

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF THE APPLICATION)
OF PUBLIC SERVICE COMPANY OF NEW)
MEXICO FOR PRIOR APPROVAL OF)
THE ADVANCED METERING)
INFRASTRUCTURE PROJECT,)
DETERMINATION OF RATEMAKING)
PRINCIPLES AND TREATMENT, AND)
ISSUANCE OF RELATED ACCOUNTING)
ORDERS)
)
PUBLIC SERVICE COMPANY OF NEW)
MEXICO,)
)
Applicant)
_____)

Case No. 15-00312-UT

RECOMMENDED DECISION

March 19, 2018

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Ashley C. Schannauer, Hearing Examiner for this case, submits this Recommended Decision to the New Mexico Public Regulation Commission ("Commission") pursuant to NMSA 1978, §8-8-14, and Commission Rules of Procedure 1.2.2.29.D(4) and 1.2.2.37.B NMAC. The Hearing Examiner recommends that the Commission adopt the following statement of the case, discussion, findings of fact, conclusions of law and decretal paragraphs in an Order.

I. STATEMENT OF THE CASE

On September 25, 2015, Public Service Company of New Mexico ("PNM") filed a petition for variance from the meter testing requirements set out in NMAC 17.5.560. PNM asked the Commission to approve suspension of PNM's meter testing program while PNM performed a cost benefit analysis associated with replacing current meters with Automated Metering Infrastructure ("AMI") meters. PNM stated that it would make a filing with the Commission on or before February 28, 2016, present the results of its cost benefit analysis, and inform the Commission of PNM's decision regarding the implementation of AMI.

On January 20, 2016, the Commission granted PNM's request upon conditions discussed in more detail in the Background section below.

On February 26, 2016, PNM filed an Application asking the Commission to approve, *inter alia*, PNM's proposed Advanced Metering Infrastructure Project ("the AMI Project"). PNM proposes to retire its existing consumption and demand meters and replace them with AMI meters and equipment capable of communicating data to and from a central PNM data center.

On March 23, 2016, the Commission issued an Initial Order to start a proceeding to review PNM's Application and directed that a hearing examiner be appointed by subsequent single signature order to preside over, take all actions necessary and convenient within the limits of the Hearing Examiner's authority, conduct any necessary hearings and take such other action

in this case that is consistent with Commission procedure. The Initial Order also rejected PNM's Advice Notice No. 521, which PNM had filed with its Application. The Commission found that PNM failed to comply with the statutory requirement that all advice notices "plainly state the ... time when the changed rates will go into effect," citing NMSA 1978, §62-8-7(B).

On March 25, 2016 a single signature order was issued appointing the undersigned to preside as hearing examiner.

On April 4, 2016, PNM filed Advice No. 522. The advice notice contains the same content as Advice Notice No. 521, except for its additional inclusion of an effective date of May 4, 2016. On April 20, 2016, the Commission issued an Order suspending the effective date of the proposed rates in Advice Notice No. 522 for a period of nine months commencing May 4, 2016.

Motions to Intervene were filed by the New Mexico Attorney General ("AG"), New Mexico Industrial Energy Consumers ("NMIEC"), Coalition for Clean Affordable Energy ("CCAEC"), Western Resource Advocates ("WRA"), City of Albuquerque ("City"), New Mexicans for Utility Safety ("NMUS"), Citizens for Fair Rates and the Environment ("CFRE") and Mark E. Graham. The Motions for all but Mr. Graham were granted by operation of law pursuant to 1.2.2.23.D NMAC. Mr. Graham's Motion was denied on July 14, 2016. Mr. Graham's Motion for Reconsideration was opposed and denied on January 3, 2017.

Pursuant to the Hearing Examiner's April 18, 2016 Order, PNM filed the supplemental testimony of Rebecca Teague regarding issues PNM's plans for the use of the AMI in potential energy efficiency programs.

Staff and Intervenors filed prepared testimony responsive to PNM's Application on July 15, 2016.

On the August 5, 2016 deadline for the filing of rebuttal testimony, PNM filed a motion asking that an order be issued suspending the procedural schedule, including that day's deadline for filing rebuttal testimony, for an indefinite period. PNM stated that, within sixty days of the issuance of a final order in PNM's pending general rate case, Case No. 15-00261-UT, it would file a motion in this docket to either withdraw its application (and to close the docket) or approve a new procedural schedule. Due to the unavailability of the Hearing Examiner on August 5, 2016, the motion was granted temporarily by a single signature order issued that same day by Commissioner Jones. The motion was granted finally by the Hearing Examiner on August 9, 2016. NMUS, nevertheless, filed the rebuttal testimony of Paul Dart, M.D. on August 5, 2016.

On November 22, 2016, PNM filed a motion asking the Hearing Examiner to lift the suspension and set a procedural schedule. On December 6, 2016, after reviewing the oppositions filed to the PNM's motion, the Hearing Examiner issued an Order lifting the suspension, and a new procedural schedule was established at a prehearing conference held on December 7, 2016.

On January 3, 2017, the Hearing Examiner issued an Order addressing the motions and objections that were outstanding as of the August 9, 2016 suspension of the proceeding. Among the items addressed were the denial of PNM's Motion in Limine which sought to exclude evidence of the health effects of radio frequencies from the AMI infrastructure, the partial granting and denials of PNM's motions to strike prepared testimonies of NMUS and CFRE, and the granting of PNM's objections to the proposed telephonic testimony of NMUS's and CFRE's witnesses.¹

¹ The January 3, 2017 Order also denied NMUS's motion to strike the prepared testimony of Rebecca Teague, NMUS's motion to compel the attendance of a witness at the public hearing, and Mark E. Graham's motion to reconsider the Hearing Examiner's denial of his motion to intervene.

PNM filed further supplemental testimony on January 9, 2017 pursuant to the new procedural schedule. On January 30, 2017, the AG and NMIEC filed testimony in response to PNM's January 9 testimony.

On February 14, 2017, PNM, NMIEC, NMUS and CFRE filed rebuttal testimony.

A public hearing was held on February 27 through March 2, 2017. During the evidentiary portion of the hearing, testimony was received from the following witnesses:

For PNM:

Gerard T. Ortiz
Rebecca R. Teague
Henry E. Monroy
Scott A. Vogt
Jonathan Hawkins
Larry O'Dell
Michael Belanger
Edward P. Gelmann, M.D.

For the AG:

Andrea C. Crane

For CCAE:

Adam Bickford

For NMIEC:

Nicholas L. Phillips

For NMUS:

Dafna Tachover
Joshua Hart
Arthur Firstenberg

For CFRE:

Norman W. Lambe
Timothy D. Schoechle, Ph.D.
Tony P. Simmons

For Staff:

Charles W. Gunter
Heidi M. Pitts, Ph.D.

A further hearing was held on March 30, 2017 to address PNM's response to the bench requests issued by Commissioner Jones on March 1 and 7, 2017. The March 1 bench request sought further information regarding PNM's costs in the event of varying scenarios of customer opt-outs. The March 7 bench request asked whether PNM will require a customer to upgrade its service before PNM will install the smart meter if PNM determines that the customer's service (i.e., the wiring, meter loop or other electrical components) is not up to New Mexico electrical code or PNM minimum standards or requirements.

The March 30 hearing revealed that Itron, Inc., the contractor PNM planned to use to supply and install the AMI equipment did not hold the necessary New Mexico contractor licenses to bid on or perform the installation work. The Electrical Bureau Chief of the Construction Industries Division (CID) of the state Regulation and Licensing Department, James Kelly Hunt, indicated that he would provide the information to the Criminal Investigation Bureau of CID for further action. The parties then discussed the need for further proceedings to address the legal and factual significance of the licensing issue and any PNM proposals to resolve it.

On March 31, 2017, the Hearing Examiner issued an Order requiring PNM to file by April 20, 2017, (a) a legal memorandum describing the impact of Itron's failure to have the necessary license and (b) supplemental testimony that includes (i) PNM's original request for proposals, Itron's proposal, and related contract documents; (ii) an itemization of costs in Itron's proposal, identifying the amounts for installation of the AMI meters; (iii) the memorialization of the resolution of Itron's licensing issue with the CID; (iv) changes to PNM's AMI proposal in the event PNM proposes to continue with its pending Application; (v) changes to PNM's contractual relationship with Itron; and (vi) a description of the costs and delays associated with the replacement of Itron meters by Texas-New Mexico Power Company and the evaluation PNM

performed to avoid similar issues in PNM's AMI Project. The Order allowed other parties to file responses by May 11, 2017.

