**BEFORE THE**

**NEW MEXICO PUBLIC REGULATION COMMISSION**

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| **IN THE MATTER OF PUBLIC SERVICE COMPANY OF NEW MEXICO'S APPLICATION FOR AUTHORIZATION TO IMPLEMENT GRID MODERNIZATION COMPONENTS THAT INCLUDE ADVANCED METERING INFRASTRUCTURE AND APPLICATION TO RECOVER THE ASSOCIATED COSTS THROUGH A RIDER, ISSUANCE OF RELATED ACCOUNTING ORDERS, AND OTHER ASSOCIATED RELIEF,** | ) | **CASE NO. 22-00058-UT** |
| **PUBLIC SERVICE COMPANY,** | ) | |
| **APPLICANT.** | ) | |

**DIRECT TESTIMONY**

**OF**

**COURTNEY LANE**

**ON BEHALF OF**
**THE OFFICE OF ATTORNEY GENERAL**

**January 27, 2023**

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## I. INTRODUCTION AND QUALIFICATIONS

**Q. Please state your name, title, and employer.**

A. My name is Courtney Lane. I am a Principal Associate at Synapse Energy Economics ("Synapse"), located at 485 Massachusetts Avenue, Suite 3, Cambridge, MA 02139.

**Q. Please describe Synapse Energy Economics.**

A. Synapse is a research and consulting firm specializing in electricity and gas industry regulation, planning, and analysis. Our work covers a range of issues, including economic and technical assessments of demand-side and supply-side energy resources; energy efficiency policies and programs; integrated resource planning; electricity market modeling and assessment; renewable resource technologies and policies; and climate change strategies. Synapse works for a wide range of clients, including attorneys general, offices of consumer advocates, public utility commissions, environmental advocates, the U.S. Environmental Protection Agency, the U.S. Department of Energy, the U.S. Department of Justice, the Federal Trade Commission, and the National Association of Regulatory Utility Commissioners. Synapse has over 40 professional staff with extensive experience in the electricity industry.

**Q. Please summarize your professional and educational experience.**

A. I have 18 years of experience in energy policy and regulation. At Synapse, I work on issues related to utility regulatory models, grid modernization, benefit-cost assessment frameworks, and performance incentive mechanisms. Prior to working at Synapse, I was employed by National Grid as the Growth Management Lead for New England where I oversaw the development of customer products, services, and business models for

Massachusetts and Rhode Island. In previous roles at National Grid, I worked on the deployment of non-wires alternatives and grid modernization efforts and led the development of the Rhode Island electric and natural gas energy efficiency plans. Prior to joining National Grid, I worked on regulatory and state policy issues pertaining to energy conservation, retail competition, net metering, and the Alternative Energy Portfolio Standard for Citizens for Pennsylvania's Future (PennFuture). Before that, I worked for Northeast Energy Efficiency Partnerships, Inc. where I promoted energy efficiency throughout the Northeast.

I hold a Master of Arts in Environmental Policy and Planning from Tufts University and a Bachelor of Arts in Environmental Geography from Colgate University. My resume is attached as Exhibit A.

**Q. On whose behalf are you testifying in this case?**

A. I am testifying on behalf of the New Mexico Office of the Attorney General ("NMAG").

**Q. Have you previously testified in regulatory proceedings in New Mexico?**

A. Yes. I provided testimony on behalf of NMAG in Case No. 21-00269-UT related to El Paso Electric Company's Application for an Advanced Metering System Project and in Case No. 21-00178-UT related to Southwestern Public Service Company's Application for Authorization to Implement Grid Modernization Components.

**Q. Have you previously submitted testimony in proceedings before other state commissions or agencies?**

A. Yes. I have testified before the New Hampshire Public Utilities Commission, the Maryland Public Service Commission, the Pennsylvania Public Service Commission, the

Public Service Commission of the District of Columbia, and the Rhode Island Public Utilities Commission. A list of my previous testimony is included in Exhibit A.

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

A. NMAG retained Synapse to review Public Service Company of New Mexico's ("PNM" or "Company") Application for Authorization to Implement Grid Modernization Components that Include Advanced Metering Infrastructure ("Application") and provide recommendations to the New Mexico Public Regulation Commission ("NMPRC" or "Commission"). Specifically, Synapse was engaged to examine the technical components of the Application, assess the reasonableness of assumed benefits to PNM and its customers, and determine whether the proposal is in the interest of New Mexico ratepayers.

**Q. What materials did you rely on to develop your testimony?**

A. The sources for my testimony and exhibits are the Company's Application and responses to discovery requests, public documents, and my personal knowledge and experience.

**Q. Was your testimony prepared by you or under your direction?**

A. Yes. My testimony and the accompanying exhibits were prepared by me or under my direct supervision and control.

## II. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

**Q. Please summarize your primary conclusions regarding the Company's Application.**

A. My primary conclusion is that PNM's Application goes well beyond the Commission's request for the Company to file a proposal for smart meters with automatic meter reading

and remote fault detection modernization components and does not sufficiently justify many of the additional grid modernization technologies proposed in its filing.[1] While I am generally supportive of grid modernization investments as a means to support the transition to a cleaner and more customer-oriented electric system, the onus must be on the Company to justify these investments with a robust benefit-cost analysis ("BCA"), quantified benefits, and a demonstration that the investment is truly needed to meet the desired outcome. I find that the Company has not met this requirement.

As I explain in more detail throughout my testimony, the Company failed to justify its proposed grid modernization investments. Specifically, I find that:

1. The Company does not provide sufficient information to allow a determination of reasonableness. The Company fails to provide a BCA and does not quantify the expected impacts from its proposed investments, including increased distributed energy resources ("DER"), reduction in greenhouse gases ("GHG"), or reliability improvements.

2. The Company fails to sufficiently link the desired outcome of an investment to the ability of the investment to meet that need. For example, the Company does not justify how its grid modernization investments will address the current

[1] Public Service Company of New Mexico ("PNM"), *Application for Authorization to Implement Grid Modernization Components That Include Advance Metering Infrastructure and Application to Recover the Associated Costs Through a Rider, Issuance of Related Accounting Orders, and Other Associated Relief* ("Application"), Executive Summary, pg. 3.

interconnection backlog of solar applications or how the reliability of the distribution system will incrementally improve due to these investments.

3. The Company's Application brings into question the accuracy of cost projections in the later years of its proposal and whether Commission approval is needed today for these future investments.

4. It is unclear how the Company's proposed Environmental Justice Screening Tool ("EJ Screening Tool") will bring incremental benefits to disadvantaged communities in its current form.

5. The Company does not provide a robust annual reporting process with a full set of evaluation metrics.

**Q. Please summarize your recommendations.**

A. I recommend that the Commission approve only a select list of PNM's proposed grid modernization projects, contingent upon the Company addressing critical flaws in its Application. Specifically, I recommend:

1. The Commission approve, with conditions, Advanced Metering Infrastructure ("AMI") -related investments including meters, Neighborhood Area Network ("NAN"), Head End System, and Meter Data Management System ("MDMS"); the Customer Energy Management Platform and applications like Green Button Connect; supporting services including, Wide Area Network ("WAN"), Cybersecurity, Data and Network Management, and the Data Warehouse; Home Area Network ("HAN"); Customer Analytics; and the EJ Screening Tool.

2. The conditions for approval of this suite of investments should include the requirement that the Company files a BCA within six months of an order being issued in this case; includes additional detail in its annual review filing related to progress toward the deployment of customer-facing programs and rate designs; includes the reporting metrics listed in Attachment B related to AMI within its annual review filing; and files an updated proposal for an EJ Screening Tool as part of its first annual review filing.

3. The Commission should reject the remaining grid modernization proposals in the Application and direct the Company to consider these projects for inclusion in a future grid modernization filing.

4. The Commission should require that any future filings include a BCA for the proposed grid modernization projects, quantify the expected outcomes, and provide more details related to program design.

## III. SUMMARY OF THE APPLICATION

**Q. Please summarize the grid modernization components and functions included in PNM's Application.**

A. The Company's Application seeks authorization to invest $344 million in the acquisition and implementation of a suite of grid modernization components ("Project(s)"), which represent the first six-year phase of PNM's overall 11-year strategy for grid

modernization deployment.[2] The major components of PNM's application include AMI, which is comprised of advanced meters, NAN, Head End System, MDMS, and a WAN. The Company also proposed investments in a Customer Energy Management Platform; Advanced Distribution Management System ("ADMS"); Fault Location, Isolation and Service Restoration ("FLISR"); Distributed Energy Resource Management System ("DERMS"); Distribution Automation; Volt-Var Management; and an EJ Screening Tool.

**Q. Please explain PNM's justification for filing this Application.**

A. The Company indicates that grid modernization is an important next step for PNM in that it will ensure that "electricity service remains reliable, resilient, and secure while transitioning to carbon-free generation."[3] The Company further states that its Application is being filed in accordance with the Grid Modernization Statute and responds to the Commission's March 23, 2022 Order, which requested that PNM file an application for grid modernization components, including AMI.[4]

Specifically, PNM states that its proposal meets the following seven evaluation criteria outlined in the Grid Modernization Statute, which requires consideration that grid modernization investments are:

[2] Direct Testimony of Laura E. Sanchez, pg. 35, lines 18-21.
[3] Direct Testimony of Laura E. Sanchez, pg. 1, lines 9-11.
[4] Public Service Company of New Mexico ("PNM"), *Application for Authorization to Implement Grid Modernization Components That Include Advance Metering Infrastructure and Application to Recover the Associated Costs Through a Rider, Issuance of Related Accounting Orders, and Other Associated Relief* ("Application"), Executive Summary, pg. 3.

1) reasonably expected to improve its electrical system efficiency, reliability, resilience and security; maintain reasonable operations, maintenance, and ratepayer costs; and meet energy demands through a flexible, diversified, and distributed energy portfolio, including energy standards established in Section 62-16-4 NMSA 1978;

2) designed to support connection of New Mexico's electrical grid into regional energy markets and increase New Mexico's capability to supply regional energy needs through export of clean and renewable electricity;

3) reasonably expected to increase access to and use of clean and renewable energy, with consideration given for increasing access to low-income users and users in underserved communities;

4) designed to contribute to the reduction of air pollution, including GHGs;

5) reasonably expected to support increased product and program offerings by utilities to their customers; allow for private capital investments and skilled jobs in related services; and provide customer protection, information, or education;

6) transparent, incorporating public reporting requirements to inform project design and commission policy; and

7) otherwise consistent with the state's grid modernization planning process and priorities.[5]

**Q. What requirements did the Commission include in its March 23, 2022 Order regarding PNM's application for grid modernization components?**

A. The Commission directed PNM to address the following issues in its application: "a) a proposal for AMI or "smart meters", including automatic meter reading, remote fault detection and includes a discussion of updated rate design options consistent with variable availability resources that use smart meter capabilities and should include time of use options; and b) identification of demand response and grid management programs being considered for implementation using smart meter capabilities and how they work in conjunction with proposed rate design principles."[6]

**Q. Did the Commission direct PNM to address any additional requirements from its previous AMI filing?**

A. Yes. PNM previously filed an application to retire its existing meters and replace them with AMI in Case No. 15-00312-UT ("Original Application").[7] The Commission ultimately disapproved PNM's Original Application,[8] stating, among other issues, that the proposal lacked public input in the design of the proposal, did not include an evaluation of alternatives to smart meters, and contained no plans to incorporate energy efficiency measures.[9] The Commission further stated that the cost-benefit analysis

[5] Direct Testimony of Laura E. Sanchez, pgs. 27-32.
[6] NMPRC. March 32, 2022. Case No. 22-00058-UT. Order Requesting Public Service Company of New Mexico to File an Application for Authorization to Implement Grid Modernization Components that Include Advanced Metering Infrastructure, ("March 23, 2022 Order"), pgs. 4-5.
[7] NMPRC. March 19, 2018. Recommended Decision. Case No. 15-00312, pg. 1.
[8] NMPRC. Final Order. Case No. 15-00312-UT.
[9] NMPRC. March 19, 2018. Recommended Decision. Case No. 15-00312.

excluded a variety of costs, making uncertain that lifetime costs will exceed benefits, and cybersecurity issues. In its Recommended Decision, the Commission directed PNM to conduct a public input process prior to filing another smart meter proposal to obtain input on issues related to energy efficiency programs, opt-out fees, health risks, data privacy, and cybersecurity.[10]

**Q. Does PNM's Application meet the Commission's filing requirements?**

A. In part. I find that the Company's Application addresses some of the deficiencies found in its Original Application by convening an extensive public input process, developing a customer engagement plan, addressing cybersecurity issues, and discussing potential opportunities for energy efficiency programs. However, PNM did not include a BCA as part of its Application so it is not possible to determine whether it will result in net benefits.

