's citizens and ratepayers and further the public interest and policy goals of the BPU and the State of New Jersey. A complete and accurate accounting of an EE investments' cost-effectiveness should consider all benefits that are significant, and quantify and monetize as many as of those benefits as possible, including those that accrue to utilities, ratepayers, and society as a whole. Given that EE and PDR can avoid greenhouse gas emissions, BPU's straw proposal risks ignoring that capability and so undervaluing EE and PDR's contributions to New Jersey's achievement of its statutory objectives and the wellbeing of its citizens.

Accounting for climate damages improves net societal welfare.

The negative effects of greenhouse gas pollution from fossil fuel-fired electricity generation are not reflected in the price of fossil fuels. When an effect like this is not captured in market prices, it is considered a type of market failure known as an "externality." Putting an economy- or sector-wide price on emissions, like a carbon tax, would address this market failure. In lieu of such a policy, adding a monetary value for greenhouse gas damages—or a value for the benefits of avoided emissions—to the New Jersey Cost Test would ensure that climate damages are at least weighed equally with other effects that the BPU has monetized.

Incorporating the negative externality of pollution from electricity generation into BPU decisionmaking is particularly important for New Jersey, as the state seeks to reduce its emissions, as discussed above; by quantifying and monetizing the societal cost of greenhouse gas pollution, the Board will be able to more fully evaluate the impact of EE and PDR policies, and compare the costs and benefits of different policy alternatives.

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[12] N.J. BD. OF PUB. UTILS., NEW JERSEY COST TEST PROPOSAL—DRAFT 13–14 (2020) [hereinafter NJCT PROPOSAL].

[13] GOLD ET AL. (2020), *supra* note 11, at 1–4, (describing relationship between EE, PDR, and emission reductions and stating that, "[d]epending on how it shifts energy consumption, [EE and PDR] can also reduce GHG emissions.").

[14] *See id.* at 6–8 (describing key barriers to uptake of opportunities to pursue EE and PDR, and challenge of coordinating policies to achieve emissions reductions); Joni Sliger & Ken Colburn, *Redefining Energy Efficiency: EE 2.0*, 32 ELECTRICITY J. 106619, at 2 (2019) (describing how energy efficiency programs can operate at cross purposes to beneficial electrification).

Monetization helps to inform rational decisionmaking and improve public understanding

Monetization ensures that climate effects will be treated on par with the other costs and benefits of EE programs, such as avoided public health costs from the reduction of harmful local pollutants.[15] When all costs and benefits are translated into the common metric of money, the tradeoffs inherent in policy choices become apparent, and decisionmakers can more readily and more transparently compare society's preferences for competing priorities. Monetization of as many potential effects as possible therefore minimizes the risk that a decision will lean too heavily on any one factor or succumb to unintended and unknown biases. For example, the value of avoided greenhouse gas emissions may far outweigh any combination of energy benefits, but if the BPU does not assign a value to those emissions reductions, it may be unable to conclude if the benefits of a particular EE or PDR project portfolio outweigh its costs. By weighing all of the costs and benefits of EE policies evenly, the BPU can also directly assess the contribution of these policies to the state's goal to reduce greenhouse gases.

New Jersey Benefits from Reciprocal Actions

Though climate change is a global phenomenon, there are two reasons that the New Jersey Cost Test should reflect the costs of climate change. First, climate damages do not respect political borders; rather greenhouse gas emissions mix in the atmosphere and affect the climate globally. New Jerseyans have financial and personal interests in businesses and property located outside the state that may be affected by climate change. Second, because greenhouse gases are global pollutants, there is another strong justification for the BPU to incorporate the monetized social cost of greenhouse gases in energy resource planning: to encourage reciprocal actions by other states and countries, which will benefit New Jersey. In other words, New Jersey's citizens and ratepayers benefit if other jurisdictions take into account climate externalities of their emissions imposed on New Jersey. By that logic, New Jersey should also take into account the externalities of its emissions that accrue outside of the state's borders as a means to encourage such reciprocity.