After granting PNM's request for extensions and ultimately receiving filings from the parties, the Hearing Examiner issued a further order on June 13, 2017 establishing a further procedural schedule and defining the scope of the further proceedings. The further hearings were scheduled to address the supplemental testimonies filed by PNM on April 24, 2017 and May 12, 2017 and PNM's further plan to hire a licensed contractor to install the AMI meters that Itron was unable to install. PNM's further plan would also include an update to PNM's cost benefit analysis based on the bid from the new meter replacement contractor and revised AMI Project savings forecasts. The Hearing Examiner allowed other parties to present supplemental testimony addressing relevant new evidence that could not reasonably have been presented for the hearings held on February 27 through March 2, 2017.

PNM filed its further supplemental testimony on September 5, 2017. The AG and Staff filed response testimony on September 29, 2017. PNM filed rebuttal testimony on October 13, 2017.

The further and final set of hearings was held on October 25 and 26, 2017. Testimony was received from the following witnesses:

For PNM:

Gerard T. Ortiz
Rebecca R. Teague
Henry E. Monroy
Scott A. Vogt

For the AG:

Andrea C. Crane

For CFRE:

Jonathan Hawkins
Larry O'Dell

For Staff:

Charles W. Gunter

Briefs-in-Chief were filed on December 5, 2017. Response briefs were filed on December 19, 2017.

Over the course of the proceedings, public comment was received orally and in writing. Public comment sessions were held in Silver City on June 23, 2017, at which 45 members of the public made oral statements. At the public comment portion of the February 27, 2017 hearing in Santa Fe, 20 members of the public made oral comments. All but three in Silver City opposed the project. All in Santa Fe opposed the project. As of the date of this Recommended Decision, more than 300 written comments were received from members of the public.

II. DISCUSSION

A. Background

In September 2006, in Case No. 06-00391-UT, the Commission directed PNM and other utilities to investigate the costs and benefits of AMI and to report the findings to the Commission. The PNM report, filed December 19, 2006, identified potential advantages of AMI but concluded that the installation of AMI was not at that time cost-effective. PNM stated that it would continue to monitor developments in technology, cost and other factors affecting the decision to deploy AMI. Ortiz (2/26/2016), pp. 4-5.

Subsequently, in Case No. 12-00238-UT, the Commission ordered PNM to file a report identifying the costs and benefits of transitioning to an automated meter reading solution for all of its customers. PNM's Report on Costs and Benefits of Transitioning to Automated Meter Reading, filed on October 12, 2012, concluded that a transition to automated metering not be undertaken due to the additional costs that would be incurred and uncertainty as to whether the

potential benefits could be fully realized at that time. The Report indicated that the cost for AMI meters was declining and potential benefits were increasing. Ortiz (2/26/2016), p. 5.

On September 25, 2015, PNM filed a Petition for Variance from the Commission's meter testing requirements. PNM requested permission to suspend the requirements associated with the periodic test schedule in Rule 17.9.560 NMAC and the Commission's Order in Case No. 2124, to allow PNM to undertake a full cost benefit cost analysis of an AMI deployment program. PNM stated that, if its Meter Testing Program were not suspended, PNM would be required to replace approximately 58,000 meters during 2016 associated with sample lots of meters that failed its statistical sampling formula. PNM stated that, if it determined that AMI were cost-effective, PNM would file by February 28, 2016 an application to move forward with a full implementation of AMI or a report detailing the reasons why the plan was not cost beneficial. PNM stated that it would seek Commission approval prior to implementing AMI because of the high cost, estimated at that time to be over \$80 million, of undertaking AMI.

On January 20, 2016, the Commission granted PNM's request subject to the following conditions: (1) that PNM make its AMI filing by no later than February 28, 2016; (2) that the variance would terminate if PNM failed to make its AMI filing, if PNM did not otherwise pursue the AMI implementation or if the Commission were to reject the AMI program; 3) that the variance would be terminated by the Commission if otherwise warranted; and 4) that all costs associated with the current meter testing and replacement program would be removed from its rates in Case No. 15-00261-UT.

B. PNM's requests

On February 26, 2016, PNM filed its AMI Application, in which it asked the Commission for the following approvals:

1. Approval of the AMI Project under which, commencing upon approval of this Application and concluding by June 2019, PNM will retire its existing meters and replace them with AMI meters and related equipment.
2. Determination that the cost of AMI, not to exceed \$87.2 million, is reasonable and prudent and authorizing recovery of such cost in future ratemaking proceedings, with any cost overruns recovered in rates only after a Commission determination in a future rate case that such excess costs were prudently incurred, using 17.3.580 NMAC to guide the process.
3. An accounting order authorizing recovery in future ratemaking proceedings of the undepreciated investment in PNM's existing meters as of the date of retirement, through a regulatory asset amortized over twenty years with a carrying charge equal to PNM's pre-tax weighted average cost of capital ("WACC") on the unamortized balance.
4. An accounting order authorizing recovery in future ratemaking proceedings of customer education costs to inform customers about the AMI, not to exceed \$1.5 million, through a regulatory asset amortized over five years with a carrying charge equal to PNM's pre-tax WACC on the unamortized balance.
5. An accounting order authorizing recovery of the costs associated with employee severances resulting from the AMI Project, not to exceed \$5.0 million, through a regulatory asset amortized over five years with a carrying charge equal to PNM's pre-tax WACC on the unamortized balance.
6. An order approving Advice Notice No. 521, modification of PNM's Rate No. 16, Special Charges to include Opt-Out Fees to be charged to customers who elect not to receive an AMI meter or wish to replace an AMI meter with a conventional meter, and granting variances from the filing requirements of Rule 17.9.530 and Rule 17.1.2.10.

7. A variance from Rule 17.5.410.33.B.2 and PNM Service Rule 20 relating to reports by utility personnel who disconnect service for nonpayment.

8. An order amending the caption of this case to conform to the caption of this Application; and for such further relief as the Commission deems proper under the circumstances. Application, pp. 12-13.

In its October 13, 2017 rebuttal testimony, PNM modified its requests to address the impact of certain cost increases. The major changes included an increase in PNM's estimated capital costs from \$87.2 million to \$95.1 million, and, as a partial offset, the withdrawal of its request for a regulatory asset to recover the severance costs of the employees it plans to lay off.

C. Request for approval of the AMI project

1. AMI infrastructure

PNM's proposed AMI Project would include meters with two-way communications capability, a communications network and back-office information technology. The back-office technology consists of a meter data collection system, network management system and a Meter Data Management System ("MDMS") that would manage the two-way communication network and the information provided by the meters. The AMI Project would include a customer portal, accessible by computer, tablet or smart phone, through which customers would-be able to track their energy usage over time and set usage goals that they would-be able to monitor through a system of alerts. Teague (2/26/2016), p. 5.

The AMI meters include data storage capability to support data intensive applications, a load-limiting remote disconnect and reconnect switch, power outage detection, restoration notification, voltage monitoring, automatic tamper and theft detection, and the ability to upload updated software for security and functional optimization. Teague (2/26/2016), p. 6.

PNM states that the communications network consists of highly secure and redundant hardware and software systems that enable communication between the meters and the MDMS. The network includes grid routers which wirelessly gather the information from the meters, and software which consolidates the data and transports it to the MDMS via either fiber communication networks or cellular communications devices. Teague (2/26/2016), p. 6.

The MDMS is the database of record for the meter data. The MDMS provides long-term storage of interval meter reads, tampering and outage data. The MDMS would transfer meter data to other systems such as the customer billing system and be the source of the data for the customer portal. Teague (2/26/2016), p. 6.

Other applications include analytical software modules to monitor the AMI system such as tools that alert to potential tampering and voltage variations. Teague (2/26/2016), p. 7.

PNM states that, upon receipt of the approvals requested in its Application, it will move forward with the AMI Project and develop a detailed implementation plan. For purposes of the customer cost-benefit analysis, PNM developed the following high-level schedule:

-- Starting Q1 through Q3 of 2017, the AMI back-office MDMS system would be installed and integrated with PNM's customer information system ("CIS"). Business processes would be re-designed, field deployment work planning would-be completed and the customer education plan finalized.

-- During Q3 and Q4 of 2017, the communication equipment would be installed and a meter field test conducted. The meter field test would ensure that the communication system functions accurately by sending meter reads to the MDMS and into the CIS test environment, to confirm that the new system will produce accurate bills for customers.

-- During Q1 of 2018, PNM would begin full deployment of the AMI meters, completing full deployment by June of 2019. Teague (2/26/2016), pp. 7-8.

PNM states that it is proposing a full-scale deployment rather than an initial pilot project, because savings will not be realized if the AMI and non-AMI systems are operated simultaneously. Ms. Teague stated that costs could even increase. Teague (5/20/2016), p. 11

Ms. Teague stated that the risk of encountering problems during implementation of the AMI Project is "quite low" as a result of lessons learned from utilities that have already deployed AMI meters. She stated that current AMI technology is well-tested and its benefits are proven. According to the Edison Foundation Institute for Electric Innovation ("IEI"), over 50 million AMI meters have been deployed in the United States in over 43 percent of U.S. homes, as of July 2014. Teague (5/20/2016), p. 11.