Regarding the Commission's March 23, 2022 Order, I find that the Company's Application discusses possible rate design options, as well as demand response and grid management programs. However, PNM's proposed investments go well beyond the Commission's request for a proposal for AMI. As I discuss in more detail later in this testimony, it is difficult to determine whether the Company's proposed investments in additional grid modernization technology such as ADMS, DERMS, and Distribution Automation are reasonable and needed given the lack of BCA and quantified benefits related to this technology.

[10] PNM Exhibit LES-9.

**Q. Do you have any concerns regarding PNM's Application?**

A. Yes. As I will discuss in more detail in the next section of my testimony, it is difficult to assess the reasonableness of the Company's Application because it does not provide a BCA for its proposed investments and does not quantify the expected impacts to DERs, GHGs, or reliability. The lack of quantitative data related to the expected outcomes of the Company's proposed Projects is concerning given the high price tag to ratepayers. I also have concerns with the length of time covered in PNM's Application. A proposal spanning six years brings into question the accuracy of future cost projections.

Furthermore, I recommend several improvements to the Company's proposed EJ Screening Tool in order to maximize net benefits to customers from this investment.

Lastly, while I commend the Company for increasing transparency by including its Guide for PNM's Grid Modernization Implementation Plan ("Implementation Plan") and Distribution Technology Roadmap Document in its Application, I find its proposed public reporting requirements and metrics to be lacking.

## IV. PNM'S APPLICATION DOES NOT JUSTIFY COSTS

### Costs Are Not Supported by Quantitative Analysis

**Q. Does the Company include a BCA of its proposed grid modernization investments?**

A. No, PNM did not conduct a BCA of its proposed investments. The Company indicates it "sought to incorporate cost-effectiveness through its grid modernization planning" by phasing in Project deployment over an 11-year period.[11]

**Q. What is the Company's justification for not conducting a BCA?**

A. In response to Interrogatory NMAG-2-01, the Company provides several reasons for not including a BCA. First, PNM states that the Grid Modernization Statute requires investments to be "reasonable" but does not mandate a BCA.[12]

The Company also claims that utilities in other jurisdictions have learned that BCAs for grid modernization investments have proven to be of limited value. The Company cites an example from Hawaii where the Hawaiian Electric Companies opined that grid modernization investments have interrelated and synergistic functions that makes assessment of cost-effectiveness for each component infeasible and impracticable.[13]

Lastly, PNM cites the U.S. Department of Energy's ("DOE") Modern Distribution Grid Volume IV report that provides guidance on methods for determining the cost-effectiveness or prudence of grid modernization investments. Within this report, DOE

[11] Sanchez, pg. 25, lines 3-8.
[12] PNM Response to NMAG 2-01(a).
[13] *Ibid*.

indicates that investments made to facilitate compliance with standards or policy mandates align with a best-fit, most-reasonable cost standard, not a BCA.[14] The Company states that since the primary driver for its grid modernization investments is to achieve the state's decarbonization goals, that it aligns with the best-fit, most-reasonable cost assessment and not a BCA.[15]

**Q. What is your opinion of the Company's interpretation of the Grid Modernization Statute?**

A. While I agree the Grid Modernization Statute does not explicitly require that grid modernization projects be cost-effective, it does require that costs are reasonable.[16] It is difficult to determine reasonableness without a BCA.

**Q. Please explain how a BCA can assist the Commission and stakeholders in determining whether costs are reasonable.**

A. A BCA provides critical information for assessing reasonableness. First, a BCA requires that the costs and benefits of a proposed grid modernization investment be quantified and monetized as much as possible, which is an important step in determining the reasonableness of costs. Second, a BCA provides information on the projected costs and benefits, allowing for those costs and benefits to be tracked over time using metrics to support the measurement and verification of the effectiveness of the grid modernization investments. Lastly, a BCA can be used to examine alternative projects and investments.

[14] U.S. Department of Energy. 2020. *Modern Distribution Grid: Volume IV: Strategy and Implementation Planning Guidebook*. Prepared by the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability, Office of Energy Policy and Systems Analysis, and the Pacific Northwest National Laboratory. Pgs. 112-114.
[15] PNM Response to NMAG 2-01(a).
[16] The Grid Modernization Act, § 62-8-13(C). NMSA 1978 (2021).

For example, if a proposed investment is not cost-effective it may be possible to find another technology or solution that creates the same desired outcome at a lower cost.

**Q. Do you agree with the Company's statement that utilities in other jurisdictions have learned that BCAs for grid modernization investments have proven to be of limited value?**

A. No, I do not. It is increasingly common for utilities to file BCAs for grid modernization plans. A recent survey by the Brattle Group found that regulators often require utilities to provide a BCA.[17] Specific to New Mexico, Southwestern Public Service Company ("SPS") filed a BCA for its proposed grid modernization investments in Case No. 21-00178-UT and indicated it was consistent with those filed by Xcel Energy's grid modernization proposals in Colorado and Minnesota.[18] In addition, El Paso Electric Company ("EPE") filed a BCA for its proposed advanced metering system in Case No. 21-00269-UT and quantified projected operation and maintenance savings. It should also be noted that PNM previously submitted a BCA associated with deploying AMI meters in Case No. 15-00312-UT.[19] Within this BCA, it monetized operation and maintenance expense savings (O&M) related to meter reading, field services, credit and collections, call center, billing, software maintenance, and other savings.[20]

[17] Sergici, S., Li, M., and Carroll, R. 2018. *Reviewing the Business Case and Cost Recovery for Grid Modernization Investments: Summary of Recent Methods and Projects*. Prepared by The Brattle Group for the National Electrical Manufacturers Association, p. 5
[18] NMPRC. Case No. 21-00178-UT, Direct Testimony of Steven D. Rohlwing, pg. 12.
[19] NMPRC. Recommended Decision. Case No 15-00312. Pg. 1.
[20] *Id*., at pg. 13.

In Minnesota, Xcel Energy conducted BCAs for many of the same grid modernization technologies proposed by PNM including AMI (with a time-of-use pilot), FLISR, Field Area Network ("FAN"), and volt-var optimization. Xcel provided individual BCAs for each technology individually and as a combined portfolio.[21] Likewise, in Massachusetts, Unitil conducted BCAs for a broad suite of grid modernization technologies as part of its plan. The utility also monetized the costs and benefits associated with DER enablement, grid reliability, distribution automation, customer engagement, and workforce development.[22]

I also disagree with the reasoning used by the Hawaiian Electric Companies that it is not practical to conduct a BCA due to the interdependencies and interactive effects between grid modernization investments. A recent study prepared for the U.S. DOE Grid Modernization Laboratory Consortium in 2021 ("GMLC 2021"), provides potential approaches for dealing with such challenges, including conducting BCAs for each grid modernization component in isolation and combining components into bundles to assess how they provide benefits when operating together.[23]

[21] Minnesota Public Utilities Commission. Docket No. E002/GR-19-564. Direct Testimony of Ravikrishna Duggirala. November 1, 2019.
[22] Petition of Fitchburg Gas and Electric Light Company d/b/a Unitil for Approval by the Department of Public Utilities of its Grid Modernization Plan. DPU 15-121. August 19, 2015. pg. 77.
[23] Woolf, T., L. Schwartz, B. Havumaki, D. Bhandari, M. Whited. 2021. *Benefit-Cost Analysis for Utility-Facing Grid Modernization Investments: Trends, Challenges, and Considerations*. Prepared by Lawrence Berkeley National Laboratory and Synapse Energy Economics for the Grid Modernization Laboratory Consortium of the U.S. Department of Energy. Pg. 33.

**Q. Is it possible for PNM to monetize the common benefits of grid modernization?**

A. Yes. The GMLC 2021 study referenced above found it is possible to monetize many of the common benefits of grid modernization investments. This study identified grid modernization plans that quantified and monetized benefits related to reliability, DER integration, distribution operation and maintenance, energy, capacity, GHG emissions, power quality, and resilience.[24]

**Q. What is your opinion of the Company's use of a best-fit, most-reasonable cost assessment method?**

A. I do not support this method. I recommend that PNM be required to submit a BCA as part of its justification for its proposed grid modernization investments. I do not think the best-fit, most-reasonable cost standard should be the primary means of evaluating these Projects.

Utilities have historically used the best-fit, most-reasonable cost standard, also referred to as the least-cost, best-fit ("LCBF") approach, to inform decisions related to traditional distribution investments. While this approach works well for traditional investments that are typically driven by a need to meet safety and reliability requirements, grid modernization investments are more challenging because it is less clear whether a particular grid modernization component is needed.[25] For example, PNM states the primary driver for its grid modernization investments is to meet the carbon-free objectives set by New Mexico; however, it is difficult to determine whether all of the

[24] *Id.*, pg. 21.
[25] *Id*, pgs. 13-14.

proposed grid modernization projects are needed to achieve that outcome. A BCA places the burden on PNM to demonstrate the merits of the proposed investment whereas the LCBF approach begins with an assumption that the investment is necessary.

The use of a BCA also provides the Commission and stakeholders with valuable information beyond that contained in an LCBF. A BCA provides a comparison of the full range of costs and benefits and is more comprehensive than the LCBF method, which focuses only on costs. This is a key distinction and is important if the Commission seeks to maximize the net benefits to ratepayers, rather than just minimizing the costs.

It is also important to note that other organizations have critiqued the evaluation approach contained in DOE's Modern Distribution Grid guide that is cited by PNM to justify its approach. In a recent presentation to the Public Service Commission of Utah, John Shenot of the Regulatory Assistance Project ("RAP") critiqued DOE's approach for evaluating grid modernization investments, indicating that there was too much reliance on the LCBF approach. He noted that the LCBF does not evaluate the benefits of alternatives for meeting the identified grid modernization need, which can lead to the cheapest option but not the one that creates the most net benefits. RAP recommends consideration of a BCA for a wider range of grid modernization investments.[26]

[26] Shenot, J. 2021. "Evaluating Potential Grid Modernization Investments." Regulatory Assistance Project. Presentation at the Utah PSC Grid Modernization Workshop. December 9, 2021. Available at: https://www.raponline.org/wp-content/uploads/2021/12/rap_shenot_utah_grid-mod-investments_eval_pt2_2021_dec_09.pdf.

**Outcomes Are Not Sufficiently Linked to Proposed Investments**

**Q In addition to the lack of BCA do you have other concerns with the Company's proposed investments?**

A. Yes. The Company does not sufficiently quantify the expected outcomes from its proposed Projects. In fact, the only quantified outcome included in PNM's Application is the projected savings associated with reduced meter reading operations from the installation of AMI meters.[27] The Company does not attempt to quantify the other expected outcomes from its proposed Projects, including improved reliability, improved resilience, increased DER deployment, and job creation.[28]

**Q. Does the Company project the estimated increase in DERs from its proposed investments?**

A. No, it does not. Instead, the Company provides vague claims that its proposed Projects will "safely and reliably unlock the full potential of DER integration."[29] This is problematic as the Company states there is limited hosting capacity on certain distribution grid circuits, which in turn limits the ability to interconnect additional solar photovoltaic systems.[30] In response to interrogatories filed by Western Resource Advocates, the Company indicates that 16 feeders are at or above solar interconnection capacity and that 276 solar projects are on hold waiting for system upgrades.[31]

[27] Direct Testimony of Eric C. Morgan, at pg. 8.
[28] Direct Testimony of Laura E. Sanchez, at pg. 24 and PNM Response to NMAG 2-02.
[29] PNM Response to NMAG 3-09(a).
[30] PNM Exhibit LES-2, pg. 15.
[31] PNM Response to WRA 1-04.