Luckily, New Jersey would be joining a number of other actors, specifically U.S. states, that account for climate damages in electricity policy. Several other states are already internalizing the externality of greenhouse gas emissions for energy sector valuation and administrative decisions,[16] including New Jersey's regional partners. For example, as a neighboring deregulated state, New York offers a good model for how New Jersey might apply the social cost of greenhouse gases in its electricity proceedings. New York has begun using the social cost of greenhouse gases to value climate damages in three different proceedings: (1) benefit-cost analysis for distributed energy resources under the state's Reforming the Energy Vision proceeding;[17] (2) resource compensation paid to nuclear generators through the Zero-Emissions Credit Program;[18] and (3) resource compensation paid to distributed energy resources to reflect

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[15] *See* NJCT PROPOSAL, *supra* note 12, at 3–4.

[16] *See, e.g.*, DENISE A. GRAB ET AL., INST. FOR POL'Y INTEGRITY, OPPORTUNITIES FOR VALUING CLIMATE IMPACTS IN U.S. STATE ELECTRICITY POLICY (2019), https://policyintegrity.org/files/publications/Pricing_Climate_Impacts.pdf.

[17] N.Y. Pub. Serv. Comm'n, Order Establishing the Benefit Cost Analysis Framework, Case 14- M-0101 (Jan. 21, 2016), https://perma.cc/5EU8-FWK6.

[18] N.Y. Pub. Serv. Comm'n, Order Adopting a Clean Energy Standard 134, Case 15-E-0302 (Aug. 1, 2016), https://perma.cc/2PPE-F5HX. Unlike New Jersey, New York has directly based its Zero Emissions Credit value on

the environmental value they provide to the grid as part of the Valuing Distributed Energy Resources program.[19]

For more detail on how states can apply a social cost of greenhouse gases in electricity proceedings, see our report, *Opportunities for Valuing Climate Impacts in U.S. State Electricity Policy*.[20]

a. *How* the Test Should Value Greenhouse Gas Emissions

To estimate the value of greenhouse gas emissions avoided by a given portfolio of EE and PDR projects, BPU must first quantify the emissions that portfolio would avoid.[21] Once that quantification is done, BPU can apply the federally developed social cost of greenhouse gases, discussed below, to determine the avoided emissions' monetary value. Using the social cost of greenhouse gases requires only basic arithmetic once decisionmakers to specify several parameters applying the metric.[22]

> *The IWG's SCC is available, technically robust, and readily integrated into the Resource Value Test rubric that New Jersey has made the basis for its New Jersey Cost Test.*

In 2009, an Interagency Working Group assembled experts from a dozen federal agencies and White House offices to "estimate the monetized damages associated with an incremental increase in [greenhouse gas] emissions in a given year" based on "a defensible set of input assumptions that are grounded in the existing scientific and economic literature."[23] The estimates are based on the three most cited, most peer-reviewed models built to link physical impacts to the economic damages of each additional ton of greenhouse gas emissions. (The models are DICE (the Dynamic Integrated Model of Climate and the Economy), FUND (the Climate Framework for Uncertainty, Negotiation, and Distribution), and PAGE (Policy Analysis of the Greenhouse Effect).) The Working Group ran these models using inputs and assumptions drawn from the peer-reviewed literature, and its estimates were updated every few years—most recently in 2016—to reflect the latest and best scientific and economic data.[24]

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the federally developed social cost of greenhouse gases. In 2018, New York's program was upheld by the U.S. Court of Appeals for the Second Circuit, based in part on the fact that the credit value is tied to the Interagency Working Group's estimates of the social cost of carbon. Coalition for Competitive Elec. v. Zibelman, 906 F.3d 41, 51 (2d Cir. 2018), *cert. denied* (Apr. 15, 2019).

[19] N.Y. Pub. Serv. Comm'n, Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters 15–16, Case 15-E-0751 (Mar. 9, 2017), https://perma.cc/5XJF-JSNR. *See also* GRAB ET AL., *supra* note 16.

[20] GRAB ET AL., *supra* note 16.

[21] *See, e.g.*, NATALIE MIMS, TOM ECKMAN & CHARLES GOLDMAN, TIME-VARYING VALUE OF ELECTRIC ENERGY EFFICIENCY, at ix fig.ES-1, 32–36 (2017) (quantifying value of carbon dioxide emissions reduction available from different forms of EE across different regions).

[22] One parameter is the applicable year, as the social cost of greenhouse gases increases every year. Another is the appropriate estimate; there are four sets of estimates, three based on different discount rates and one reflective of a low probability catastrophic risk scenario. *See* PAUL, HOWARD & SCHWARTZ, *supra* note 8, at 24–27.

[23] IWG SCC TSD, *supra* note 6.