PNM is also mitigating risk by field testing up to 5,000 meters after it has installed the back office technology and communication network sufficient to complete the field test. During the field test, the automated meters would be read both manually for actual billing purposes, and read electronically and tested through the communications network and meter data management system to ensure that the AMI meters are properly communicating with the back office systems. Ms. Teague said PNM will not move forward with the full deployment stage of the AMI project until the field test has been successfully completed. Teague (5/20/2016), p. 12.

2. Customer outreach and education

PNM proposes to communicate directly with each customer prior to deploying the new meter on the customer's property. Customer education expenditures would be made in an 18 month period prior to and during AMI deployment to inform customers about the new AMI meters and how they most effectively can realize the benefits of AMI. PNM states it will inform customers of the expected timeframe for replacement of their current meter and the benefits of

AMI. PNM will also attempt to alleviate any misconceptions customers may have about AMI meters. Implementation of the customer education plan will also give customers who are firmly opposed to AMI installation the information they need to arrange to opt out of the AMI installation if they so choose.

PNM states that it will develop a detailed, comprehensive communication plan based on a proactive messaging approach that uses phone outreach, bill inserts, mailings, community meetings, social media messages, focus groups, and neighborhood associations meetings. PNM will also follow up with customers after the meter is installed to address any questions they may have. The customer outreach and communication plan is estimated to have a one-time cost of \$1,500,000. The estimate was developed based on costs for developing educational materials, holding community meetings, website development, creation of print, digital and radio customer communications, and training PNM customer representatives. Teague (2/26/2016), pp. 45-46.

3. Benefits

a. Annual savings.

In its February 26, 2016 Application, PNM estimated annual operations and maintenance (O&M) expense savings of \$11.3 million after the full deployment of AMI. In its September 5, 2017 testimony, PNM reduced its estimate of savings by 5% to \$10.8 million.

Ongoing O&M Savings	Application February 26, 2017	September 5, 2017	Change
Meter reading	\$5,812,440	\$6,117,265	\$304,825
Field services	2,172,040	1,566,041	(605,999)
Credit and collections (including bad debt reduction)	2,432,300	2,168,776	(263,524)
Call center	268,338	268,132	(206)
Billing	77,538	76,920	(618)
Other savings	572,221	566,516	(5,704)
Total	\$11,334,876	\$10,763,650	(571,226)

Teague (9/5/2017) Exhibit RRT-7.

Meter reading. The primary operational benefit of the AMI Project is the ability of AMI meters to automatically communicate customer usage data to a central location, eliminating the need to send meter readers into the field to manually read meters. Because the entire meter reading function would be eliminated with AMI deployment, PNM estimated, in its Application, \$5.8 million in O&M savings based on the actual expenses incurred by PNM for statewide meter reading in 2015. PNM increased its estimate of savings to \$6.1 million in its September 5, 2017 testimony by increasing the labor load rates used to calculate the annual expenses for the meter reading workers. Teague (9/5/2017), pp. 10-11.

Field services. Certain meter-related functions are handled manually by field services employees in the electric meter department. These functions include meter connects and disconnects, meter reading assistance, meter read-ins and read-outs related to customer move orders, failed meter investigations, read verifications and meter sampling and replacements. With the deployment of AMI, the extent to which these functions would be performed manually in the field would be substantially reduced. PNM originally estimated \$2.2 million in savings and reduced the estimate to \$1.6 million in its September 5, 2017 testimony. The reduction was based upon a decrease in the labor load rate, updated data on the number of field services work orders, updated time required to complete field services work orders and an increase in average cost per mile for transportation charges. Teague (9/5/2017), pp. 11-12, Exhibit RRT-7.

Credit and collections (including bad debt reduction). After AMI has been deployed PNM would no longer send employees to customer locations to collect past due accounts and disconnect service. In its February 26, 2016 Application, PNM estimated a resulting annual savings of \$977,721. PNM also estimated an annual reduction in bad debt expense of

\$1,454,579. PNM states that, with the ability to disconnect service remotely disconnections will occur more promptly, reducing the amount of bad debt. Teague (2/26/2016), pp. 18-19.

In its September 5, 2017 testimony, PNM increased the estimated annual savings from eliminating employee trips to customer locations to collect past due accounts and disconnect service by \$69,662 to \$1,047,383 to reflect an increase in labor rates and an increase in labor loads. PNM decreased its estimate of savings on bad debt expense by \$333,186 (23%) to reflect the overall decrease in customer bills with poor payment history in the 12 months ended March 31, 2017. Teague (September 5, 2017), pp. 12-13.

PNM Table RRT-3 (September 5, 2017 Supplemental)

Bad Debt Write Offs	Original Filing	Updated Filing	Difference
Customers with poor payment history	\$ 2,895,896	\$ 2,271,077	\$ (624,819)
Less amounts that were 30 days or less delinquent	\$ (615,964)	\$ (446,743)	\$ 169,221
Less amounts under medical certificate protection	\$ (825,353)	\$ (702,941)	\$ 122,412
Estimated savings for bad debt	\$ 1,454,579	\$ 1,121,393	\$ (333,186)

Id., p. 13.

Call center operations. PNM originally estimated annual savings of \$268,338 in call center operations as a result of AMI. PNM stated that the savings would stem from efficiencies in handling billing question calls, connect and disconnect calls, high-bill complaint calls and outage calls. Teague (2/26/2016), p. 22. PNM's September 5, 2017 testimony estimated a \$206 decrease in savings to reflect an updating of the underlying data to the 12 months ended March 31, 2017. Teague (September 5, 2017), p. 13.

Billing. PNM originally estimated an annual savings of \$15,508 related to billing efficiencies for group-billed accounts. For customers with multiple accounts, PNM would be able to schedule the reading of all meters for a particular customer during the same billing cycle, making the billing process more efficient. Teague (2/26/2016), p. 27. PNM's September 5, 2017

testimony estimated a \$618 decrease in savings to reflect an updating of the underlying data to the 12 months ended March 31, 2017. Teague (September 5, 2017), pp. 13-14.

Software maintenance, IT support and claims. In its Application, PNM estimated \$572,000 in annual savings, consisting of \$112,208 for the elimination of maintenance costs for PNM's current hand-held meter reading devices, \$265,088 in annual depreciation for the manual meter reading equipment, \$187,194 for the software used to upload the meter readings from the hand-held devices into the billing system, and \$7,731 in damage claims related to meter reading. Teague (2/26/2016), p. 28; Exhibit RRT-2. PNM's September 5, 2017 testimony decreased the estimated savings by \$5,704. Teague (September 5, 2017), p. 14.

b. One-time O&M savings and expenses.

In its Application, PNM estimated a one-time O&M savings of \$170,000, consisting of \$320,000 in savings that would be realized as the leased fleet vehicles used for meter reading are sold. PNM also estimated a one-time increase in call center expense of \$150,000 to enable PNM to respond to an expected increase in call volume as AMI is deployed and customers have questions about their new meter and the customer portal. Teague (2/26/2016), p. 9.

In its September 5, 2017 testimony, the one-time savings turned into a one-time cost of \$25,000. PNM added \$215,000 in one-time incremental O&M costs for storage and testing of the removed meters. PNM plans to store the removed meters for ninety days so that if a customer requests a test of the removed meter during the first three billing cycles using the new meter, the removed meter will be available to be tested. PNM also added an additional one-time savings of \$20,000 due to an anticipated additional five vehicles which will have an average salvage value of \$4,000 each. Teague (September 5, 2017), pp. 14-15.

One-Time O&M Expense Savings	Application	September 5, 2017	Change
One time offset for sales of vehicles (salvage)	\$320,000	340,000	20,000
One-time increase in call center costs	(150,000)	(150,000)	0
One-time increase in meter storage and testing	0	(215,000)	(215,000)
Net One-Time O&M Savings subtotal	\$170,000	(25,000)	(195,000)

Teague (9/5/2017) Exhibit RRT-7.

c. Operational benefits for customers.

PNM states that customers will receive the following operational benefits from the AMI

Project:

- An on-line customer web portal that will allow customers access to energy use information in near real time to help them make informed decisions about energy use and control costs. The portal will include the ability to set alerts when their usage reaches a certain level.
- The ability of customers to choose their bill due date for better account management and budgeting.
- The ability to start and stop service more easily and quickly.
- Elimination of the need to estimate bills due to property access or weather issues and the avoidance of meter reading errors.
- Increased security and privacy due to the reduced need for meter readers to enter customer property.
- Meter reads will not be subject to human error.
- Immediate alerts to PNM if an AMI meter is tampered with, power is diverted from a meter, or there is a power outage.
- Enhanced emergency response coordination with fire departments and other public safety entities.

Teague (2/26/2016), p. 42; Teague (5/20/2016), pp. 12-13; Teague (2/14/2017) pp. 4-5.