While the Company states proposed Projects like volt-var management and ADMS can address potential limitations on hosting capacity,[32] it fails to explain how these investments will directly address the system upgrade issues causing the interconnection backlog. The Company does not provide details on what types of system upgrades are needed to increase capacity on these 16 feeders and if investments other than volt-var management and ADMS can achieve this outcome at a lower cost.

**Q. Does the Company indicate what DER programs will be enabled by its proposed investments?**

A. No, it does not. A primary justification for DERMS is that it will interface and manage customer DER programs. However, when asked what DER programs PMN intends to offer after the adoption of AMI and DERMS, the Company states it has not yet developed DER-related programs. The Company instead asserts that its grid modernization investments will provide more data to PNM and its customers to "choose or develop programs that are beneficial to the customer or the grid."[33] Based on this response it is premature to approve costs associated with DERMS. Given the fact the Company does not propose to implement DERMS until Year 4 of its Implementation Plan, it would be more prudent to require the Company to first work with stakeholders to develop potential DER programs and then file a proposal to the Commission for the approval of DERMS as part of a future grid modernization filing.

[32] *Id*., at pg. 12.
[33] PNM Response to WRA 1-05.

**Q. Does the Company project the estimated reductions in GHG emissions and other air pollutants from its proposed Projects?**

A. No, it does not. While the Company claims the primary goal of its Application is to achieve New Mexico's decarbonization mandates, PNM has not calculated or estimated the amount of GHG reductions that will result from its proposed grid modernization investments.[34] The Company instead states that its Application will result in a general reduction in GHG emissions.[35] The primary ways that grid modernization investments will reduce GHG emissions is through the DERs that are enabled by the investments and avoidance of vehicle miles traveled from avoided meter reads. However, as noted above, PNM has not identified the extent to which its grid modernization investments will increase the DERs on its system nor has it estimated vehicle emission reductions.

**Q. Did the Company quantify reliability benefits from its proposed Projects?**

A. No, it does not. Within its Application, the Company ties several Projects to the outcome of improved distribution system reliability. For example, the Company asserts that distribution automation will enable circuit reconfiguration to address failure conditions on the distribution system and FLISR will leverage the ability of the distribution automation devices to rapidly address customer outages and restore power.[36]

The Company also asserts that while distribution automation is the most significant grid-facing investment in PNM's Application, it has similarly significant benefits.[37] However,

[34] PNM Response to NMAG 2-53.
[35] PNM Response to NMAG 2-53.
[36] Direct Testimony of Omni B. Warner, pg. 38.
[37] PNM Exhibit LES-3.

the Company does not estimate projected improvements to System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency Index ("SAIFI") resulting from these investments. It is also unclear what the incremental benefit of these investments will be in relation to the proposed investments in various reliability projects related to upgrading its feeders and substations in its recent general rate case to improve reliability in its distribution system.[38] In this case, PNM intends to target its worst-performing feeders for distribution upgrades, calling into question how much the proposed grid modernization investments are likely to improve reliability.[39]

The Company also fails to estimate the monetary value of increased reliability benefits to customers. This could be accomplished through the Interruption Cost Estimator ("ICE"), developed by Lawrence Berkeley National Laboratory and Nexant, Inc., which aims to estimate the benefits associated with reduced interruptions (also referred to as the "value of lost load" or "VoLL") in the United States.[40]

Lastly, the Company makes contradictory statements regarding when improvements to reliability can be expected. Within its Application the Company states that distribution automation investments will provide immediate improvements to PNM's distribution system reliability and resilience.[41] Yet, in response to NMAG Interrogatory 2-03, the

[38] Direct Testimony of Omni B. Warner, pg. 23, lines 5-6.
[39] PNM Response to NMAG 2-36(b).
[40] Sullivan, Michael J., Josh Schellenberg, and Marshall Blundell, Nexant, Inc. Updated Value of Service Reliability Estimates for Electric Utility Customers in the United States. January 2015. Available at https://eta-publications.lbl.gov/sites/default/files/lbnl-6941e.pdf
[41] PNM Exhibit LES-3.

Company states that "initially, SAIDI and SAIFI may not improve as PNM implements grid modernization."[42]

**Q. Do you have any other concerns related to PNM's proposed investments to support reliability?**

A. Yes. The Company plans to install FLISR on all its distribution feeders but has not justified this level of investment. According to reliability indices reported to the Commission, on average, customers have electric service more than over 99.98 percent of the time.[43] Installing FLISR on feeders experiencing high reliability is not a cost-effective use of ratepayer funds as the incremental reliability gains would be minimal.

The Company should target FLISR to only the worst-performing feeders or those that are most susceptible to outages from storm-related events. PNM has already identified the top 20 worst-performing feeders in its system over a five-year period (2018–2022) and on a five-year aggregated basis.[44] A more limited scope of FLISR deployment will result in more cost-effective reliability improvements.

[42] PNM Response to NMAG 2-03(b).
[43] NMPRC Reliability Indices. Available at: https://www.nm-prc.org/utilities/reliability-indices/.
[44] PNM Response to NMAG 2-36.

**Application Should Be Limited to Four Years**

**Q. How does the Company propose to sequence its grid modernization Projects over the course of its Implementation Plan?**

A. The Company proposes a phased-in approach to its Projects over an 11-year period. Its instant Application in this case requests funding for an initial six-year period, which is followed by anticipated future investments in Years 7–11.[45]

**Q. Do you have concerns with this approach?**

A. Yes. While I appreciate the fact the Company sought to implement a phased approach to its Project deployment over an 11-year period, I find the initial six-year period included in the Application to be too long.

First, I question the accuracy of projected costs and benefits six years into the future. The Company seems to acknowledge this concern, indicating that "PNM's costs estimates for Years 4–6 necessarily are less certain than the costs for the AMI[-]related projects that are in the focus of Years 1–3."[46] While the Company's proposed annual review and reconciliation process would allow for PNM to provide certainty for cost estimates for Projects planned for deployment in the following rate year, it does not consider whether the proposed need for the Projects and associated benefits have changed.

In addition, as noted in the previous section, the Company failed to demonstrate the immediate need of many of its proposed Projects occurring in Years 4–7, including ADMS, DERMS, Distribution Automation, and FLISR.

[45] PNM Exhibit LES-2, pg. 9.
[46] Direct Testimony of Laura E. Sanchez, pg. 22, lines 14-16.

**Q. What is your recommendation?**

A. I recommend that the Company further segment its proposed investments into shorter time periods. For this initial Application, I recommend a four-year term to account for the start-up time required in Year 1. Following this Application, I recommend that the Company move to a three-year filing term. Having more frequent plans will help to ensure better accuracy of the projected costs and benefits of the grid modernization investments. This not only relates to having more accurate projections of technology costs; it also allows for a review of distribution needs closer to the need for and installation of the proposed investments. It is possible that customer needs and distribution system needs four to six years from now look differently than they do today and may call for a different priority for the timing of certain grid modernization investments.

More frequent filings can also serve as an opportunity to review and evaluate performance of the previously installed grid modernization technologies through review of tracking metrics, utility spending, and customer engagement. These filings should be coordinated with the Company's longer-term Implementation Plan and Distribution Technology Roadmap Document.

## V. NEEDED IMPROVEMENTS TO ANNUAL REPORTS AND METRICS

**Q. Please describe PNM's proposed annual review process.**

A. PNM proposes to make annual review and reconciliation filings for the Grid Mod Rider. For each annual review and reconciliation filing, PNM proposes to file updated

forecasted costs for the following rate year based on the best available information and to true up forecasted costs from the prior year to the actual costs incurred.[47]

The Company also proposes to report on a set of Grid Modernization Evaluation Metrics ("Metrics") as part of its annual review filing. PNM proposes metrics for AMI and distribution automation technology.[48]

**Q. Do you find this annual review process to be sufficient?**

A. I do not. I recommend several improvements to the content of the annual review filing and the metrics.

**Q. What additional information should be included in the annual review filing?**

A. I recommend that the annual review filing include information related to current spending compared to budgets, technology implementation status, and an explanation of any variances to the planned deployment timeline.

PNM should also provide an update on its progress towards the development and implementation of customer-facing programs, marketing and communications activities, and stakeholder engagement. For example, PNM indicates that many of its proposed customer-facing programs will take time to implement: PNM mentions that the activities related to the deployment of the Customer Energy Management Platform will extend until Year 3 of the Implementation Plan[49] and future customer programs like pre-pay and

[47] *Id.*, pg. 22.
[48] *Id.*, pg. 23.
[49] PNM Response to NMAG 2-16.

the pre-pay program specifics will be included in separate applications or future rate cases.[50] In addition, PNM will need to develop a customer program to effectively enable HAN Wi-Fi capability; this would include information on how to initiate the connection, an online self-help guide, and call center support.[51] It is important that the Company be held accountable for following through with these proposed customer offerings. The AMI meters alone will not provide sufficient benefits to customers and PNM needs to develop opportunities for customers to directly interact with this technology in ways that help them manage energy use and save money. The annual review filing provides an opportunity to hold PNM accountable for these activities.

The Company should also provide a status update of customer-facing programs utilizing AMI and other grid modernization technologies that are developed outside of its Application. This should include an update on the deployment of time-varying rates or other new rate designs in its annual filing. For example, the Company should report on the implementation of PNM's proposed Time-of-Day ("TOD") rate pilot proposed in Case No. 222-00270-UT, if approved. The Company should discuss how new rates and price signals are being integrated with AMI and the Customer Energy Management Platform and provide details related to customer enrollment. In addition, the Company should summarize its progress towards the development of new energy efficiency and demand response programs that utilize AMI.

[50] PNM Response to NMAG 2-18(a).
[51] Direct Testimony of Jonathan C. Hawkins, pg. 10.

I also recommend that PNM include a discussion of the development of the third-party marketplace offerings being enabled by its grid modernization investments. This could include the development of technologies that interact with the HAN or offerings by third parties utilizing Green Button Connect.

**Q. What is your recommendation for additional metrics?**

A. I recommend that PNM include several additional metrics for AMI that align with the suite of metrics agreed to in the Comprehensive Stipulation for EPE's grid modernization proposal in Case No. 21-00269-UT.[52] I also recommend that PNM adopt additional metrics related the Company's other proposed Projects.

A robust set of metrics is important for several reasons. Metrics are an important means by which PNM can be held accountable for taking actions and achieving the goals it described in its Application. Metrics are also critical to evaluating the success of the Company's Projects in meeting stated objectives and to inform future proposals.

**Q. What additional metrics do you recommend for AMI?**

A. I recommend that the Company adopt the full set of metrics agreed to in Attachment D of the Comprehensive Stipulation in EPE's grid modernization proposal in Case No. 21-00269-UT. While PNM includes many of these metrics, several key items are missing.

I recommend the following metrics in addition to those already proposed by the Company:

[52] NMPRC Case No. 21-00269-UT. Comprehensive Stipulation. April 29, 2022. Attachment D.

- Deployment phase: (1) costs associated with customers opting out of AMI installation, and (2) number of complaints regarding AMI installation.

- Post-deployment phase: (1) percentage of customers with an advanced meter that have made a complaint of inaccurate meter readings, (2) number of customers with an advanced meter with an active web portal account, (3) meter accuracy test percentage, (4) percentage of interval reads received, (5) changes to SAIDI and SAIFI (pre vs post AMI deployment), (6) number of avoided meter purchases, (7) changes to theft and meter tampering (pre- vs. post-AMI deployment), (8) changes to uncollectables and bad debt (pre- vs. post-AMI deployment, (9) number of AMI meters by customer class supporting customer HAN devices, (10) number and percentage of customers by customer class using Green Button Connect My Data, (11) number and percentage of customers by customer class using Green Button Download My Data, (12) percentage of customers aware of AMI, and (13) further information obtained from customer satisfaction surveys including customer understanding of AMI technology and benefits, and percentage of low-income customers aware of AMI.