[24] Interagency Working Group on the Social Cost of Greenhouse Gases, Technical Update on the Social Cost of Carbon for Regulatory Impact Analysis (2016) [hereinafter "IWG SCC Update"], https://perma.cc/UYX6-2W8M.

The Working Group's estimates have been repeatedly endorsed by reviewers. In 2014, the U.S. Government Accountability Office reviewed the Working Group's methodology and concluded that it had followed a "consensus-based" approach, relied on peer-reviewed academic literature, disclosed relevant limitations, and adequately planned to incorporate new information through public comments and updated research.[25] In 2016, the U.S. Court of Appeals for the Seventh Circuit held that estimates of the social cost of carbon used to date by federal agencies were reasonable.[26] The U.S. District Courts for the Districts of Colorado and Montana have also chided agencies for their failure to use the Interagency Working Group's estimates of the social cost of carbon.[27] In 2016 and 2017, the National Academies of Sciences issued two reports that, while recommending future improvements to the methodology, supported the continued use of the existing Working Group estimates.[28] In 2018, two federal courts of appeals upheld states' use of the social cost of greenhouse gases in monetizing the value of avoided emissions from nuclear generators.[29] In 2019, a New York State court did as well.[30] Most recently, the Government Accountability Office[31] and a federal district court[32] have upheld the use of the IWG social cost of greenhouse gases in federal decisionmaking and dismissed any domestic-only "interim" numbers[33] that have cropped up since the group was disbanded as not consistent with the best available science and economics. It is, therefore, unsurprising that scores of economists and climate policy experts have endorsed the IWG values as the best available estimates.[34]

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[25] GOV'T ACCOUNTABILITY OFFICE, REGULATORY IMPACT ANALYSIS: DEVELOPMENT OF SOCIAL COST OF CARBON ESTIMATES 12-19 (2014).

[26] Zero Zone, Inc. v. Dep't of Energy, 832 F.3d 654, 679 (7th Cir. 2016).

[27] High Country Conservation Advocates v. Forest Service, 52 F. Supp. 3d 1174, 1191 (D. Colo. 2014); Montana Environmental Information Center v. Office of Surface Mining, 274 F. Supp. 3d 1074, 1098–99 (D. Mont. 2017).

[28] NAT'L ACAD. SCI., ENG. & MEDICINE, VALUING CLIMATE DAMAGES: UPDATING ESTIMATES OF THE SOCIAL COST OF CARBON DIOXIDE 3 (2017) [hereinafter "NAS 2017"]; NAT'L ACAD. SCI., ENG. & MEDICINE, ASSESSMENT OF APPROACHES TO UPDATING THE SOCIAL COST OF CARBON: PHASE 1 REPORT ON A NEAR-TERM UPDATE 1 (2016) [hereinafter "NAS 2016"].

[29] *See* Elec. Power Supply Ass'n v. Star, 904 F.3d 518 (7th Cir. 2018) (upholding Illinois ZEC program against Federal Power Act preemption challenge); Coalition for Competitive Elec. v. Zibelman, 906 F.3d 41 (2d Cir. 2018) (upholding New York ZEC program against Federal Power Act preemption challenge and dormant commerce clause challenge).

[30] Hudson River Sloop Clearwater, Inc. v. N.Y. Pub. Serv. Comm'n, 65 Misc. 3d 1219(A) at *12 (N.Y. Sup. Ct. 2019).

[31] GOV'T ACCOUNTABILITY OFFICE, SOCIAL COST OF CARBON: IDENTIFYING A FEDERAL ENTITY TO ADDRESS THE NATIONAL ACADEMIES' RECOMMENDATIONS COULD STRENGTHEN REGULATORY ANALYSIS, GAO-20-254 (June 2020);

[32] California v. Bernhardt, No. 4:18-cv-05712-YGR, 2020 WL 4001480 (N.D. Cal. July 15, 2020).

[33] Executive Order 13,783 disbanded the IWG and withdrew its technical support documents, 82 Fed. Reg. 16,093 (Mar. 31, 2017). In response, a number of agencies have used values that reflect only climate damages that occur within U.S. borders. *See, e.g.*, Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources: Stay of Certain Requirements, 82 Fed. Reg. 51,788 (Nov. 8, 2017); Waste Prevention, Production Subject to Royalties, and Resource Conservation; Delay and Suspension of Certain Requirements, 82 Fed. Reg. 46,458 (Oct. 5, 2017).