PNM has no plans at this time to implement any measures for demand side management, in home displays, or time-of-use rates. PNM states that the AMI technology that PNM has selected could support a number of such measures, but it believes it is premature to consider implementation of any such measures before the AMI meters have been deployed and PNM has thoroughly evaluated both the additional load data that the new meters will provide and how

customers interact with AMI. In the meantime, PNM states that its Energy Efficiency Design team has begun and will continue to collect information on how other electric utilities have used AMI in conjunction with energy efficiency measures, and on which measures have been successfully implemented with AMI. Teague (5/20/2016), pp. 2-4.

Mr. Ortiz, however, made it clear that PNM considers any energy efficiency measures and programs that the AMI technology may enable to be merely elements of the portfolio of energy efficiency programs that PNM may develop in the future. He said the additional energy efficiency measures enabled by the AMI technology will have to satisfy the same cost-effectiveness standards that apply to energy efficiency programs generally. Perhaps most significant, he also noted that PNM has a "fixed pot" of funds that it can spend on energy efficiency programs and that the programs related to the AMI technology programs will have to compete for those funds along with existing energy efficiency programs.² Mr. Ortiz also stated that PNM did not want to have arguments in this case about justifying the cost-effectiveness of AMI-related energy efficiency programs. Tr. (2/27/2017), pp. 113-114.

d. Operational benefits for PNM

PNM states that the AMI project will provide better information to manage the distribution system such as interval consumption data, voltage data at each customer location and momentary outage information. PNM states that the information will enhance its ability to respond to outages and allow PNM to more effectively manage the distribution network equipment. Teague (2/26/2016), p. 44.

² Section 62-17-6(A) of the Efficient Use of Energy Act ("EUEA") states that funding for EUEA program costs for investor-owned electric utilities shall be 3% of customer bills, excluding gross receipts taxes and franchise and right-of-way access fees, or \$75,000 per customer per calendar year, whichever is less. NMSA 1978, §62-17-6(A).

PNM also states that the AMI project will better enable PNM to coordinate with fire departments and other agencies and respond faster to emergencies. For example, when a disconnection of service is necessary due to a fire or other emergency, PNM will be able to perform the disconnection remotely instead of having to send an employee to the location to disconnect service. AMI also will have a positive impact on staff safety by eliminating physical trips to the customer location for meter reads and disconnects. Teague (2/26/2016), p. 44-45.

4. Accuracy and reliability

PNM states that the Itron meters PNM will install are the fourth generation of a meter that was originally launched in 2006. Ms. Teague stated that the Itron meters have been proven to be accurate, and there are currently more than 24 million meters in operation. She stated that the Itron meters meet all American National Standards Institute ("ANSI") standards for meter accuracy. She also cited a 2010 study commissioned by the Public Utility Commission of Texas that evaluated AMI deployment in Texas, including CenterPoint Energy's Itron meters. The assessment determined that Itron meters accurately and reliably deliver meter data to utilities. Of the 5,100 meters examined during the test, almost all were found to be accurate by ANSI standards. Teague (5/20/2016), pp. 8-9.

PNM also provided data regarding Itron meters (supplied by Itron) from four other utilities with large AMI Itron meter deployments that showed reliable and accurate read rates greater than 99%. The data showed further that Itron's meter headend software, which is used to gather data from the meters, has been tested and proven to deliver 99.99% high availability and disaster recovery. The data showed that residential meters have a failure rate below one-half percent a year, and commercial and industrial meters have a failure rate below three quarters of a percent per year. Teague (5/20/2016), p. 9.

5. Opt-out provisions

Customers would be given the option to receive an AMI meter or to keep their existing meter. Customers would also have the option to receive an AMI meter and to replace it at a later time with a conventional meter. PNM proposes one-time fees for such customers and a monthly fee to recover PNM's costs for meter reading, meter installation and other costs to serve the customers. Teague (2/26/2016), pp. 46-47.

PNM proposes a one-time fee of \$35.00 for customers who opt-out of the AMI project during the initial deployment period. The one-time fee was calculated based on the cost of one FTE, who would be responsible for administering opt-out requests during the 18-month deployment period. PNM multiplied the \$29.82 loaded labor rate by 3,120 hours (2,080 hours multiplied by 1.5 years) which resulted in a total cost of \$93,038. PNM then divided that sum by an estimated 2,655 opt-out customers³ which, after rounding, resulted in a \$35.00 per customer one-time fee. Teague (2/26/2016), p. 50.

PNM proposes a one-time fee of \$60.00 for customers who opt-out after their AMI meter is installed. The one-time fee is based on the service order cost of \$29.93 multiplied by 2, or a fee of \$60.00 after rounding. PNM states that a customer who chooses to opt-out after the AMI meter is installed will cause PNM to make two service trips, first to remove and replace the AMI meter with the non-AMI equipment and later, when the customer terminates service, to replace the non-AMI equipment with AMI equipment. Teague (2/26/2016), pp. 50-51.

In addition to the one-time charges, PNM proposes a continuing monthly fee, initially at \$46.96 and finally, \$42.72. PNM proposed the reduced monthly fee in its September 5, 2017

³ Based on the experience of other utilities, PNM estimated that one half of one percent (.5%) of customers will opt-out of AMI. Multiplying 531,000 AMI meters by .005 results in PNM's estimate of 2,655 potential opt-out customers. Teague (2/26/2016), p. 48.

testimony based upon the intervening reduction in PNM's cost of a non-standard service order.

Teague (9/5/2017), p. 16.

	Total Annual Cost	Monthly charge
Monthly non-standard service order	\$818,483	
In house meter maintenance	21,904	
Manual meter reading equipment depreciation	265,088	
Manual meter administration	68,505	
Technology and support	187,194	
Total	1,361,174	
Volume of non-standard meters		2,655
Total monthly charge to customers (\$1,361,174 / 12 months / 2,655 customers		\$42.72

Teague (9/5/2017), Exhibit RRT-20.

PNM calculated the fee using the \$25.69 cost of a field service order for a meter failure investigation as a proxy for the cost of a meter technician performing a manual meter read as well as the other types of service orders that will be required for the non-AMI meters. PNM states that the cost of meter failure service orders is reasonable, because opt-out customers will be geographically dispersed. PNM then added costs for meter testing and inventory administration, depreciation expense, a return on the meter reading hardware and software, the cost of one FTE to administer the manual meter reads, and the cost of technology support for manual meter reading, including server data storage, software maintenance and application support for the software to continue manual meter reading integration into the CIS system.

Teague (2/26/2016), pp. 48-49; Teague (9/5/2017), Exhibit RRT-20.

PNM states that the fees are justified for opt-out customers, because they reduce the AMI cost savings for other customers. PNM states that the fees are consistent with the principle of cost-causation in that customers who cause costs for meter reading and other manual processes should pay those costs. Teague (2/26/2016), pp. 47-51.

6. Job losses

PNM anticipates that 125 positions will be lost as a result of the AMI project. PNM states that it will attempt to re-assign affected employees to fill vacant positions within the company. PNM also will make reasonable efforts to re-train employees for new positions that will be necessary under AMI. Teague (2/26/2016), p. 28.

Employees who are laid-off and are represented by the IBEW may receive up to four months of base salary plus one additional week of base salary for each year of service. They would also receive extended medical, dental and vision insurance for up to 6 months at the same cost to the employee as prior to termination and life insurance for the face amount of \$10,000 for a 6-month period following termination at no cost. Represented employees also receive a lump sum payment of up to ten percent of the employee's base salary for placement assistance. Teague (2/26/2016), p. 29.

Employees who are laid-off and are not represented by the IBEW may receive up to four months of base salary plus one additional week of base salary for each year of service. They would also be eligible for an additional lump sum payment based on length of service with the company as follows: less than 10 years = 10% added to amount described above, 10 years and over but less than 20 years = 20% added to the amount described above and 20 years and over = 30% added to the amount described above. Non-represented employees may also elect to receive extended medical, dental and vision insurance for up to 6 months at the same cost to the employee as prior to termination and may also receive life insurance for the face amount of \$10,000 for a 6 month period following termination at no cost. Placement assistance at no cost would also be offered for up to six months for non-represented employees and would include: career assessments, resume preparation and editing, online job search campaigns, career

branding techniques, social media and networking strategies, interviewing training and practice, as well as, job offer and compensation negotiation techniques. Teague (2/26/2016), pp. 29-30.

PNM estimated severance costs of \$5.0 million based on the projected staff reductions in the meter reading, collections and meter field services departments. The severance cost estimate is based on severance for 125 employees and does not account for any employees who may re-deploy into vacant positions or new AMI positions. Teague (2/26/2016), p. 30. PNM ultimately agreed in its October 13, 2017 rebuttal testimony to forego recovery of the costs and is no longer seeking a regulatory asset to recover them. Ortiz (10/13/2017), p. 2.