I include a full list of proposed reporting metrics for AMI in Attachment B.

**Q. What metrics to you recommend be tracked for PNM's other proposed Projects?**

A. Within its Application, the Company lists a range of expected benefits from its Projects, which I include in Table 1 below.[53] The Company should track these benefits where feasible. I provide a set of recommended metrics to track the Company's progress towards achievement of the expected benefits from grid modernization. This approach is similar to the Smart Grid Advanced Metering Annual Implementation Progress Report as filed by Commonwealth Edison in Illinois.[54]

[53] Direct Testimony of Laura E. Sanchez, pg. 24, lines 8-18.
[54] Commonwealth Edison Company. April 2021. Smart Grid Advanced Metering Annual Implementation Progress Report. Available at: https://www.icc.illinois.gov/industry-reports/comed-advanced-metering-infrastructure.

## VI. ENHANCEMENTS TO THE EJ SCREENING TOOL

**Q. What is your understanding of PNM's proposed EJ Screening Tool?**

A. The Company's proposed EJ Screening Tool will be a mapping application that layers state and federal demographic data over a map of PNM's service territory. It is intended to function as a "heat map" that will reveal where "various data criteria merge and provide guidance as to where known [environmental justice] disadvantages are the most concentrated."[55] My understanding is that the tool will combine data including customers' income, race, language, and other possible attributes in a very similar manner to other existing environmental justice tools, such as California's CalEnviroScreen and the U.S. Environmental Protection Agency's tool EJSCREEN.[56]

**Q. How does PNM plan to use the EJ Screening Tool?**

A. The Company plans to use the EJ Screening Tool's data to identify priority areas for AMI deployment and to inform PNM's strategy for customer engagement.[57] Specifically, PNM will use the tool to identify disadvantaged communities and to use that information as a proxy for areas that "would most benefit from the [grid modernization] effort."[58] Those areas will be selected to receive AMI before other areas and for additional community engagement efforts.

[55] PNM Response NMAG 2-04.
[56] For more information about CalEnviroScreen, see https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40. For more information about EPA's EJSCREEN tool, see https://www.epa.gov/ejscreen.
[57] PNM Response to NMAG 2-06.
[58] PNM Response to NMAG 2-05.

The EJ Screening Tool will also be used to inform "analysis and decision-making as to how to engage with a community."[59] That engagement will include inviting community participation during the process of planning where to deploy AMI first. It will also include field canvassing, which refers to PNM employees walking through communities to observe languages on signs and ground-truth the locations of schools, public facilities, parks, and places of worship. Field canvassing will not, according to PNM, generally involve visiting peoples' homes.[60] Lastly, data on the location of disadvantaged communities will be used to determine where to "apply appropriate mitigation measures" to reduce the impacts of grid modernization projects.[61] The mitigation process will focus on finding "technical, financial, and administrative ways to maximize benefits […] and minimize costs."[62]

**Q. What is your overall opinion of PNM's proposed EJ Screening Tool?**

A. I agree with the Company that grid modernization provides an opportunity to drive benefits to customers affected by systemic disadvantage through the lens of environmental justice. I commend PNM for taking a data-driven approach to seizing this opportunity and for joining other states such as California, Michigan, New York, Washington, and Massachusetts, as well as the federal government, in the growing effort to use mapping tools to identify priority areas for investment to alleviate environmental

[59] PNM Response to NMAG 2-04.
[60] PNM Response to NMAG 3-06.
[61] PNM Response to NMAG 2-04.
[62] PNM response to NMAG 2-38.

injustice.[63] I do, however, have significant concerns about the design of the EJ Screening Tool and the extent to which PNM's current plan will bring unique, additional value to disadvantaged communities.

**Q. What are your concerns with the design of the EJ Screening Tool?**

A. I am concerned about the lack of information provided by PNM regarding the data feeding into the tool, the absence of a clear definition of disadvantaged communities, and the lack of a justification for why PNM needs to design its own tool rather than use an existing tool.

PNM has stated it will use a blend of state and federal data to build the EJ Screening Tool, but it has not provided specific sources or a complete list of demographic criteria for public review.[64] This is particularly concerning because PNM plans to use these demographic indicators as a proxy for areas most in need of grid modernization, a methodology the Company has yet to provide data to support. It is unknown whether PNM will also layer data specific to its service performance to directly inform the need for grid modernization, such as outage information. It is crucial that data specific to system performance also be used to prioritize grid modernization investments.

[63] Solomon, M. "Without mapping tools, environmental justice investments could be just a shot in the dark." February 16, 2022. Accessed January 19, 2023. Available at https://www.utilitydive.com/news/without-mapping-tools-environmental-justice-investments-could-be-just-a-sh/618593/.
Massachusetts 2020 Environmental Justice populations, accessed January 19, 2023. Available at https://mass-eoeea.maps.arcgis.com/apps/webappviewer/index.html?id=1d6f63e7762a48e5930de84ed4849212

[64] PNM provides a list of potential sources in the sample EJ Screening process provides in Les-5, but this example is not a comprehensive source of all data sources that may be included in the EJ Tool.

Without a clear definition of a disadvantaged community, PNM's plan to focus attention on areas where environmental justice criteria coincide leaves too much open to interpretation and subjectivity. It is unclear how the Company will weigh environmental justice indicators against one another, and which will be given priority. Without a clear definition of disadvantaged communities, is it more difficult for the public to review PNM's selection of where to focus attention.

Lastly, PNM has not provided an argument for why it needs to spend ratepayer funds to construct its own tool rather than using a free one that already exists. Multiple environmental-justice-specific mapping tools exist and are available for no cost, such as CalEnviroScreen and EJScreen, which allow users to map environmental, socioeconomic, and supplemental environmental justice indices. In fact, PNM Exhibit LES-5 details a sample environmental justice review process and cites several of these sources including EJScreen but does not clarify how these will be used to construct the EJ Screening Tool.[65]

**Q. What are your concerns with how PNM plans to use the data provided by the EJ Screening Tool?**

A. I am concerned that the purported benefits PNM ascribes to the data provided by the EJ Screening Tool are unclear and represent the minimum that should be provided to all ratepayers, not a special benefit for disadvantaged communities.

[65] PNM Exhibit LES-5.

For example, PNM provides no clear evidence that accelerated AMI deployment will deliver significant benefits to any area, let alone help meet the particular "critical needs" in disadvantaged communities.[66] Early deployment will not, for example, guarantee improved electric service. As PNM has acknowledged, improved SAIFI and SAIDI, "initially may not materialize."[67] Early deployment will also not coincide with full functionality of customer-facing AMI programs. For example, pre-pay bill capability will not be available until Year 3 of the Implementation Plan, and real-time energy data will not be available to customers who receive AMI until they connect their wi-fi router to the HAN, which at the earliest will be available in Year 4 of the Implementation Plan.[68] Even at that time, this functionality will be permanently out of reach for low-income customers who do not have wi-fi. For early recipients of AMI, these delays means that a new advanced meter will provide no more actionable information on a daily basis than their old meter. Lastly, PNM is not proposing any new demand response or DER programs as part of its grid modernization plan, so early AMI does not unlock new energy-saving program eligibility.[69]

**Q. What is your recommendation for improving the design of the EJ Screening Tool?**

A. I recommend that PNM make the following improvements to the design of the EJ Tool:

[66] PNM response to NMAG 2-05.
[67] PNM response to NMAG 2-03.
[68] PNM response to NMAG 2-18 and 2-22.
[69] PNM response to NMAG 2-39.

1. **Evaluate existing environmental justice mapping tools for applicability**: prior to any additional investment in a PNM-built tool, the Company should clearly explain why existing environmental justice mapping tools are inadequate.

2. **Publicly release a complete list of data sources:** this will ensure the credibility of the tool by providing transparency. As new data becomes available, the public can review whether sources are up to date.

3. **Include system performance data as a data source:** in addition to using demographic data as a proxy for grid modernization need, performance data such as SAIDI and SAIFI should also be layered in to ensure that areas most in need of system upgrades are prioritized.

4. **Adopt a clear definition of disadvantaged communities**: PNM's methodology for prioritizing some areas over others should be made clear. This should include adopting a definition of disadvantaged communities that is transparent and aligned with New Mexico state law and the goals of the Commission.

5. **Design the tool to evolve over time:** if the Company determines it is necessary to build its own tool, I recommend building a platform that can integrate with PNM's other mapping applications and evolve over time based on future data-sharing needs. For example, the EJ Screening Tool should be designed to merge with PNM's outage map to provide a single mapping resource to ratepayers.[70] It

[70] For PNM's outage map, see https://www.pnm.com/web/pnm.com/search-an-outage.

should also be designed to eventually integrate with hosting capacity data, which is already provided in GIS-map format in several other states.[71]

**Q. What is your recommendation for improving the use of the EJ Screening Tool?**

A. I recommend that PNM makes the following improvements to the proposed use of the EJ Tool:

1. **Create a publicly available, online tool:** This is important for transparency and public engagement. An online, publicly available tool also provides PNM an opportunity to add links that direct ratepayers to resources for further engagement. Publicly sharing the EJ Screening Tool would follow the example of virtually every other jurisdiction that uses maps to study environmental justice impacts, including California (CalEnviroScreen), the EPA (EJSCREEN), Michigan (MiEJScreen), New York (PEJA), and Washington (Environmental Health Disparities Map).[72]

2. **Use the tool to prioritize programs specifically designed to benefit disadvantaged communities:** PNM should use the EJ Screening Tool to direct funding for distributed generation and energy-saving technologies that integrate

[71] See, for example, New York's hosting capacity maps by utility available at https://www3.dps.ny.gov/W/PSCWeb.nsf/All/6143542BD0775DEC85257FF10056479C. See also New Jersey hosting capacity maps available at https://www.pepco.com/SmartEnergy/MyGreenPowerConnection/Pages /HostingCapacityMap.aspx.

[72] For links to these maps, see CalEviroScreen (https://oehha.ca.gov/calenviroscreen), EJScreen (https://www.epa.gov/ejscreen), MiEJScreen (https://www.michigan.gov/egle/maps-data/miejscreen), New York Potential Environmental Justice Areas (PEJA) (https://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1273), and Washington health disparities map (https://doh.wa.gov/data-and-statistical-reports/washington-tracking-network-wtn/washington-environmental-health-disparities-map)

with AMI and enable energy efficiency and demand response programs for low-income customers. This type of program is currently implemented by the California Public Utilities Commission (CPUC), which used the CalEnviroScreen mapping tool to structure its "Solar on Multifamily Affordable Housing Program," which will award up to $100 million per year over 10 years for solar projects in disadvantaged communities.[73] The Cape Light Compact in Massachusetts also recently earned approval for a program that will install energy-saving technologies for customers based on income thresholds and will reduce energy usage and save money. The program, called the Cape & Vineyard Electrification Offering ("CVEO"), will provide solar PV systems, heat pumps, and storage technology for demand response to low- and moderate-income customer at little to no cost.[74] PNM's EJ Screening Tool data can be used to identify and prioritize where PNM can pilot similar programs that allocate additional investments to disadvantaged areas.