[34] *See, e.g.*, Richard L. Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 357 SCIENCE 655 (2017), https://policyintegrity.org/files/publications/Science_SCC_Letter.pdf; Michael Greenstone et al., *Developing a Social Cost of Carbon for U.S. Regulatory Analysis: A Methodology and Interpretation*, 7 REV. ENVTL. ECON. & POL'Y 23, 42 (2013); Richard L. Revesz et al., *Global Warming: Improve Economic Models of Climate Change*, 508

While it remains the best of available estimates, decisionmakers should recognize that the IWG's Social Cost of Carbon, which is $57 per metric ton of carbon dioxide for emissions in 2020,[35] is really a lower bound. Many significant climate impacts identified by the Intergovernmental Panel on Climate Change are difficult to quantify and so have been omitted from the IWG estimates. Effects such as increased fire risk, slower economic growth, and large-scale migration are all unaccounted for, despite their potential to cause large economic losses. So, policymakers should account for these omissions by treating the 2016 IWG social cost figures presented as underestimates.[36]

Notably, no existing methodology can calculate accurately a domestic-only estimate, let alone a state-only estimate. The models simply were not designed to produce such estimates: for example, the models do not account for any interregional spillover effects. Any approximate and speculative estimate based on factors like percentage of global GDP, or share of global coastline or landmass, will be inherently misleading, as they ignore interregional spillover effects and extraterritorial interests of citizens.[37] Put simply, there is no New Jersey-only estimate of the social cost of greenhouse gases, only a global one.

Finally, New Jersey's Clean Energy Act of 2018 requires that "[t]he methodology, assumptions, and data used to perform the benefit-to-cost analysis" for energy efficiency programs "shall be based upon publicly available sources."[38] Although a 2017 federal executive order disbanded the IWG,[39] its work is still publicly available, as are the reports on future updates to the IWG's data and methodologies by the National Academies.[40] Using the IWG's 2016 estimates for the social cost of greenhouse gases not only fulfills this statutory requirement, but also ensures transparency in the BPU's EE benefit-cost methodology.

The IWG's methodology, and why its estimates are the best available values for the SCC, are discussed in more detail in the Institute for Policy Integrity's report *The Social Cost of Greenhouse Gases and State Policy*. [41]

Other States Are Looking to the IWG Social Cost of Greenhouse Gases

Most if not all states that have to date incorporated or are considering incorporating the social cost of greenhouse gases into their electricity decisionmaking have relied at least in part on the

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NATURE 173 (2014), https://policyintegrity.org/files/publications/Nature_SCC.pdf (co-authored with Nobel Laureate Kenneth Arrow, among others); Nat'l Highway Traffic Safety Admin. Final Regulatory Impact Statement: The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021–2026 Passenger Cars and Light Trucks (Mar. 2020); Decl. of Michael Hanemann ¶ 17, Wyoming v. Interior, No. 16-00285 (D. Wyo. Dec. 14, 2016), https://perma.cc/LG2M-MVN9 (stating that estimates prepared by the Working Group for the cost of methane are "the best available estimate of the environmental cost of an additional unit of methane emissions.").

[35] IWG SCC Update, *supra* note 6, at 4 tbl. ES-1.

[36] *See* INST. FOR POL'Y INTEGRITY, A LOWER BOUND: WHY THE SOCIAL COST OF CARBON DOES NOT CAPTURE CRITICAL CLIMATE DAMAGES AND WHAT THAT MEANS FOR POLICYMAKERS (2019), https://policyintegrity.org/files/publications/Lower_Bound_Issue_Brief.pdf.

[37] *See* Peter Howard & Jason Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 COLUM. J. ENVTL. L. 203 (2017), https://policyintegrity.org/files/publications/Think_Global.pdf.

[38] N.J.S.A. 48:3-87.9(d)(2).

[39] Exec. Order 13,783, 82 Fed. Reg. 16,093 (Mar. 31, 2017).

[40] NAS 2017 and NAS 2016, *supra* note 28.

[41] PAUL ET AL. *supra* note 8.

IWG numbers or methodologies. States using or considering the IWG social cost of greenhouse gases include California, Colorado, Illinois, Maine, Maryland, Minnesota, Nevada, New York, Virginia, and Washington State. While many of these states primarily use the social cost of greenhouse gases in electricity policy, California and Washington State both use the social cost of greenhouse gases in other contexts.