In addition, in PNM's October 13, 2017 rebuttal testimony, PNM proposed to provide up to \$5,000 additional tuition reimbursement to employees whose jobs are affected due to the AMI project. The funding is in addition to PNM's current education reimbursement plan which supports employees with \$5,000 per year for tuition reimbursement. PNM would also extend re-employment rights for represented employees from the current 12 month period to 18 months. Teague (10/13/2017), p. 9. PNM will not seek recovery of these additional costs. Ortiz (10/13/2017), p. 4.

7. AMI costs

PNM originally estimated the capital costs for replacing its current metering technology with AMI to be \$87.2 million. This amount included the estimated cost to acquire and deploy 531,000 advanced meters, back office information technology systems, and a communications network. Also included in the amount were estimated project management costs and Allowance for Funds Used During Construction ("AFUDC"), as well as other capital loads. Ortiz (2/26/2016), pp. 6-7.

	Application	September 5, 2017
Advanced meters	\$75,479,909	\$85,131,958
AMI back office systems	5,498,512	4,079,829
Communications network (hardware)	3,502,779	3,275,125
Communications network (software)	2,677,380	2,649,506
Total	\$87,158,580	95,136,417

Monroy (September 5, 2017), Exhibit HEM-3; Monroy (2/26/2016), p. 6.

By September 5, 2017, the capital cost estimate increased to \$95.1 million. The primary reason for the increase was a \$7,002,478 increase in meter installation costs. Of that amount, \$6,224,923 is due to PNM asking for separate bids for the installation work in June and July 2017. An additional \$270,000 was added to cover the cost of scrapping the old meters and \$507,555 is due to the increase in gross receipts tax. Teague (September 5, 2017), p. 9.

There was also a net overall increase of \$947,509 in equipment costs. The base cost for the meters and equipment did not change because Itron held its quote for material pricing to its original bid. The costs increased due to PNM's decision to purchase 20,000 additional meters (\$1,871,437), installation equipment support (\$169,350), and an increase of \$241,489 due to an increase in gross receipts tax from 7.1875% to 7.5% on the materials costs. The increases were offset somewhat by a decrease of \$1,016,167 for internal infrastructure hardware and software, and a decrease of \$318,600 for communication coupler equipment that is no longer needed. Teague (September 5, 2017), p. 8.

The purchase of 20,000 additional meters was caused by a 10,000 increase in the number of installed meters serving PNM customers since the original filing and PNM's determination that a further 10,000 meters would be necessary for an inventory of meters to meet the needs of new customers. Teague (September 5, 2017), p. 9.

In addition to the capital costs of the project, PNM also originally requested the recovery of its undepreciated investment in existing meters, employee severance costs, and customer education costs through the establishment of regulatory assets. The estimated total value of these regulatory assets was \$39.5 million. Ortiz (2/26/2016), pp. 6-7.

Regulatory Assets	Application	September 5, 2017
Undepreciated costs of existing meters	\$33 million	\$24.9 million
Employee severance costs	5 million	0
Customer education costs	1.5 million	1.5 million
Total	\$39.5 million	\$26.4 million

Monroy (February 26, 2016), pp. 13-16; Monroy (September 5, 2017), p. 7; Ortiz (10/13/2017), p. 2. PNM requested recovery of the undepreciated costs of the existing meters over a 20 year period, and recovery of the severance and customer education costs over a 5 year period. PNM proposed carrying costs on all of the regulatory assets at the rate of PNM's weighted average cost of capital. Monroy (February 26, 2016), pp. 13-16.

On October 13, 2017, PNM proposed reductions to the recovery of the regulatory assets to increase the economic benefits to customers. PNM reduced its estimate of the undepreciated value of its existing meters,⁴ and agreed to reduce the carrying charge on the regulatory asset to its 4.94% embedded cost of debt (instead of the 7.92% WACC used in PNM's Application⁵) -- although PNM also proposed, on the other hand, to reduce the recovery period to 10 years. PNM also agreed to completely forego its request for recovery of the \$5 million in employee severance costs. Ortiz (10/13/2017), p. 2.

⁴ Mr. Monroy stated that the primary reason for the \$8.1 million reduction in the estimated value of the undepreciated investment was the elimination of equipment used for substation and current transformer metering, which PNM subsequently determined would not be replaced. Monroy (9/5/2017), p. 7.

⁵ Tr. (10/26/2017), p. 61. PNM's WACC was reduced to 7.23% in the Revised Stipulation in Case No. 16-00276-UT. Id.

8. Cost-benefit analysis

PNM submitted cost-benefit analyses with its original Application, with its September 5, 2017 testimony and in its final rebuttal testimony on October 13, 2017. The analyses compared the net present value of the annual revenue requirements over 20 years associated with the AMI Project, to the revenue requirements over the same time period associated with PNM's current meters and related O&M expenses. Monroy (2/26/2016), p. 4.⁶

The original analysis filed on February 26, 2016 showed that replacing current metering with AMI will produce a net present value benefit of \$20.9 million over 20 years. Monroy (2/26/2016), Exhibit HEM-2. The September 5, 2017 analysis showed a reduced benefit of \$8.6 million over 20 years, after including the increased installation costs based on selection of Kelly Cable as the AMI installation contractor and other updated costs. Monroy (9/5/2017), Exhibit HEM-2 Supp. The October 13, 2017 analysis increased the 20-year benefit to \$16.1 million after factoring in the concessions in PNM's rebuttal testimony to forego recovery of the \$5 million in employee severance costs and to accept a reduced carrying charge on PNM's remaining regulatory asset requests. Monroy (10/13/2017), Exhibit HEM-2 Reb.

Costs for on-going meter replacements that occur after the deployment period were not included in the cost-benefit analysis. PNM expects that after deployment the cost for replacements will be less than the current cost of meter replacement considering that the AMI meters will be much newer than the existing meters. Monroy (2/26/2016), p. 7.

9. Rate increases and bill impacts

The only rate change that PNM is proposing at this time is the establishment of the opt-out rates for customers deciding not to participate in the AMI program. PNM is asking the

⁶ The 20 year time period was selected based on the 20 year expected useful life of the AMI meters. Monroy (2/26/2016), p. 4.

Commission to approve PNM's proposed ratemaking treatment for the costs of the AMI project in this case, but PNM will not seek an increase in rates to actually start recovering the costs until a future rate case.

In PNM's original filing, it estimated a first year revenue requirement impact of \$4,942,187, which would decline to a \$947,271 savings in 2024. Monroy (2/26/2016) Exhibit HEM-2. The revenue requirements associated with the AMI Project are the highest in the early years of the project. PNM states that revenue requirements and customer bill impacts will decline as the AMI investment depreciates and the O&M savings grow over the life of the project. PNM states that, beginning in 2024 and continuing through 2039, savings resulting from the AMI Project will exceed the project's costs. Monroy (2/26/2016), p. 20.

In September 2017, PNM increased its estimate of the first year revenue requirement increased to \$5,859,380 based primarily upon the increase in installation costs, declining to \$1,011,061 in savings in 2026. Monroy (9/5/2017), Exhibit HEM-2. On October 13, 2017, PNM estimated the first year revenue requirement as being \$5,006,012 (based upon the concessions PNM offered in its rebuttal testimony), declining to \$560,624 in savings in 2026. Monroy (10/13/2017), Exhibit HEM-2.

PNM also presented the following estimated bill impacts associated with the revenue requirement increases to inform the Commission of the potential impact of the AMI Project in the future:

Residential Customers	Avg Class Bill Impact %	Cost per Month per Bill (Avg)	Annual Cost (Avg)¹
Jan. 9, 2017 (Vogt) ²	0.50%	\$0.36	\$4.32
Sept. 5, 2017 (Vogt) ³	0.74%	\$0.53	\$6.36
Oct.13, 2017 (Vogt) ⁴	0.45%	\$0.32	\$3.84

¹Calculated (Cost per Month per Bill x 12)

²Vogt (1/9/2017), Exhibit SAV-2.

³Vogt (9/5/2017), Exhibit SAV-1.

⁴Vogt (10/12/2017), Exhibit SAV-1 Corrected.

10. Health and safety

a. Health risks

PNM presented the testimony of a cancer researcher, Edward P. Gelmann, M.D., Professor of Medicine and of Pathology and Cell Biology at the Columbia University Medical Center in New York City.⁷ Although a cancer researcher, Dr. Gelmann also reviewed scientific literature that addresses a possible connection between exposure to radio frequency ("RF") radiation and non-cancer health effects.

Dr. Gelmann stated that smart meters use transmission frequencies similar to baby monitors, cordless telephones, and cell phones, and that all transmit at levels well below the thresholds set by the FCC. He also said the smart meters proposed by PNM would only emit RFs for a total of a few minutes a day so that the exposure duration is very brief compared to cell phones and baby monitors. Gelmann (2/14/2017), pp. 5-6.