3. **Utilize the EJ Screening Tool to track outcomes:** Supplementing the EJ Screening Tool's demographic data with an ongoing feed of grid modernization performance data will allow PNM to track the progress of grid modernization and changes to system performance across communities. This type of ongoing

[73] For this program, disadvantaged communities are defined as the 25 percent most disadvantaged census tracts on the current and previous version of CalEnviroScreen, along with the 22 census tracts that have the 5 percent highest pollution score but not socioeconomic data. See https://caleja.org/what-we-do/energyequity/somah/

[74] "Cape & Vineyard Electrification Offering Overview." Massachusetts Department of Public Utilities Docket DPU 20-40. Accessed January 19, 2023. Available at, https://www.capelightcompact.org/wp-content/uploads/2020/07/CVEO-General-Talking-Points-AAE1_DG1.pdf.

evaluation is necessary to ensure an equitable distribution of benefits as grid modernization continues. This is the way in which environmental justice data is used in other jurisdictions. For example, Washington State's King County has used the Washington Environmental Health Disparities map to develop a six-year Equity and Social Justice Strategic Plan and will use the mapping tool to measure progress over time.[75] Similarly, CPUC uses CalEnviroScreen to specifically evaluate the benefit of utility transportation electrification projects on disadvantaged communities.[76]

## VII. RECOMMENDED PROJECTS FOR COMMISSION APPROVAL

**Q. Given the critical flaws you describe in the Company's Application, should it be approved by the Commission?**

A. I find that it is premature to recommend approval of the full list of Projects included in the Company's Application. However, I recommend that the Commission approve a select list of Projects, contingent upon the Company addressing the critical flaws in its Application.

**Q. Which Projects should the Commission approve with conditions?**

A. The NMAG has been generally supportive of AMI functionality and its associated customer-facing investments, including the customer energy management portal, Green

[75] "Environmental Justice Task Force Recommendations for Prioritizing EJ in Washington State Government, Fall 2020." Available at https://www.environmentallawandpolicy.com/wp-content/uploads/sites/452/2021/05/3.-Washignton-EJ-Taskforce-Recommendations-Report.pdf.

[76] "California Investor-Owned utility Transportation Electrification Priority Review Projects Final Report." April 22, 2021. Available at https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/sb-350-te/california-te-prp-final-evaluation-report-presentation.pdf.

Button Connect, and HAN. AMI, when paired with tools to help customers manage their energy usage, can provide direct economic benefits to customers.

Specific to the Company's Application, I support the approval of the following Projects if the Company meets certain conditions. These Projects include AMI-related investments including meters, NAN, Head End and MDMS; the Customer Energy Management Platform and applications like Green Button Connect; supporting services including WAN, Cybersecurity, Data and Network Management, and the Data Warehouse; HAN; Customer Analytics; and the EJ Tool.

**Q. What critical flaws should the Company address in order to receive Commission Approval?**

A. I recommend that the Commission approve this list of Projects contingent on the Company taking the following actions:

1. The Company files a BCA within six months of an order being issued in this case that monetizes the benefits associated with the Projects to the extent possible. Where benefits cannot be monetized, the Company should quantify expected impacts or address them qualitatively.

2. The Company includes the additional recommended content described in this testimony within its annual review filing.

3. The Company includes the reporting metrics included in Attachment B related to AMI within its annual review filing.

4. The Company files an updated proposal for an EJ Screening Tool as part of its first annual review filing.

**Q. What is your recommendation for the other Projects proposed in the Company's Application?**

A. I recommend that the Commission reject the other Projects and direct the Company to consider these Projects for inclusion in a future grid modernization filing. While these technologies appear promising, the Company needs to provide more justification for their implementation in order to allow for a determination of reasonableness. As discussed in previous sections of this testimony, the Company does not attempt to quantify changes to reliability, GHG reductions, resilience, and increased DER deployment.[77] Several investments also appear to be premature. This includes DERMS where the Company has yet to develop DER-related programs. The Company also failed to demonstrate how Projects like volt-var management and ADMS can address potential limitations on hosting capacity,[78] and it does not explain how these investments will directly address the system upgrade needs causing the interconnection backlog. It also does not appear that FLISR will be deployed in the most cost-effective manner because it is applied too broadly and is not limited to only the worst-performing feeders.

I recommend that the Commission require PNM to address these deficiencies in its future grid modernization applications.

[77] Direct Testimony of Laura E. Sanchez, at pg. 24 and PNM Response to NMAG 2-02.
[78] *Id*., at pg. 12.

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

A. Yes, it does.

**BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION**

| | | |
|---|---|---|
| IN THE MATTER OF PUBLIC SERVICE COMPANY OF NEW MEXICO'S APPLICATION FOR AUTHORIZATION TO IMPLEMENT GRID MODERNIZATION COMPONENTS THAT INCLUDE ADVANCED METERING INFRASTRUCTURE AND APPLICATION TO RECOVER THE ASSOCIATED COSTS THROUGH A RIDER, ISSUANCE OF RELATED ACCOUNTING ORDERS, AND OTHER ASSOCIATED RELIEF. | ) | CASE NO. 22-00058-UT |
| PUBLIC SERVICE COMPANY OF NEW MEXICO<br><br>APPLICANT. | ) | |

AFFIRMATION (IN LIEU OF AFFIDAVIT)
OF COURTNEY LANE

In compliance with the *Temporary NMPRC Electronic Filing Policy of March 20, 2020*, and under Rule 1-011(B) NMRA of the New Mexico Rules of Procedures for the District Courts, I, Courtney Lane, hereby file this testimony on behalf of the New Mexico Attorney General and state as follows:

I hereby affirm in writing under penalty of perjury under the laws of the State of New Mexico that the statements contained in the foregoing *Direct Testimony of Courtney Lane on Behalf of the Office of Attorney General* are true and correct to the best of my knowledge, information, and belief.

I further declare under penalty of perjury that the foregoing is true and correct.

Executed on January 27, 2023.

/s/ Courtney Lane__
Courtney Lane (electronically signed)
Expert Witness on Behalf of the New Mexico Attorney General
485 Massachusetts Avenue #3
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**Courtney Lane,** Principal Associate

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## PROFESSIONAL EXPERIENCE

**Synapse Energy Economics, Inc.**, Cambridge, MA. *Principal Associate*, September 2022 – Present, *Senior Associate,* November 2019 – September 2022.

Provides consulting and researching services on a wide range of issues related to the electric industry including performance-based regulation, benefit-cost assessment, rate and bill impacts, and assessment of distributed energy resource policies and programs. Develops expert witness testimony in public utility commission proceedings.

**National Grid**, Waltham, MA. *Growth Management Lead*, *New England,* May 2019 – November 2019, *Lead Analyst for Rhode Island Policy and Evaluation,* June 2013 – April 2019.

- Portfolio management of product verticals including energy efficiency, demand response, solar, storage, distributed gas resources, and electric transportation, to optimize growth and customer offerings.
- Strategy lead for the Performance Incentive Mechanisms (PIMs) working group.
- Worked with internal and external stakeholders and led the development of National Grid's Annual and Three-Year Energy Efficiency Plans and System Reliability Procurement Plans for the state of Rhode Island.
- Represented energy efficiency and demand response within the company at various Rhode Island grid modernization proceedings.
- Led the Rhode Island Energy Efficiency Collaborative; a group focused on reaching consensuses regarding energy efficiency plans and policy issues for demand-side resources in Rhode Island.
- Managed evaluations of National Grid's residential energy efficiency programs in Rhode Island, and benefit-cost models to screen energy efficiency measures.

**Citizens for Pennsylvania's Future**, Philadelphia, PA. *Senior Energy Policy Analyst*, 2005–2013.

- Played a vital role in several legislative victories in Pennsylvania, including passage of energy conservation legislation that requires utilities to reduce overall and peak demand for electricity (2009); passage of the $650 million Alternative Energy Investment Act (2008); and important amendments to the Alternative Energy Portfolio Standards law vital to the development of solar energy in Pennsylvania (2007).
- Performed market research and industry investigation on emerging energy resources including wind, solar, energy efficiency and demand response.
- Planned, facilitated and participated in wind energy advocates training meetings, annual partners retreat with members of wind and solar companies, and the PennFuture annual clean energy conference.

**Northeast Energy Efficiency Partnerships, Inc.**, Lexington, MA. *Research and Policy Analyst,* 2004–2005.

- Drafted comments and testimony on various state regulatory and legislative actions pertaining to energy efficiency.
- Tracked energy efficiency initiatives set forth in various state climate change action plans, and federal and state energy regulatory developments and requirements.
- Participated in Regional Greenhouse Gas Initiative (RGGI) stakeholder meetings.
- Analyzed cost-effectiveness of various initiatives within the organization.

**Massachusetts Executive Office of Environmental Affairs,** Boston, MA. *Field Projects Extern,* 2003.

- Worked for the Director of Water and Watersheds at the EOEA, examining the risks and benefits of different groundwater recharge techniques and policies throughout the U.S.
- Presented a final report to both Sea Change and the EOEA with findings and policy recommendations for the state.

**EnviroBusiness, Inc.,** Cambridge, MA. *Environmental Scientist,* July 2000 – May 2001

- Conducted pre-acquisition assessments/due diligence assignments for properties throughout New England. Environmental assessments included an analysis of historic properties, wetlands, endangered species habitat, floodplains, and other areas of environmental concern and the possible impacts of cellular installations on these sensitive areas.

## EDUCATION

**Tufts University**, Medford, MA
Master of Arts; Environmental Policy and Planning, 2004.

**Colgate University**, Hamilton, NY
Bachelor of Arts; Environmental Geography, 2000, *cum laude.*

## PUBLICATIONS

Fortman, N., J. Michals, T. Woolf, C. Lane. 2022. *Benefit-Cost Analysis: What it Can and Cannot Tell us About Distributional Equity of DERs*. E4TheFuture, Synapse Energy Economics. Presented at the 2022 ACEEE Summer Study of Energy Efficiency in Buildings.

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## TESTIMONY

**New Mexico Public Regulation Commission (Case No. 21-00178-UT):** Direct Testimony of Courtney Lane regarding the application of Southwestern Public Service Company's request for authorization to implement grid modernization. On behalf of the New Mexico Office of Attorney General. October 11, 2022.

**Public Service Commission of Wisconsin (Docket 5-UR-110):** Direct and Surrebuttal Testimony of Courtney Lane regarding the Joint Application of Wisconsin Electric Power Company and Wisconsin Gas, LLC for Authority to Adjust Electric, Natural Gas, and Steam Rates. On behalf of Clean Wisconsin. September 9, 2022 and October 3, 2022.

**New Mexico Public Regulation Commission (Case No. 21-00269-UT):** Testimony of Courtney Lane in Support of Unopposed Comprehensive Stipulation regarding the Application of El Paso Electric Company for Approval of a Grid Modernization Project to Implement an Advanced Metering System. On behalf of the New Mexico Office of Attorney General. May 11, 2022.

**Public Utilities Commission of New Hampshire (Docket No. DG 21-104):** Direct testimony of Courtney Lane and Ben Havumaki regarding Northern Utilities, Inc.'s request for change in rates. On behalf of the Office of Consumer Advocate. April 1, 2022.

**Public Utilities Commission of New Hampshire (Docket No. DE 20-092):** Direct testimony of Courtney Lane and Danielle Goldberg regarding the 2021-2023 Triennial Energy Efficiency Plan. On behalf of the Office of Consumer Advocate. April 19, 2022.

**Maryland Public Service Commission (Docket No. 9655)**: Direct and Surrebuttal Testimony of Courtney Lane regarding the application of Potomac Electric Company for a Multi-Year Plan and Performance

Incentive Mechanisms. On behalf of the Maryland Office of People's Counsel. March 3, 2021 and April 20, 2021.

**Pennsylvania Public Utility Commission (Docket No. M-2020-3020830):** Direct testimony of Alice Napoleon and Courtney Lane regarding PECO Energy Company's proposed Act 129 Phase IV Energy Efficiency and Conservation Plan. On behalf of the Natural Resources Defense Council. January 14, 2021.

**Maryland Public Service Commission (Case No. 9645)**: Direct and Surrebuttal Testimony of Courtney Lane regarding the Application of Baltimore Gas and Electric Company for an Electric and Gas Multi-Year Plan. On behalf of the Maryland Office of People's Counsel. August 14, 2020 and October 7, 2020.

**Maryland Public Service Commission (Case No. 9619):** Comments of Maryland Office of People's Counsel Regarding Energy Storage Pilot Program Applications, attached Synapse Energy Economics Report. June 23, 2020.