All of these above-listed states make use of the federal IWG social cost of greenhouse gases estimates. Some states, such as California and Washington State, take a conservative approach and therefore use higher SCC estimates that are based on the IWG's high-impact range of estimates.[42] Many other states, like Illinois and Nevada, use the so-called "central" estimate based on a 3% discount rate.[43] Considering New Jersey's recent experiences with extreme weather events, like Super Storm Sandy—which caused $70 billion in damages in New Jersey and other nearby states[44] —BPU may want to reflect the state's particular vulnerabilities to climate change by using a high-end estimate to price emissions.

3. BPU Should Consider Using a Different Approach to Value Local Air Pollution

Policy Integrity agrees strongly with BPU's decision to value the avoidance of local air pollution (SO_2, NO_x, and $PM_{2.5}$), but encourages BPU to consider using a different approach than the one currently proposed. That is, the straw proposal would have BPU value local pollutants using the U.S. Environmental Protection Agency's "Benefits per Kilowatt-hour" (BPK) approach.[45] BPU should consider instead using the tools and methodology described in Policy Integrity's 2018 report, *Valuing Pollution Reductions*,[46] to assign a value to the local air pollution avoided by EE and PDR investments under the New Jersey Cost Test.

EPA's BPK tool is methodologically sound as a general matter, but at least two of its features—enumerated below—could cause it, if incorporated into the New Jersey Cost Test, to result in misestimations of the value of some projects.

(1) *Project/portfolio size.* the BPK tool is designed to estimate the value of projects of specified size-range: "EPA modeled . . . the EE projects assuming generation reductions of 500 GWh for uniform EE scenarios and 200 GWh for EE during peak hours."[47] Indeed, EPA expressly "advises against using AVERT to estimate emissions reductions for projects that are too small (~ 1 MW) or too big . . . The absolute amount can differ by region but can be as low as

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[42] *See* http://costofcarbon.org/ (California uses the 3% central estimate and the "high impact" estimate of approximately $123/metric ton CO2 in its value of distributed energy resources proceeding; Washington State recommends utilities use the 2.5% discount rate estimate of approximately $78/metric ton CO2).

[43] See http://costofcarbon.org/ for more details.

[44] Nat'l Oceanic and Atmospheric Admin., Nat'l Hurricane Ctr., "Costliest U.S. Tropical Cyclones Tables Updated" (Jan. 26, 2018), https://perma.cc/L225-U4F2.

[45] U.S. ENVTL. PROTECTION AGENCY, PUBLIC HEALTH BENEFITS PER KWH OF ENERGY EFFICIENCY AND RENEWABLE ENERGY IN THE UNITED STATES: A TECHNICAL REPORT (2019) [hereinafter "BPK REPORT"], https://perma.cc/XN8P-V6V6.

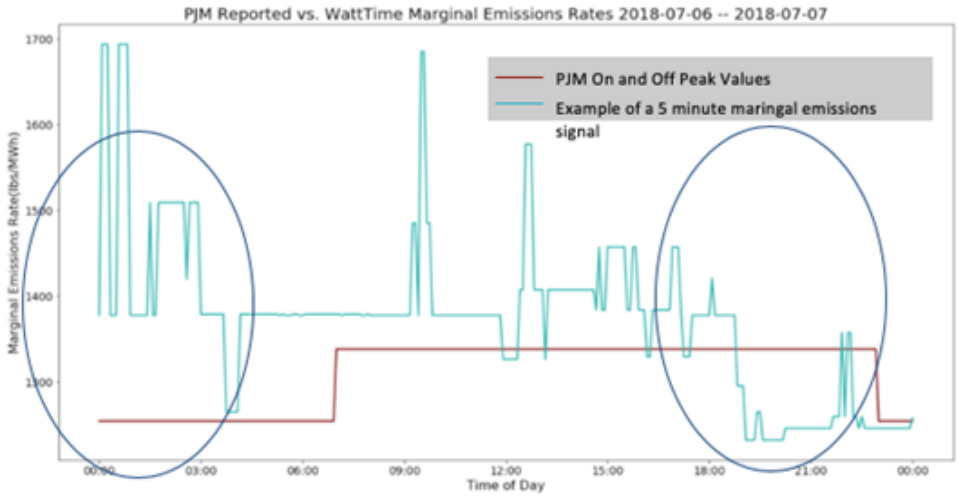
[46] JEFFREY SHRADER, BURCIN UNEL & AVI ZEVIN, INST. FOR POL'Y INTEGRITY, VALUING POLLUTION REDUCTIONS: HOW TO MONETIZE GREENHOUSE GAS AND LOCAL AIR POLLUTANT REDUCTIONS FROM DISTRIBUTED ENERGY RESOURCES (2018), https://policyintegrity.org/publications/detail/valuing-pollution-reductions.