Dr. Gelmann stated that he has never done any clinical or epidemiological research on the health effects of RF radiation, nor experimental on the biologic effects. Tr. 216 (3/1/2017). He stated, however, that his review of the scientific, peer-reviewed literature and of the operations of smart meters allows him to conclude that there is no convincing evidence that smart meters or similar devices can cause any adverse health effects. He also stated categorically that there is no chance that they can cause cancer or affect the cancer process. Gelmann (2/14/2017), p. 6. He stated that complaints about health effects of smart meters are impossible to quantify or characterize on a physiologic basis and that there is no scientific evidence that plausibly links the complaints to the RF transmissions of smart meters. Gelmann (2/14/2017), p. 8.

⁷ Dr. Gelmann has published over 180 scientific papers, principally on cancer. He has also co-authored several book chapters on cancer and cancer causation, and he is the senior editor of a textbook on molecular oncology that was released in 2014. Gelmann (2/14/2017), pp. 1-2.

Dr. Gelmann testified that other states, such as California, Vermont, and Maine, have considered the connection between health issues and smart meters and concluded that smart meters are completely safe and that additional study of their safety is not necessary. He stated that approximately 50 million smart meters have been installed across the United States, and there has been no credible evidence and no reports in the peer reviewed literature implicating these devices in adverse health outcomes. Gelmann (2/14/2017), p. 6.

Dr. Gelmann stated that the claims of illness due to Smart Meter exposure described by the witnesses of NMUS and CFRE are subjective, vague and diffuse. He said the most common health effects are sleep disorders, tinnitus, and dizziness, but he said there is no physiologic basis to associate smart meter transmissions with any of the symptoms. In addition, none of the NMUS witnesses presented medical evidence that identifies an anatomic, chemical, or physiologic basis for RF field causation of the symptoms. He said they provided no results of sleep studies to demonstrate sleep pathology and there was no evidence supporting a temporal association between smart meter proximity and a cause of tinnitus. He also said that the radiofrequency fields of smart meters are replicated throughout our environment in nearly any populated area, such that it would be nearly impossible to demonstrate to a medical probability that the dizziness cited was associated with smart meter fields. Gelmann (2/14/2017), pp. 8-9.

Dr. Gelmann acknowledged that some use the label EHS for a very long list of symptoms that they attempt to attribute to sources of radiofrequency electromagnetic fields ("EMF"), but he said EHS is not recognized as a medical condition. He stated that some of the citations in the literature review he conducted for his testimony state that radiofrequency EMF causes various symptoms, but he said there does not appear to be any link to disease and there is no citation that

describes progression from symptomatology to an actual disease state. Gelmann (2/14/2017), pp. 9-10.

Dr. Gelmann also criticized some of the papers as not having been peer-reviewed and stated that others do not actually support the conclusions claimed.⁸ He said it has been suggested for more than two decades that both power line frequency and radiofrequency EMF can affect levels of melatonin, but the data from different studies have been contradictory and, in some cases, negative. He said there is, therefore, no consensus whether there is an effect of EMF of various frequencies on serum melatonin levels. He also said that the literature describes no physiologic or health impact of the changes in melatonin that have been described in the literature. Gelmann (2/14/2017), pp. 12-13. Finally, Dr. Gelmann stated that RF at the power densities of smart meter transmissions do not have sufficient energy to cause genetic mutations, and direct laboratory experiments have repeatedly and conclusively shown that transmission frequencies similar to those employed for smart meters do not cause DNA damage or mutations at the FCC-approved amplitudes used. Gelmann (2/14/2017), pp. 13-14.

⁸ According to Dr. Gelmann, Lyskov et al (*Int J Psychophysiol* 42:33, 2001), examined individuals who perceived themselves to have EHS and matched controls. Upon exposure to a RF field there were some statistically significant, but physiologically insignificant differences between a subset of cardiovascular parameters in the two groups. There were no differences in electroencephalographic results between the two groups. The data presented by Lyskov do not support a role for radiofrequency EMF in symptom causation. Gelmann (2/14/2017), pp. 11-12.

Eskander et al (*Clin Biochem* 45:157, 2012) measured the levels of numerous hormones over several years in subjects with different degrees of cell phone use. Making single measurements years apart without multiple verifications at each time point is subject to confounders. Thus we do not know the inter-individual variation of the hormone levels over several days at the time points of 1, 3, and 6 years. The few statistically significant differences that were found to correlate with subjective cell phone use were of no physiologic significance. This was a study that showed no important effects of radiofrequency fields on hormonal levels. Id.

Dr. Gelmann also stated that other papers, such as Abdel-Rassoul et al (*Neurotoxicology* 28(2):434-440, 2007) and McCarty et al (*Int J Neurosci* 121:670-6, 2011) do not provide data that demonstrate there are health effects of radiofrequency fields as found in everyday life. Id.

Michael Belanger, Product Manager responsible for Itron's OpenWay systems, testified that Itron's RF communication systems comply with Federal Communication Commission ("FCC") requirements. He said all of the radio elements to be used for the AMI project have been certified by the FCC except the OpenWay Riva Routing Node (used as a range extender), which was still in development at the time of his February 2017 testimony and which, he said, would be released by the end of 2017. He said the new design of this component uses the same radio elements as used in components that have been certified, so he was confident that the new component would also be certified. He also said that factory tests ensure that each radio has been assembled in accordance with the approved design, and the settings cannot be changed in the field. Belanger (2/14/2017), pp. 3-6.

Mr. Belanger described the extent to which RF energy levels disperse beyond each meter. He said RF energy levels in a typical meter socket (between the meter and the customer's outside wall) are at least 10 times lower than in front of the meter. Thus, if a meter has a peak output power level of 1.0 Watt directly in front of the meter, the value would be 0.1 Watt (100 milliwatts) at the rear of the meter. The building materials to which the meter box is mounted provide additional RF attenuation. Belanger (2/14/2017), p. 11.

He also said that RF levels and the resulting power density drop off very quickly as the distance from the meter increases -- reducing at rate equal to the square of the distance.

Distance (feet)	Distance (inches)	Distance (centimeters)	Pwr Density (mW/cm ²)	FCC Limit (mW/cm ²)	% of Limit
	7.876	20	0.239	0.61	39%
1	12	30.48	0.103	0.61	17%
2	24	60.96	0.026	0.61	4%
3	36	91.44	0.011	0.61	2%
5	60	152.4	0.004	0.61	1%

Belanger (2/14/2017), pp. 12-13.

Mr. Belanger stated further that the AMI meters transmit RF signals in short durations and only intermittently throughout the day.⁹ He said meter transmissions will be of short duration and spread throughout the day. He said the meter's transmitter is, on average, only active 0.21% of the time (about 3 minutes per day). The maximum duty cycle (i.e., how often the transmitter is active as compared with being idle) is 8% of the time (115 minutes per day). Belanger (2/14/2017), pp. 13-15.

Mr. Belanger said that smart meters present a much lower level of RF exposure than do cell phones. Smart meters generally transmit at a power level of 1 watt while cell phones can transmit at a power level of 2 watts. Belanger (2/14/2017), p. 15.

Finally, PNM witness, Mr. Hawkins, prepared a table that shows other utilities in New Mexico that use some form of AMI or AMR.¹⁰ He said that there are approximately 600,000 meters with RF communications already installed in the state of New Mexico and that New Mexico utilities began installing these meters in 2006.

⁹ The RF communications network PNM will deploy is a frequency hopping network, which forms cells of meters under the routers. The meters will form a multi-hop mesh network to establish communications paths to the routers and from there to the head end systems. Belanger (2/14/2017), p. 14.

¹⁰ PNM's 2012 Report on Costs and Benefits of Transitioning to Automated Meter Reading described the differences between two automated meter technologies, which were becoming known as Automated Meter Reading ("AMR") and Automated Metering Infrastructure (soon to be known as "Advanced Meter Infrastructure" or "AMI"). The 2012 report described "AMR" as "a system of individual meters that have a short range radio frequency ("RF") transmitter that allows a meter reader in close proximity to an individual electric meter to gather the meter read remotely" and Automated Metering Infrastructure ("AMI") as a system that "deploys meters with a communications technology, either cellular or radio frequency ("RF"), that communicates meter readings directly back to the utility . . . [and which] also allows opportunity for two way communications between the customer and the utility." Report, p. 1.

