

## **Executive Summary**

Grid modernization is the keystone to New Mexico’s and the U.S.’s energy transition. A modernized grid provides the platform for a more resilient, reliable, efficient and decarbonized electric system.<sup>1</sup> With this Application, PNM proposes to invest in a comprehensive grid modernization plan to set New Mexico on a path to succeed in this energy transition, while meeting customers’ needs and evolving expectations.

The modern grid must have more and better communication between utilities and customers. The modernized grid proposed here will join the digital age by:

- Enhancing customer reliability;
- Allowing better integration of carbon-free resources;
- Ensuring benefits flow to all customers; and,
- Improving the customer experience.

PNM is embarking on an 11-year grid modernization deployment to bring its grid into the 21<sup>st</sup> century. It starts with this focused six-year Grid Modernization Implementation Plan (Plan). This Plan, the result of a 20-month collaborative engagement process by PNM and the public, identifies the investments that are necessary to achieve the promised benefits of our energy transition. While no investment plan is “future proof,” PNM’s Plan does its best to modernize the grid in ways that will serve customers well into the future and be adaptable to customer needs as they develop.

### **I. The Modernized Grid**

Historically, the electric grid has relied on one-way communication. Electrons flow down the grid for the customer to use. An analog meter counts the electrons any given customer uses;

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<sup>1</sup> Reliability means that the lights always come on when you turn on the switch. Resilience means that the electrical system can mitigate, survive, and/or recover from high impact threats. Source: <https://securethegrid.com/reliability-vs-resilience/>

the utility then sends a bill based on the number of electrons used. A modernized grid transforms this one-way, analog communication path into a two-way, real-time digital communication pathway. The technology backbone of this pathway is advanced metering infrastructure (“AMI”) working with an Automated Distribution Management System (“ADMS”) and a Distributed Energy Resource Management System (“DERMS”).

Converting the grid to a two-way communication path is a game-changer. The AMI deployment enables a new Customer Energy Management Platform to roll out, giving customers control and insight into their energy usage and choices. PNM has planned its AMI deployment to prioritize economically disadvantaged customers. Once the communications infrastructure is in place, the network and its systems can evolve along with the needs of customers. PNM, meanwhile, will have new automation and information on the real-time status of the distribution grid. This means problems can be avoided before they happen, and programs can be designed using more accurate data.

## **II. Customer Benefits**

First and foremost, the modernized grid will be more efficient and adaptive. This means:

- Customers can access user platforms that give them insight and control over energy usage, allowing them to take advantage of using energy when rates are low, or conserving energy when rates are high;
- Rooftop solar and other distributed generation resources can be more safely, effectively and efficiently connected to the grid; and
- The scope and length of outages can be reduced, and costs and completion times for service connections and disconnections can also be reduced.

Customers benefit from these efficiencies in multiple ways. Energy efficiency and load management programs can become more effective. Customers who want to use distributed resources can get and use them more quickly. Reliability and system resiliency will be enhanced

because PNM will have better insight into what is happening on the distribution system. Outage times can be reduced, and even eliminated by identifying problems before they occur.

### **III. Environmental Benefits**

A modern and efficient grid means that customers will be better able to conserve and shape their usage and that distributed resources can be more quickly planned for, deployed, and optimized on the grid.

The challenges of the energy transition are illustrated by the shifting characteristics of how and where customers get power. With the pre-modernized grid, large central station power plants supplied the electricity with firm, 24/7 baseload generation. One-way communication was fine for such a system. A modern grid starts to turn that old model inside out. A modern grid needs to accommodate an increased number of smaller, intermittent renewable generation resources. A modern grid can better utilize larger scale renewable generation resources located at the edge of the local system on distribution feeders. Turning that traditional grid inside-out as the energy transition promises is only possible with a grid that has robust two-way communication, real-time situational transparency, and more automation.

### **IV. Grid Modernization and Low-Income Communities**

Consistent with the legislature's goal that grid modernization prioritize low-income and underserved communities for access to clean energy, PNM has prioritized rollout of the AMI grid investments to such communities. Distribution system upgrades will also be prioritized for low-income and underserved communities. PNM's stakeholder process to devise the Plan emphasized how grid modernization could best serve low-income and underserved communities, and that feedback informed our prioritized rollout for low-income communities. By prioritizing these communities for AMI and distribution upgrades, the modernization plan gives low-income

customers timely and equal access to the clean energy opportunities and customer service that the statute envisions.

#### **V. Cost-Effectiveness of Grid Modernization Investments**

PNM is aware of the cautionary tales when it comes to technological modernization. That is why planning and investment in infrastructure modernization will begin immediately and continues in orderly, and strategically phased projects over a multi-year period.

With that in mind, in concert with its vendors and technology partners, PNM has done its best to avoid the hazards of a “modern grid” becoming an “obsolescent grid” because of misguided technology choices. The vendors and technology standards involved with the proposed investments have a proven track record of current performance and come with a continuous ability to upgrade the capabilities of the modernized and always modernizing grid that PNM and its customers want.

PNM has developed its Plan so that later projects build on the investments and benefits of the initial AMI and distribution system technology deployments. The Plan provides flexibility over time to respond to changing customer needs and to consider new technology requirements. Importantly, the proposed annual rate-rider and cost recovery mechanism allows for project adjustments while retaining regulatory oversight of PNM’s grid modernization progress throughout the initial six-year period of the Plan.

#### **VI. PNM’s Grid Modernization Plan**

This Application seeks approval of PNM’s Plan and grid modernization investments in years one through six of the Plan. The Plan is part of PNM’s broader long-term grid modernization strategy, which will take place over 11 years. PNM proposes to roll out AMI to all its customers, prioritizing low-income communities. Along with the AMI rollout, PNM proposes to invest in

greater physical- and cyber-infrastructure to protect the data and information generated by the new AMI capabilities. These initial grid modernization investments will overlay a secure communication network on the existing electric grid infrastructure using both wireless and fiber optic technologies.

This modernized communication path between PNM and its customers will generate data – lots and lots of data – to inform customers and PNM on new and improved ways of managing energy usage. While AMI deployment is underway, PNM proposes to construct a Customer Energy Management Platform that will give customers information on their usage and begin to allow customers to customize when and how much energy they use. Finally, PNM will enhance the distribution system with ADMS, DERMS, and a Fault Location, Isolation and Service Restoration (FLISR) module to support automation of the physical infrastructure. Automating existing mechanical or manual processes on the distribution system will make it more resilient and adaptive by using digital technology. Likewise, these systems will give PNM better information about what is happening on the distribution system in real-time. This means distributed resources can be accommodated on the grid more quickly while also identifying problems while, or even before, they happen.

## **VII. Conclusion**

Grid modernization is a necessary step for the transition to a carbon free energy system that empowers customers to make energy choices that meet their needs. With input from the broad array of stakeholders, PNM's proposed Grid Modernization Plan will set New Mexico on a path to meet its energy policy goals and give customers more options and insight as they make their energy choices.