**Public Service Commission of the District of Columbia (Formal Case No. 1156)**: Direct, Rebuttal, Surrebuttal, and Supplemental Testimony of Courtney Lane regarding the Application of Potomac Electric Power Company for Authority to Implement a Multiyear Rate Plan for Electric Distribution Service in the District of Columbia. On behalf of the District of Columbia Government. March 6, 2020, April 8, 2020, June 1, 2020, and July 27, 2020.

**Rhode Island Public Utilities Commission (Docket No. 4888)**: Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2019 Energy Efficiency Program (EEP). On behalf of National Grid. December 11, 2018.

**Rhode Island Public Utilities Commission (Docket No. 4889)**: Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2019 System Reliability Procurement Report (SRP). On behalf of National Grid. December 10, 2018.

**Rhode Island Public Utilities Commission (Docket No. 4755)**: Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2018 Energy Efficiency Program (EEP). On behalf of National Grid. December 13, 2017.

**Rhode Island Public Utilities Commission (Docket No. 4684)**: Oral testimony of Courtney Lane regarding the RI Energy Efficiency and Resource Management Council (EERMC) Proposed Energy Efficiency Savings Targets for National Grid's Energy Efficiency and System Reliability Procurement for the Period 2018-2020 Pursuant to §39-1-27.7. On behalf of National Grid. March 7, 2017.

**Rhode Island Public Utilities Commission (Docket No. 4684)**: Oral testimony of Courtney Lane regarding National Grid's 2018-2020 Energy Efficiency and System Reliability Procurement Plan. On behalf of National Grid. October 25, 2017.

**Rhode Island Public Utilities Commission (Docket No. 4654)**: Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2017 Energy Efficiency Program Plan (EEPP) for Electric & Gas. On behalf of National Grid. December 8, 2016.

**Rhode Island Public Utilities Commission (Docket No. 4580)**: Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2016 Energy Efficiency Program Plan (EEPP) for Electric & Gas. On behalf of National Grid. December 2, 2015.

**Pennsylvania Public Utility Commission (Docket No. P-2012-2320369)**: Direct testimony of Courtney Lane regarding the Petition of PPL Electric Utilities Corporation for an Evidentiary Hearing on the Energy Efficiency Benchmarks Established for the Period June 1, 2013 through May 31, 2016. On behalf of PennFuture. October 19, 2012.

**Pennsylvania Public Utility Commission (Docket No. P-2012-2320334)**: Direct testimony of Courtney Lane regarding the Petition of PECO Energy for an Evidentiary Hearing on the Energy Efficiency Benchmarks Established for the Period June 1, 2013 through May 31, 2016. On behalf of PennFuture. September 20, 2012.

**Pennsylvania Public Utility Commission (Docket No. I-2011-2237952)**: Oral testimony of Courtney Lane regarding the Commission's Investigation of Pennsylvania's Retail Electricity Markets. On behalf of PennFuture. March 21, 2012.

**Committee on the Environment Council of the City of Philadelphia (Bill No. 110829)**: Oral testimony of Courtney Lane regarding building permitting fees for solar energy projects. On behalf of PennFuture. December 5, 2011.

**Pennsylvania Public Utility Commission (Docket No. M-00061984)**: Oral testimony of Courtney Lane regarding the En Banc Hearing on Alternative Energy, Energy Conservation, and Demand Side Response. On behalf of PennFuture. November 19, 2008.

## PRESENTATIONS

Lane, C. 2021. "Accounting for Interactive Effects: Assessing the Cost-Effectiveness of Integrated Distributed Energy Resources." Presentation at the 2021 American Council for an Energy-Efficient Economy (ACEEE) National Conference on Energy Efficiency as a Resource, October 27, 2021.

Lane, C. 2019. "The RI Test." Presentation for AESP Webinar: Emerging Valuation Approaches in Cost-Effectiveness and IRPs, October 31, 2019.

Lane, C., A. Flanders. 2017. "National Grid Rhode Island: Piloting Wireless Alternatives: Forging a Successful Program in Difficult Circumstances." Presentation at the 35th Annual Peak Load Management Association (PLMA) Conference, Nashville, TN, April 4, 2017.

Lane, C. 2013. "Regional Renewable Energy Policy Update." Presentation at the Globalcon Conference, Philadelphia, PA, March 6, 2013.

Lane, C. 2012. "Act 129 and Beyond." Presentation at the ACI Mid-Atlantic Home Performance Conference, October 1, 2012.

Lane, C. 2012. “Act 129: Taking Energy Efficiency to the Next Level.” Presentation at the Energypath Conference, June 28, 2012.

Lane, C. 2011. “Pennsylvania’s Model Wind Ordinance.” Presentation at Harvesting Wind Energy on the Delmarva Peninsula, September 14, 2011.

Lane, C. 2011. “Electric Retail Competition and the AEPS.” Presentation at the Villanova Law Forum, November 4, 2011.

Lane, C. 2009. “Act 129: Growing the Energy Conservation Market.” Presentation at the Western Chester County Chamber of Commerce, March 25, 2009.

*Resume updated January 2023*

**Table 1. Proposed Metrics to Track Customer Benefits of Other Proposed Projects**

| Benefit | Metric |
|---|---|
| Increased DER Deployment | • Average number of days to interconnect DER system<br>• Number of DERs interconnected<br>• MW DER installed as a percentage of load, by class<br>• MW DER installed by type, by circuit<br>• Percent of load served by DERs, by type |
| Enhanced Reliability | • SAIDI<br>• SAIFI<br>• Cumulative customer-hours of outages<br>• Cumulative customer energy demand not served |
| System Efficiency | • System load factor and load factor by customer class |
| Enhanced Resiliency | • Cumulative critical customer-hours of outages<br>• Critical customer energy demand not served<br>• Average number (or percentage) of critical loads that experience an outage<br>• Time to recovery<br>• Cost of recovery<br>• Cost of grid damages (e.g., repair or replace lines, transformers)<br>• Avoided outage cost |
| Customer Control of Energy Usage | • Number of monthly, unique customer visits to the web portal<br>• Number and percent of customers with access to real-time data<br>• Number and percentage of customers by customer class using Green Button Connect My Data<br>• Number and percent of customers with Home Area Network (HAN) functionality<br>• Number and percentage of customers, by class, on a time-varying rate<br>• Number and percentage of customers, by class, enrolled in an AMI-enabled demand management program<br>• Peak MW reduction from demand response |
| Enhanced customer bill payment options | • Number of bill payment options available<br>• Number and percent of customers, by class, enrolled in a bill payment option |

**Appendix C: PNM Responses to Interrogatories Cited in Testimony**

PNM Response to NMAG 2-01

PNM response to NMAG 2-03

PNM Response NMAG 2-04

PNM Response to NMAG 2-05

PNM Response to NMAG 2-06

PNM Response to NMAG 2-16

PNM Response to NMAG 2-18

PNM Response to NMAG 2-22

PNM Response to NMAG 2-36

PNM response to NMAG 2-38

PNM response to NMAG 2-39

PNM Response to NMAG 2-53

PNM Response to NMAG 3-06

PNM Response to WRA 1-04

PNM Response to WRA 1-05

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## INTERROGATORIES

**INTERROGATORY NMAG 2-01:**
**LAURA E. SANCHEZ**

**REFER TO THE STATEMENT THAT PNM HAS SOUGHT TO INCORPORATE COST-EFFECTIVENESS THROUGHOUT ITS GRID MODERNIZATION PLANNING AT LINES 3-4 ON PAGE 25 OF LAURA SANCHEZ'S DIRECT TESTIMONY.**

**a DID THE COMPANY CONDUCT A BENEFIT-COST ASSESSMENT OF ITS PROPOSED GRID MODERNIZATION PROJECTS? IF YES, PLEASE PROVIDE SUPPORTING WORKPAPERS AND CALCULATIONS IN EXCEL WITH ALL FORMULAE INTACT. IF NO, PLEASE EXPLAIN WHY NOT.**

**b. WHAT IS THE COST-EFFECTIVENESS OF PNM'S GRID MODERNIZATION PLAN OVER THE FIRST 6 YEARS, AND THE TOTAL 11-YEAR TIMEFRAME. PLEASE PROVIDE THE NET COSTS, NET BENEFITS, AND BENEFIT-COST RATIO.**

**RESPONSE:**

a. No, PNM did not conduct a quantitative benefit-cost analysis. The grid modernization statute does not impose a cost-benefit requirement on grid modernization investments but requires that proposed grid modernization investments be "reasonable." As utilities in other jurisdictions have learned, traditional benefit-cost analysis of grid modernization has limited utility. In Hawaii, for example, the Hawaiian Electric Companies, in supporting their proposed Grid Modernization Strategy ("GMS"), explained that "it is impracticable to aggregate GMS implementation benefits for use in a traditional benefit-cost analysis. Indeed the GMS investments in general, and the ADMS in particular, are foundational to and enable other programs. GMS investments have interrelated and naturally synergistic functions that make it infeasible to determine the cost-effectiveness of each GMS component independently."[1] This example was emphasized at the June 2, 2022 Grid Modernization Webinar hosted by GridWorks, and California and Michigan were noted as consistent with Hawaiian Electric's approach.

   PNM recommends that NMAG refer to the U.S. Department of Energy's ("DOE") Modern Distribution Grid Volume IV, which provides both utilities and regulators with recommendations on how to consider the cost effectiveness of grid modernization

[1] See Application of Hawaiin Electric Company, Inc., Hawai'I Electric Light Company, Inc., and Maui Electric Company, Limited, Public Utilities Commission of the State of Hawaii, Docket No. 2019-0327, at p. 21.

investments.[2] Specifically, Figure 72 provides insight into Investment Drivers and Their Economic Evaluation Methods and Figure 73 is an Illustrative Categorization of Objectives, Economic Evaluation Methods, and Activities for Grid Modernization Investments. The primary driver for PNM grid modernization investment is to achieve both New Mexico and PNM decarbonization goals, as well as to address customer interests and priorities in the transition to carbon free. As such, PNM's grid modernization investments can be categorized in what the DOE classifies as "Policy-driven DER Integration," aligning with a best-fit, most-reasonable cost assessment for the cost effectiveness evaluation rather than a benefit-cost analysis. This "most-reasonable assessment" further aligns with the statutory language that grid mod investments be reasonable. PNM's Grid Mod Plan is policy-driven in that it furthers the goals of the ETA, empowers customers, and seeks to increase renewable resources on the grid.

b. While PNM did not conduct a quantitative analysis, pages 25 to 26 of the Direct Testimony of Laura E. Sanchez discuss how PNM addressed cost-effectiveness for its grid modernization investments. Among other examples discussed, PNM has proposed a phased approach that staggers each new piece of technology in the Grid Modernization Plan to build on existing infrastructure or other grid modernization projects to leverage customer and system benefits. This is explained in more detail in PNM Exhibit LES-2 at pages 9-14. Specifically, PNM's grid modernization implementation plan sequences the selected grid modernization technologies in a logical manner to enable future activities to build upon the initial investments. The list of projects discussed at pages 9 to 14 in PNM Exhibit LES-2 provide an overview of how PNM's grid modernization projects should be sequenced in a cost-effective manner. For example, the customer energy management platform investment has three phases articulated starting with the platform itself, then adding customer data analytics to provide customers with additional electricity usage insights, and then anticipating customer decision support functionality for years 7-10 after the initial grid modernization work in the subject application (years 1-6) is complete.

   It should be noted that while PNM did not conduct a quantitative cost-benefit analysis, the Commission's recent policy initiatives assume that PNM will be able to make the investments proposed in this grid modernization case. For example, the Commission just adopted some of the most advanced interconnection procedures in the country, stating that "New Mexico state policies such as the Energy Transition Act and the Community Solar Act [] have set the state on a course to more effectively integrate distributed energy generation and storage into the electricity infrastructure." Docket No. 21-00266-UT, Final Order, at 4. In that Final Order, the Commission acknowledges that "[t]he expected addition of higher levels of distributed generation brings additional stress to the utility network …" *Id.* Many of the grid modernization projects proposed by PNM are prerequisites to fully and safely implement the Commission's new interconnection policies.