PNM Table JH-1 Rebuttal

Utility	Technology	Number of Meters Installed
Albuquerque Bernalillo County Water Utility Authority	Sensus – tower based	80,000 meters with goal of 100,000 installs by July 2017 bringing them to 50% deployment. Goal of 200,000 installs (100%) by 2021
Kit Carson Electric Cooperative, Inc.	Cannon RF Mesh	21,634 Cannon meters + 2,373 Nex-Grid meters accounting for about 90% of the meters installed.
Los Alamos Department of Public Utilities	Landis & Gyr Gridstream	1,600 meter installs (~19%) with plans to install an additional 7,000 meters.
New Mexico Gas Company	AMR – 1 way communications	Approximately 345,000 meters installed
City of Santa Fe Water Division	Badger Meter with Cellular communications provided by Aeris	34,000 meters installed covering nearly 100% of customers.
PNM	AMR – 1 way communications	Approximately 34,000 meters installed
Town of Silver City Utilities Department (Water)	Metron with AMR RF communications	99% Complete with nearly 7,000 meters installed
El Paso Electric Co. (Las Cruces)	Residential Itron – with AMR communications Commercial – Itron with cellular communications	Approximately 85,000 meters installed in New Mexico

Hawkins (2/14/2017), pp. 9-10.

Mr. Hawkins said PNM submitted requests under the Inspection of Public Records Act to the New Mexico Department of Health ("DOH") and the Commission for complaints received since January 1, 2006 regarding health effects caused by smart meters. He said DOH and the Commission responded that they had no such records -- although they had received calls expressing concerns about the AMI project proposed here. Hawkins (2/14/2017), pp. 10-11.

b. Risk of fires

PNM states that its current meters are a solid-state digital readout meter -- "the same meter that [PNM is] proposing for the AMI meters with the exception that the AMI meters have

a remote disconnect switch and have a communications module to be able to talk to the AMI system." Tr. (3/1/2017), p. 147.

Larry O'Dell, Senior R&D Manager for Itron testified that there is a minimal risk of any meter causing a fire and the risk of a Centron II meter causing a fire is no greater than the risk of any other meter PNM currently has installed causing a fire. He said the probability of a Centron II meter causing a fire is very low. He said there are more than 15 million Centron II meters in service and there have been no reported fires where the meter was actually found to be the cause. O'Dell (2/14/2017), p. 3.

Mr. O'Dell stated that Itron designs its Centron II meters to minimize the risk of fires. The base material used for the Centron II is polyethylene terephthalate, an engineering thermoplastic material chosen for its high melt temperature and high ignition temperature. The remote switching mechanism in the Centron II meter is a custom design that prevents overheating during maximum current flow situations. It is also designed to be either fully open or fully closed, and cannot become stuck in a partially closed position. O'Dell (2/14/2017), p. 3.

Also, the protection scheme used for the Centron II meter electronics includes a 480V MOV (metal oxide varistor) protected by a 100 ohm fusible resistor. This allows the meter to survive an overvoltage event of two times the normal 240V service voltage. In the event the overvoltage condition exceeds 480V, the fusible resistor prevents any catastrophic failure. O'Dell (2/14/2017), p. 4.

He said that Itron's Centron II meters are certified to Underwriter's Laboratories ("UL") 2735, which specifically addresses fire safety. Before certifying a meter as UL 2735 compliant, UL analyzes the materials it is made of to insure they meet specific flammability ratings. UL also tests the meter's critical components in single fault conditions to evaluate how the product reacts

when a component fails. If a meter has a remote switching mechanism, as the Centron II meters do, UL tests the switch over 1,000 cycles to insure its reliability. UL 2735 also addresses materials selection, radio frequencies, component selection, and other aspects of meter safety. O'Dell (2/14/2017), p. 4.

Mr. O'Dell testified that Itron's Centron II meters are also certified as compliant with applicable American National Standard Institute ("ANSI") and Canadian Standards Association standards. While ANSI is not specifically a fire safety standard, there are several ANSI tests that are safety related. He said ANSI requires that the temperature of internal current carrying components of the meter not exceed 55 degrees Celsius ("°C") above ambient. ANSI also requires the meter to survive high voltage surges and high current transients without damage. O'Dell (2/14/2017), pp. 4-5.

Mr. O'Dell said that the claims made by witnesses for CFRE and NMUS regarding fires allegedly caused by smart meters involved meters produced by other manufacturers. He said the inner workings of meters manufactured by various meter manufacturers are very different, from the way they measure power to how the protection schemes are implemented. O'Dell (2/14/2017), p. 3.

He disagreed with the claim of CFRE witness, Mr. Lambe, that during activation of the meter's remote switch, a burst of power can cause arcing in the meter and result in a fire. He said the switch in the Centron II meters is designed to adequately carry maximum current without generating heat in excess of that allowed by ANSI. O'Dell (2/14/2017), p. 5. He said Itron has shipped over fifteen million Centron II meters with switches, and no switches have been reported as generating excess heat. O'Dell (2/14/2017), p. 6.

He also said that the Lithium battery used in the Centron II meters does not pose a risk of fire. The battery is a primary cell and is not rechargeable. It also has a series diode to prevent current flow to the battery. He said, as part of Itron's qualification of battery vendors, meters containing the Lithium batteries are tested for 1,250 hours in an 80°C/80% humidity test. They are also tested at 90°C at low humidity for 5,000 hours. These extreme temperatures are more than the meter will see in normal operation. O'Dell (2/14/2017), p. 6.

Mr. O'Dell stated the plastic used for the meter cover is polycarbonate, and has been used as a lighter, more robust alternative to glass covers in meters for decades. The plastics used in the Centron II meters are all high temperature engineering thermoplastics, with the base, for example having an ignition temperature above 400°C. O'Dell (2/14/2017), pp. 6-7.

Mr. O'Dell also stated that an error in the testing protocol used in a MET Labs report identified by CFRE witness, Mr. Simmons, addressed meter accuracy after subjecting the meter to an overload of electrical current and that Mr. Simmons did not identify any errors in the testing that addressed meter safety when subjecting the meter to an overload of electrical current. O'Dell (2/27/2017), pp. 3-5, discussing Simmons (2/14/2017), pp. 5-6. Mr. O'Dell said that Itron informed Met Labs of the mistake identified by Mr. Simmons, that Met Labs subsequently performed the pertinent tests correctly, and that no problems were identified. Tr. 127-151 (10/25/2017).

Mr. Hawkins testified that Mr. Lambe does not claim that any of the three fires he discusses involved an Itron meter, nor does he claim that an Itron meter has ever been the cause of any fire. For two of the fires, Mr. Lambe states proper investigations were not done because the suspect meters were not located. The third fire apparently involved a meter manufactured by Sensus. Hawkins (2/14/2017), p. 3.

Mr. Hawkins also stated that the 2014 article on www.greentechmedia.com cited by Mr. Hart reports on the replacement of meters manufactured by Sensus at utilities in Oregon and Canada. He said the article does not make any claim regarding whether smart meters in general, or Sensus meters in particular, have caused fires. To the contrary, the article states: "it appears there's no link between reports of fires and problems with Sensus' meters themselves." Mr. Hawkins notes that the article only addresses Itron meters in its last paragraph, where it states: "BC Hydro is using Itron meters, and we haven't seen that smart meter maker's name connected to fire concerns." Hawkins (2/14/2017), p. 4.

Finally, Mr. Hawkins stated that CFRE has not provided sufficient information to determine the causes of the fires its witnesses cite. He said some of the conditions mentioned can be indicative of issues known as "hot sockets," or a poor meter to socket connection which can create a potential for arcing and increased heat. Mr. Hawkins stated that the poor meter to socket connection can be caused by an improper meter installation or pre-existing defects in the meter socket, both of which are independent of whether the meter is a smart meter. He also said PNM only purchases and installs meters that comply with ANSI C12 meter standards and that the standards specify the acceptable dimensions for the meters, including the dimensions of the meter blades that are plugged into a customer's socket. He said the Itron meters PNM proposes to install will have the same meter to socket connection as PNM's other solid state meters. Hawkins (2/14/2017), pp. 5-6.

D. Request for advance ratemaking treatment

Mr. Ortiz stated that implementation of AMI will provide significant financial and operational benefits, but the project is not necessary for the provision of adequate service nor is it required by any Commission rule or other regulatory mandate. Because it will require a significant capital investment, however, PNM is asking for advance ratemaking treatment -- prior

to the project's implementation and outside the context of a rate case -- of its right to fully recover the capital costs and its proposed regulatory assets. He said "[s]imply stated, before proceeding with a discretionary expenditure of this magnitude, PNM needs assurance that all of the costs of the project as well as the costs of its remaining investment in existing meters will be recoverable in rates." Ortiz (2/26/2016), p. 8. He said PNM will not proceed with the project if the Commission does not authorize the future capital investments and regulatory assets. *Id.* PNM asks that the Commission's affirmative findings on these issues would be res judicata in future proceedings. PNM Brief-in-Chief, p. 19.

PNM argues that the Commission has the legal authority under the Public Utility Act to approve advance ratemaking treatment of the cost of the installation and equipment for the AMI Project. PNM states that the Commission is vested with expansive regulatory power to effect the articulated policies under the Act and that, among the most prominent powers conferred on the Commission is the power to set utility rates. NMSA 1978, § 62-6-4(A); § 62-8-1, § 62-8-7; and § 62-9-1(B). While the CCN statute (i.e., NMSA 1978, §62-9-1(B)) is not directly applicable, it allows the Commission to determine the future ratemaking principles and treatment for facilities that are the subject of the CCN application. By analogy, the Commission can likewise determine the ratemaking treatment for the AMI Project.