[47] BPK REPORT, *supra* note 45, at 13.

1,000 MW."[48] To the extent that the New Jersey Cost Test applies to portfolios of the "wrong" size, the BPK tool could generate misestimations of avoided emissions' value.

(2) *Granularity*. BPK relies on AVERT, which uses hourly emissions data at the county, state, and regional levels to calculate peak and uniform EE values. BPK also treats 12 p.m. to 6 p.m. on weekdays as the window when EE can reduce peak energy use.[49] This means that BPK inputs are too coarse to provide a clear picture of actual benefits of EE measures. The emission benefits of EE or PDR measures depend on how marginal emission rates (MERs) vary during the period when loads change. As illustrated in Figure 1 below, which compares PJM-reported peak and off-peak marginal emission rates with 5-minute marginal emission rates calculated by WattTime, coarse MER estimates that are averaged over long intervals miss a great deal of information about actual emissions. Furthermore, relying on long intervals might result in underestimates of the value of EE and PDR measures that reduce load during off-peak hours (as can be seen from in the area marked by the circle on the left) or overestimate the value of measures that reduce load during peak hours (the circle on the right). While it may be that a coarse estimate of avoided emissions' value based on peak and off-peak times is better than none, a coarse estimate is often inaccurate, and so is less likely than a granular estimate to help New Jersey recognize and reward the emissions-related value of EE and PDR investments.

Figure 1. Marginal Emissions Rates in PJM



Graphic based on analysis by WattTime

Therefore we recommend that BPU use more granular calculation methods as outlined in Policy Integrity's *Valuing Pollution Recutions.*

[48] *Id.* at 20.

[49] *Id.* at 10–11.

4. Conclusion

EE and PDR can be potent means of avoiding the emissions of greenhouse gases and local pollutants from electricity generation. BPU is right to explore how to incorporate values to capture both of these categories of pollutants into the New Jersey Cost Test. With respect to greenhouse gases, Policy Integrity encourages BPU to recognize not just the validity and feasibility of valuing them, but also that *failing* to value them would mean forgoing an opportunity to help align EE and PDR investments with the state's greenhouse gas emissions reduction agenda. With respect to local pollutants, Policy Integrity encourages BPU to examine the potential sources of misestimation noted above and to consider the methodology described in *Valuing Pollution Reductions: How to Monetize Greenhouse Gas and Local Emission Reductions from Distributed Energy Resources*.

Appendix: Policy Integrity Reports and Articles Cited

- DENISE A. GRAB ET AL., INST. FOR POL'Y INTEGRITY, OPPORTUNITIES FOR VALUING CLIMATE IMPACTS IN U.S. STATE ELECTRICITY POLICY (2019), https://policyintegrity.org/files/publications/Pricing_Climate_Impacts.pdf
- Peter Howard & Jason Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 COLUM. J. ENVTL. L. 203 (2017), https://policyintegrity.org/files/publications/Think_Global.pdf
- INST. FOR POL'Y INTEGRITY, A LOWER BOUND: WHY THE SOCIAL COST OF CARBON DOES NOT CAPTURE CRITICAL CLIMATE DAMAGES AND WHAT THAT MEANS FOR POLICYMAKERS (2019), https://policyintegrity.org/files/publications/Lower_Bound_Issue_Brief.pdf
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- Richard L. Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 357 SCIENCE 655 (2017), https://policyintegrity.org/files/publications/Science_SCC_Letter.pdf
- Richard L. Revesz et al., *Global Warming: Improve Economic Models of Climate Change*, 508 NATURE 173 (2014), https://policyintegrity.org/files/publications/Nature_SCC.pdf
- JEFFREY SHRADER, BURCIN UNEL & AVI ZEVIN, INST. FOR POL'Y INTEGRITY, VALUING POLLUTION REDUCTIONS: HOW TO MONETIZE GREENHOUSE GAS AND LOCAL AIR POLLUTANT REDUCTIONS FROM DISTRIBUTED ENERGY RESOURCES (2018), https://policyintegrity.org/publications/detail/valuing-pollution-reductions