[2] See https://gridarchitecture.pnnl.gov/modern-grid-distribution-project.asp

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**INTERROGATORY NMAG 2-03:**
**OMNI B. WARNER**

**REFER TO ENHANCED CUSTOMER RELIABILITY AND RESILIENCY ON PAGE 2 OF LAURA SANCHEZ'S DIRECT TESTIMONY RELIABILITY.**

**a. PLEASE PROVIDE THE COMPANY'S CURRENT SYSTEM AVERAGE INTERRUPTION DURATION INDEX ("SAIDI") AND SYSTEM AVERAGE INTERRUPTION FREQUENCY INDEX ("SAIFI").**

**b. PLEASE PROVIDE ANY ANALYSIS AND SUPPORTING WORKPAPERS DEMONSTRATING HOW SAIDI AND SAIFI ARE EXPECTED TO CHANGE AFTER THE IMPLEMENTATION OF THE PROPOSED GRID MODERNIZATION PROJECTS. PLEASE PROVIDE IN ELECTRONIC FORMAT WITH ALL FORMULAE INTACT.**

**c. HOW WILL PNM TRACK AND REPORT ON CHANGES TO RELIABILITY AND RESILIENCY OVER ITS GRID MODERNIZATION IMPLEMENTATION PLAN?**

**RESPONSE:**

a. PNM system SAIDI and SAIFI numbers for 2021 are 86.22 minutes and 0.741, respectively.

b. PNM's grid modernization plan specified that the distribution asset deployment will be prioritized on the distribution feeders with poor SAIDI and SAIFI performance. Coupled with the feeder rebuilds, these investments are aimed to address individual feeder performance. There are no specific workpapers. Initially, SAIDI and SAIFI may not improve as PNM implements grid modernization. The investments planned for grid modernization will, over time, provide PNM with more visibility into where there are issues on PNM's system. This information and insight will be used to drive upgrades and updates to enhance reliability in the future.

c. PNM will continue to report out on system SAIDI and SAIFI system performance.

**INTERROGATORY NMAG 2-04:**
**LAURA E. SANCHEZ**

**REFER TO PAGE 18 OF THE DIRECT TESTIMONY OF LAURA SANCHEZ, WHICH STATES "A MORE COMPREHENSIVE DESCRIPTION OF THIS ENVIRONMENTAL JUSTICE SCREENING TOOL ("EJ SCREENING TOOL" OR "TOOL") IS ATTACHED AS PNM EXHIBIT LES-5." THERE IS NO EXPLICIT MENTION OR DESCRIPTION OF THE REFERENCED ENVIRONMENTAL JUSTICE SCREENING TOOL IN PNM EXHIBIT LES-5; RATHER, THE ATTACHMENT CONTAINS A SUGGESTED PROCESS FOR ESTABLISHING A PROGRAMMATIC ENVIRONMENTAL JUSTICE PROCESS TRIGGERED AFTER A PROJECT IS IDENTIFIED AND FUNDED. PLEASE PROVIDE A COPY OF AND A COMPREHENSIVE DESCRIPTION AND WORKPAPERS FOR THE EJ SCREENING TOOL THAT PNM INTENDS TO USE.**

**RESPONSE:**

The "EJ Screening Tool" is being developed by PNM. It is based upon the process discussed in PNM Exhibit in LES-5. The EJ Screening tool is still in the prototype phase. A detailed description of its functionality can be provided upon its completion, which is scheduled for January of 2023. The current development is focusing on building a standardized data set composed of Federal and State criteria, which will uniformly analyze communities for EJ criteria and systemic impacts. The criteria will be compiled into "heat maps," or visual representations of where the various data criteria merge and provide guidance as to where known EJ disadvantages are the most concentrated in a community. The EJ Screening Tool will also compile the various data into an easily-discernable chart, which will allow for analysis and decision-making as to how to engage with the community and apply appropriate mitigation measures and provide guidance to the overall rollout of the Grid Modernization process.

**INTERROGATORY NMAG 2-05:**
**LAURA E. SANCHEZ**

**REFER TO PAGE 30 OF THE DIRECT TESTIMONY OF LAURA SANCHEZ, WHICH STATES THE EJ SCREENING TOOL WILL BE USED TO "PRIORITIZE AND UNDERSTAND THE IMPACT THAT GRID MODERNIZATION UPGRADES WILL HAVE IN LOW-INCOME AND UNDERSERVED COMMUNITIES."**

**a. PLEASE DESCRIBE HOW THE EJ SCREENING TOOL WILL ILLUMINATE THE IMPACT OF A PROPOSED GRID MODERNIZATION UPGRADE.**

**b. PLEASE DESCRIBE HOW THE EJ SCREENING TOOL WILL BE USED TO PRIORITIZE GRID MODERNIZATION UPGRADES.**

**RESPONSE:**

a. Refer to NMAG 2-04 for information on the EJ Screening Tool. The EJ Screening Tool can illuminate the impact of the proposed grid modernization upgrade by providing information about which areas would most benefit from the effort.

b. By knowing which communities have experienced the greatest disadvantage due to systemic impacts identified through an EJ screening, the grid modernization team can focus energy and funds on the areas where critical needs should be prioritized. Often, areas with the highest percentages of minority, low income, educationally deprived, linguistically challenged, and aged pose the greatest need for grid modernization.

**INTERROGATORY NMAG 2-06:**
**LAURA E. SANCHEZ**

**REFER TO PAGES 31 AND 32 OF THE DIRECT TESTIMONY OF LAURA SANCHEZ, WHICH STATES "PNM'S PLANNED EJ SCREENING TOOL WILL ENGAGE THE COMMUNITY AS TO PROJECT DESIGN WHERE THE TOOL IDENTIFIES THAT DISADVANTAGED COMMUNITIES WILL BE IMPACTED BY A GRID MOD PROJECT."**

**a. PLEASE DESCRIBE HOW THE EJ SCREENING TOOL WILL ENGAGE A COMMUNITY.**

**b. PLEASE EXPLAIN WHAT IS MEANT BY "ENGAGE THE COMMUNITY AS TO PROJECT DESIGN."**

**c. PLEASE EXPLAIN WHAT TYPES OF GRID MOD PROJECTS PNM EXPECTS TO ENGAGE COMMUNITIES ABOUT WITH REGARDS TO PROJECT DESIGN.**

**RESPONSE:**

a. The use of the EJ Screening Tool will assist PNM in understanding the communities with which PNM will engage. Understanding racial makeup, language barriers and other factors which may impede or erode trust and finding ways to remove those barriers greatly aids in engagement. Overall communications and understanding are improved if PNM knows which language interpreter to use, knows if tribal lands are involved, and understands the timeframes to which people may be available for public events.

b. "Engage the community as to project design" refers to conducting outreach to customers with the purpose of soliciting input as to certain aspects of the Grid Modernization project.

c. As discussed in the testimony of Laura E. Sanchez on page 30, lines 2-7, PNM anticipates deploying Advanced Metering Infrastructure (AMI) along meter reading routes with high concentrations of low-income customers. Communities could provide input as to the prioritization of certain routes for deployment. Additionally, communities will be asked to provide input as to the functionality of the customer energy management platform, to ensure maximum participation and customer value. Regarding distribution upgrades, customers could also provide input as to the prioritization of installation of those upgrades in their community.

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**INTERROGATORY NMAG 2-16:**
**STELLA CHAN/MARIO A. CERVANTES**

**PLEASE LIST WHAT CUSTOMER-FACING PROGRAMS, PRICING, AND OFFERINGS CONTAINED IN PNM EXHIBIT LES-2 WILL BE AVAILABLE TO CUSTOMERS UPON INSTALLATION OF AN AMI METER.**

**RESPONSE:**

The focus of this response is on program and pricing available upon installation of the AMI meters. PNM plans to begin the technical planning activities needed for the implementation of the Customer Energy Management Platform in year two of the Grid Modernization Plan. The implementation activities for the Customer Energy Management Platform will extend until year three of the Grid Modernization Plan. The Customer Energy Management Platform solution will be available to customers at the end of year three. Once the Customer Energy Management Platform is operational, customers who have an AMI meter will begin to have their detailed AMI interval usage data available through the Customer Energy Management Platform.

Time-of-Day rates are not part of PNM's grid modernization plan; however, a Time-of-Day pilot rate program is included in PNM's rate case filed on December 5th, Case No. 222-00270-UT. If approved, the Time-of-Day rate pilot program will be available to customers beginning in 2024. The WHEV rate is currently in effect, but is not yet available to customers. Neither the Time-of-Day pilot rate nor the WHEV rate will be initially dependent on AMI meters, as these programs will use cellular interval meters that transmit the data from the meter to PNM via a cellular connection. The full implementation of TOD pricing and WHEV rates will require future implementation consistent with AMI deployment.

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**INTERROGATORY NMAG 2-18:**
**MARIO A. CERVANTES**

**REFER TO PNM EXHIBIT LES-3 ON PAGE 8 OF 18, WHICH STATES "OVER TIME, THE CUSTOMER ENERGY MANAGEMENT PLATFORM WILL PROVIDE ADDITIONAL FUNCTIONALITY TO CUSTOMERS, INCLUDING OPTIONS TO PRE-PAY BILLS AND PICK YOUR OWN BILL DATE."**

**a. WHEN WILL THIS ADDITIONAL FUNCTIONALITY BE AVAILABLE TO CUSTOMERS?**

**b. WHAT INVESTMENTS ARE NEEDED TO ENABLE THESE FUNCTIONS?**

**c. WHAT IS THE COST ASSOCIATED WITH INVESTMENT LISTED IN RESPONSE TO (B) ABOVE?**

**d. WHEN WILL PNM SEEK COST-RECOVERY OF THE COSTS LISTED IN (C) ABOVE?**

**RESPONSE:**

a. PNM anticipates that the technical capabilities for a pre-pay program will be available after year 3 of the Grid Modernization Implementation Plan after the MDMS is integrated with the PNM Customer Information System ("CIS") and the customer energy management platform is implemented. PNM is not proposing any new customer programs as part of the grid modernization. Instead, grid modernization provides the technical foundation for

future customer programs like pre-pay and the pre-pay program specifics will be included in separate applications or future rate cases.

PNM expects that "pick your own due date" technical capabilities will be available to customers in year 4 of the Grid Modernization Implementation Plan, once AMI has been fully deployed such that all customers have this capability. AMI technology enables the implementation of the pick your own due date program because bill due dates will no longer be based on manual meter reading routes. However, PNM anticipates requesting the implementation of a pick your own due date in a future rate case or application.

b. PNM is evaluating the investments that will be needed to enable a pre-pay program given that this solution falls outside of the functionality offered by the Customer Energy Management Platform and will likely be provided by another vendor and will require significant development efforts. Pick your own due date may also require additional investments in PNM's current CIS to enable this functionality. Specifics regarding the pre-pay and pick your own due date customer programs will be included in a future application or rate case.

c. The costs to implement these options are unknown at this time given that PNM has not conducted a full evaluation, but PNM plans to conduct the necessary evaluations if approval of the Grid Modernization is granted. Specifics regarding the pre-pay and pick your own due date customer programs will be included in a future application or rate case.

d. See PNM's response to part c. The cost recovery schedule is currently unknown. Specifics regarding the pre-pay and pick your own due date customer programs will be included in a future application or rate case.

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**INTERROGATORY NMAG 2-22:**
**MARIO A. CERVANTES**

**REFER TO PNM EXHIBIT JAR-6 ON PAGE 5 THAT STATES "THE CUSTOMER ENERGY MANAGEMENT PLATFORM, WHICH WILL ALLOW CUSTOMERS TO RECEIVE REAL-TIME ENERGY DEMAND CONSUMPTION FROM THE ADVANCED METER, ONCE ENROLLED ON A DEVICE, SUCH AS A LAPTOP, TABLET, OR MOBILE DEVICE." IS THE REAL-TIME ENERGY DEMAND CONSUMPTION AVAILABLE THE SAME DAY OR THE DAY AFTER? PLEASE EXPLAIN YOUR RESPONSE**

**RESPONSE:**

The meter data is downloaded from the meter four times per day. Initially, PNM anticipates that the Customer Energy Management Platform will make that data available to the customer the following day after the interval data is reconciled with the midnight meter register read data. However, it is possible that customers will gain access to the meter data more quickly in the future. Additionally, in the future it is possible that the AMI data will be downloaded more frequently than every four hours.

Real-time energy data will only be available to customers that enroll in the future PNM program to connect their Wi-Fi router to the meter Home Area Network. HAN may be available as early as year 4 of the AMI implementation timeline. However, PNM anticipates that it will file a customer program application with the Commission with AMI HAN program details prior to implementing the program and offering it to customers.

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**INTERROGATORY NMAG 2-36:**
**OMNI B. WARNER**

**REFER TO THE DIRECT TESTIMONY OF OMNI WARNER ON PAGE 36, LINES 19-22 REGARDING THE PORTION OF PNM'S DISTRIBUTION SYSTEM THAT IS IN THE MOST NEED TO BE UPGRADED FOR RELIABILITY AND RESILIENCE.**

**a. PLEASE DESCRIBE THE RELIABILITY AND RESILIENCE ISSUES THE COMPANY SEEKS TO ADDRESS.**

**b. DOES THE COMPANY CURRENTLY TRACK SAIDI AND SAIFI FOR THESE AREAS? IF YES, PLEASE PROVIDE SAIDI AND SAIFI PERFORMANCE FOR EACH OF THE PAST FIVE YEARS. IF NO, PLEASE EXPLAIN WHY NOT.**

**c. WHAT TYPE OF CAPITAL INFRASTRUCTURE INVESTMENTS WILL BE UTILIZED FOR FEEDER REBUILDS?**

**d. ABSENT GRID MODERNIZATION TECHNOLOGIES, IS PNM CURRENTLY WORKING TO UPGRADE THE DISTRIBUTION SYSTEM IN THESE COMMUNITIES? PLEASE EXPLAIN.**

**RESPONSE:**

a. The investments in the grid modernization plan will be deployed on specific distribution feeders with higher outage times and durations.

b. Yes. Please see PNM Exhibit NMAG 2-36. The attached data shows the SAIDI and SAIFI for the top 20 worst-performing feeders in the PNM system over a five-year period (2018-2022) and on a five-year aggregated basis. PNM intends to target its worst-performing

feeders for distribution upgrades. The data in the attached PNM Exhibit NMAG 2-36 demonstrates the SAIDI and SAIFI for PNM's 20 worst-performing feeders.

c. Distribution poles, overhead wire, underground conductor, conduit, cross arms, insulators, transformers, voltage regulators, and grounding are all assets utilized for feeder rebuilds. These infrastructure investments are outside of the scope of the grid modernization investments which focus on AMI and distribution automation technologies, enabling telecommunications, data management, cybersecurity, distribution planning and engineering, and the customer energy management platform. For a discussion of feeder rebuilds, please see the Direct Testimony of Wesley W. Gray in PNM's recently filed general rate case, Case No. 22-00270-UT.

d. PNM is rebuilding distribution feeders that are at or near end of average service life. Many of these feeders are or will be experiencing reliability outages from aging assets. These investments are not included in PNM's grid modernization plan. PNM's gid modernization plan will synchronize the timing of the grid modernization deployment with the plans to rebuild distribution feeders and in some cases deploy grid modernization assets on existing feeders ahead of feeder rebuild cycles. For more information, please see the direct testimony of PNM Witness Wesley W. Gray in Case No. 22-00270-UT.

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**INTERROGATORY NMAG 2-38:**
**OMNI B. WARNER**

**REFER TO THE DIRECT TESTIMONY OF OMNI WARNER ON PAGE 37, LINES 10-11, WHICH STATES "THE EJ SCREENING TOOL WILL BE USED TO DEVELOP MITIGATION ACTIONS ASSOCIATED WITH PNM'S PLANNED PROJECTS."**

**a. PROVIDE AN EXPLANATION OF THE POTENTIAL MITIGATION ACTIONS ASSOCIATED WITH PNM'S PLANNED PROJECTS.**

**b. PLEASE DESCRIBE HOW THE EJ SCREENING TOOL WILL ACCOMPLISH THE DEVELOPMENT OF MITIGATION ACTIONS.**

**c. TO WHAT EXTENT WILL COMMUNITIES BE INVOLVED IN THE DEVELOPMENT OF MITIGATION ACTIONS?**

**d. PLEASE DESCRIBE THE TYPES OF PROJECTS THAT PNM EXPECTS TO REQUIRE MITIGATION.**

**RESPONSE:**

a. The EJ screening process and mitigation development is a process in its infancy with PNM. PNM anticipates this process and tool will mature through industry and customer feedback each year. Some potential mitigation actions might include working with local community partners and other partners (private and public) to understand energy affordability concerns within a particular community and to seek technical, financial and administrative ways to maximize benefits of PNM's planned projects and minimize costs. In addition, involving community partners in siting studies to understand local issues and needs in order to locate energy resources and evaluate design criteria in an effort to minimize environmental and social impacts and maximize benefits.

(b-c) Through outreach and community involvement, the community will provide valuable input into a mitigation plan that works to address community issues and needs. As appropriate, mitigation actions will be vetted with community members to gain their input and insight.

d. The types of activities include implementation of customer energy management tools and the siting of new facilities, including renewables and battery storage.

**INTERROGATORY NMAG 2-39:**
**OMNI B. WARNER/LAURA E. SANCHEZ**

**REFER TO THE DIRECT TESTIMONY OF OMNI WARNER ON TO PAGE 32, WHICH STATES "PNM EXPECTS THAT DATA FROM AMI WILL HELP IT DESIGN FUTURE DEMAND RESPONSE PROGRAMS." HAS PNM IDENTIFIED THE PROGRAMS IT PLANS TO PROVIDE? IF YES, PLEASE DESCRIBE EACH PROGRAM AND PROVIDE WORKPAPERS SUPPORTING THEIR DEVELOPMENT. IF NO, PLEASE EXPLAIN WHY NOT**

**RESPONSE:**

PNM is not proposing any new demand response programs as part of the grid modernization plan. Please see the Direct Testimony of Laura E. Sanchez, Section VI, for further discussion on this issue. Instead, grid modernization provides the technical foundation for future customer programs, including demand response programs, which would be included in separate applications or future rate cases. For example, NMAG 2-46 below discusses the whole house electric vehicle ("WHEV") rate being proposed in in Case No. 20-00237-UT.

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**INTERROGATORY NMAG 2-53:**
**LAURA E. SANCHEZ**

**PLEASE PROVIDE THE ESTIMATED GREENHOUSE GAS REDUCTIONS THAT WILL RESULT FROM THE COMPANY'S GRID MODERNIZATION PROJECTS IN EACH YEAR OF ITS GRID MODERNIZATION IMPLEMENTATION PLAN.**

**RESPONSE:**

PNM has not calculated or estimated the amount of greenhouse gas emissions reductions as a result of its Grid Mod Plan. However, given that the Grid Mod Plan will facilitate increased renewable and clean energy and in turn decrease reliance on carbon-emitting resources such as coal plants, the result will be a general reduction in greenhouse gas emissions. Through years 1-6 of the Grid Mod Plan, PNM will be laying the groundwork with the deployment of AMI that will eventually enable more electrification and DERS, to advance the energy transition.

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**INTERROGATORY NMAG 3-06:**
**LAURA E. SANCHEZ**

**REFER TO THE COMPANY'S RESPONSE TO NMAG 2-07(A).**

**A) WILL FIELD CANVASSING INCLUDE CUSTOMER RESIDENCES? PLEASE EXPLAIN WHY OR WHY NOT.**
**B) WHAT ARE THE COSTS ASSOCIATED WITH CANVASING?**
**C) WILL CANVASING BE PERFORMED BY CURRENT PNM EMPLOYEES? IF NO, PLEASE EXPLAIN WHY NOT.**

**RESPONSE:**

A) Field canvassing, in this context, includes the activities described in NMAG 2-07(A). Given this description of activities focused on businesses, schools, parks, public facilities,

etc., generally, canvassing would not include customer residences. However, the exception would be if there is a specific need in a given community that is identified by one of the other entities, then we may canvass residences.

B) The costs would include labor for field canvassers, particularly if they are outside contractors, training for contractors and PNM staff, supplies for canvassing to memorialize information – whether electronically or on paper – and mileage reimbursement, if company vehicles are not used. Actual figures would depend on the market for labor and cost of supplies at the time of the field canvassing, which would be in future years.

C) At this time, canvassing would likely be performed by a combination of PNM employees and outside contractors. Certainly, PNM employees would be involved to ensure compliance with the goals of the field canvass, and potentially to train on the scope of the project. But with limited staff availability that is not already carrying a fulltime load in work responsibilities, contractors would likely also need to be used.

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**INTERROGATORY WRA 1-04:**
**OMNI B. WARNER**

**PLEASE REFER TO EXHIBIT LES-2 AT 15, WHICH STATES: "PNM IS CURRENTLY IN A POSITION OF TELLING CUSTOMERS THAT THERE IS LIMITED HOSTING CAPACITY ON CERTAIN DISTRIBUTION GRID CIRCUITS THEREBY LIMITING THE AMOUNT OF ADDITIONAL PV AND EV THAT CUSTOMERS CAN INTERCONNECT TO THE DISTRIBUTION GRID." DOES PNM REJECT ADDITIONAL INTERCONNECTIONS FOR PV AND EV IN THESE CIRCUMSTANCES, OR PERMIT DEVELOPERS AND/OR CUSTOMERS TO PAY FOR DISTRIBUTION SYSTEM UPGRADES TO SUPPORT INTERCONNECTIONS? HOW MANY APPLICATIONS HAVE BEEN REJECTED FOR THIS REASON?**

**RESPONSE:**

PNM does not reject any customer requests to interconnect. There are a number of distribution feeders for which the aggregate generation has reached the rated capacity given the solar photovoltaic ("PV") penetration. If solar interconnection applications are received to interconnect to these feeders today, customers are given the option to undertake supplemental review to determine the costs to upgrade the feeder for interconnection. However, the cost of system upgrades for feeders at capacity can be over $1 million, and as such, most developers and customers will not fund those upgrades. Therefore, customers are also given the alternative to be placed in a queue and are eligible to interconnect after capacity becomes available. Currently, there are 16 feeders that are at or above solar interconnection capacity. There are currently 276 projects that are on hold waiting for system upgrades for feeders at solar interconnection capacity.

Electric Vehicle charging requests have not been impacted by feeders that are at solar interconnection capacity.

**INTERROGATORY WRA 1-05:**
**LAURA E. SANCHEZ**

**PLEASE REFER TO EXHIBIT LES-2, AT 18, WHICH STATES: "ADDITIONALLY, AMI, IN CONJUNCTION WITH THE DERMS, ENABLES PNM TO OFFER MORE SOPHISTICATED DER PROGRAMS THAN NET METERING TO REFLECT THE RESPONSIVENESS, PERFORMANCE AND/OR VALUE OF DER AT SPECIFIC TIMES OF DAY OR TIMES OF THE YEAR." WHAT DER PROGRAMS DOES PNM INTEND TO OFFER AFTER ADOPTION OF AN AMI AND DERMS THAT ARE SUPPORTED BY THESE TECHNOLOGIES?**

**RESPONSE:**

PNM has not yet developed DER-related programs as part of this grid modernization filing. As discussed in the Direct Testimony of PNM Witness Sanchez at pages 40 to 42, with regards to demand response and dynamic pricing programs, grid modernization investment will both empower customers to understand how their energy usage may benefit from changed behavior or enrollment in PNM programs and provide PNM with more information to design future programs that are beneficial to customers and the grid. While Ms. Sanchez's testimony was not specific to DER-related programs, the same logic applies in that grid modernization investments will provide more data to PNM and its customers to choose or develop programs that are beneficial to the customer or the grid.