PNM also argues that it is not unprecedented for the Commission to make advance ratemaking determinations. PNM cites as an example the Commission's approval of a stipulation providing for the future ratemaking treatment for PNM's undepreciated investment in Units 2 and 3 of the San Juan Generating Station as well as the installation of selective non-catalytic reduction technology on Units 1 and 4 pursuant to a contested stipulation. Certification of

Stipulation, Case No. 13-00390-UT, November 15, 2015, ¶¶ 5, 4 and 8 at 100-101, approved in Final Order Approving Certification of Stipulation, December 16, 2015.

Thus, PNM is requesting a determination now that \$95.1 million capital cost of the AMI Project is reasonable and prudent before the costs have been incurred and authorization to recover the costs in a future ratemaking proceeding. PNM proposes that any cost overruns be recovered in rates only after a Commission determination that the excess costs were prudently incurred, using the Commission's cost overrun rule for CCNs in 17.3.580 NMAC to guide the Commission's review. Ortiz (2/26/2017), p. 3.

PNM is also asking the Commission to approve now the establishment of regulatory assets to recover an estimated \$24.9 million in undepreciated costs for PNM's existing meters and \$1.5 million in customer education costs.

Mr. Ortiz stated that PNM's investment in its existing metering equipment has been prudently incurred. The existing meters have been in use on PNM's system for many years. They have provided reasonable service, and their costs have been included in PNM rates in numerous rate proceedings without any challenge to their prudence or reasonableness. He said PNM did not anticipate AMI implementation and fully anticipated to use the current meters throughout their entire useful life. Ortiz (2/26/2016), pp. 14-15.

Mr. Ortiz stated that recovery is also reasonable, because replacement of the existing meters will result in a net cost savings to customers. If it is reasonable to retire plant because there is a more cost-effective alternative for customers, the decision to do so should not impose a financial penalty on shareholders. Ortiz (2/26/2016), pp. 15-16.

Mr. Ortiz stated that the "used and useful" concept is not a relevant consideration here. He said the Commission has been clear that the used and useful concept is only one factor to be

considered in ratemaking. He said strict application of the concept in these circumstances would ignore that PNM's current meters have been used and useful in serving customer needs since the time of their installation on PNM's system. Ortiz (2/26/2016), pp. 16-18.

Mr. Ortiz said communication with the customers will reduce complaints during the AMI installation. He stated that the alleviation of complaints will also benefit the Commission's Consumer Relations Division which would be tasked with mediating customer complaints which elevate to their office. Ortiz (2/26/2016), pp. 19-20.

Mr. Monroy stated that the proposed regulatory asset treatments are consistent with prior PNM requests and Commission orders. He cited as an example Case No. 2262, in which PNM sought recovery for costs associated with PNM's efforts to reduce labor costs, termed Project Turnaround. He said PNM demonstrated that customers received a net benefit as a result of the labor reductions, and was allowed to recover the costs incurred to achieve these reductions. Monroy (2/26/2016), p. 16.

E. Requests for variances

1. Disconnection provisions in NMAC 17.5.410.

PNM seeks a variance from three portions of the Commission's rule for the disconnection of a customer's service "to the extent it is deemed necessary." The portions of the rule at issue require (1) that the utility employee sent to disconnect service shall note any information from the residential customer that a person living in the residential customer's residence is seriously or chronically ill, (2) that such information be immediately reported to a utility employee authorized to prevent discontinuance, and (3) that the utility employee sent to discontinue utility service may be empowered to receive payment of delinquent bills, and upon receipt of approved payment method, shall cancel the discontinuance order.

The disconnection rule does not require that utilities use meters that can be disconnected only by personnel visiting a customer's premises, and it does not expressly require that a utility employee be sent to a customer's premises to effect the disconnection of service. It appears that the rule assumed that the disconnection of a customer's service could only be accomplished by a utility employee's physical presence at the customer's premises.

PNM states that, after AMI is installed, PNM will no longer be sending a utility employee to the customer's premises in order to effect the actual disconnection of service and that there will therefore not be a final opportunity for a PNM employee in the field to note information on a resident's health conditions, nor to accept payment on delinquent bills. Ortiz (2/26/2016), pp. 22-23.

Thus, "[t]o the extent it is deemed necessary, PNM is requesting a variance from the provision of Rule 410 regarding employees who are sent to residential service locations to disconnect service, since discontinuance of service after installation of AMI will not require a PNM employee to visit the customer premises." Ortiz (2/26/2016), p. 23.

PNM states that it will continue to comply with all other provisions of the rules regarding discontinuance of service, including delivering a 15-day disconnection notice to customers. In addition, PNM will attempt to contact the customer by phone within the two day period prior to disconnection to ascertain whether discontinuance should be stayed in accordance with other provisions of the rules. If PNM is unable to reach the customer by phone in person or by voicemail, a notice will be posted at the customer's site. PNM will instruct the field representative posting the notice to be alert for any potential health issue at that time. PNM will also increase its promotion of available outreach programs, and intends to incorporate a new

program of customer choice of payment due dates. Ortiz (2/26/2016), p. 23; Teague (2/26/2016), pp. 51-52.

2. Filing requirements for PNM's proposed opt-out fees

PNM is seeking two variances regarding the filing requirements for its proposed opt-out fees. The first variance is from 17.9.530 NMAC (minimum standard data requirements) based on the limited and specialized character of the opt-out fees and the fact that these are new fees that do not currently exist. Ortiz (2/26/2016), p. 24.

The second variance is from the requirements of 17.1.2.10.B(2)(b) NMAC. A comparison of the opt-out fees with present rates is not included in the Proposed Form of Notice because the opt-out fees are new rates that do not currently exist. Ortiz (2/26/2016), p. 24.

3. Meter testing requirements in NMAC 17.9.560.

A variance was granted to PNM in Case No. 2124 to substitute a stipulated modified meter testing program for the testing program otherwise required under the Commission's rules. PNM initiated the current docket on September 25, 2015 under a different caption requesting a further variance from the requirements of the substituted testing program approved in Case No. 2124 while PNM investigated the feasibility of an AMI project, which resulted in the Application ultimately filed in this docket on February 26, 2016 and the current caption. The Commission granted PNM's September 2015 variance request on January 20, 2015 but ordered that the variance would automatically terminate if PNM fails to make its AMI filing, if PNM does not otherwise pursue the AMI implementation or if the Commission otherwise rejects the AMI program, and that the variance could be terminated by the Commission if otherwise warranted. Order Granting Variance, Case No. 15-00312-UT, January 20, 2015, p. 4.

PNM states that, after the AMI installation has been completed and all customer meters have been replaced, it will reinstate the meter testing program approved in Case No. 2124. Ortiz

(2/26/2016), p. 22. Thus, PNM appears to be asking that the variance granted earlier in this proceeding be terminated, effectively resulting in the reinstatement of the meter testing program approved with the variance granted in Case No. 2124.

F. Opponents

1. Smart meters versus smart grid

All non-PNM parties oppose PNM's Application, even after the revisions PNM proposed in its October 13, 2017 rebuttal testimony. Most of the parties, except NMUS and CFRE, say they are inclined to support some form of advanced metering but they state that PNM's proposal is unreasonable for a variety of reasons. They cite the resulting costs PNM proposes to charge ratepayers, PNM's plan to eliminate 125 jobs, PNM's unwillingness to incorporate energy efficiency measures into its proposal, and the rates PNM proposes for customers who wish not to participate. NMUS and CFRE oppose the project entirely, citing health and safety risks in addition to the objections cited by the other non-PNM parties.

One of the opponents' major themes is that smart meters are not the same as a smart grid. They object to the narrow focus of PNM's AMI proposal on cost savings and its absence of plans to integrate the AMI meters into a smarter grid.

Staff's position is representative of that of most of the opponents. Staff states that PNM's proposal does not offer the potential benefits of advanced metering. Without grid modernization and customer engagement features, Staff states that PNM's AMI Project is more about automation and achieving savings through job losses than anything else. Staff states that the approach to infrastructure planning in PNM's plan is not required by the public convenience and necessity. Staff states that the AMI Project is not a project that will simply be undertaken without detriment to other individuals. Staff cites the 125 employees that will lose their jobs as a result of the AMI Project. Staff Post Hearing Brief, pp. 19, 21.

Dr. Pitts said smart meter deployment accelerated significantly under the American Recovery and Reinvestment Act of 2009, which provided \$4.5 billion in matching federal funds to update aging electricity infrastructure with smart grid investments. She said smart meter projects were in the majority of projects receiving funds. Pitts (7/15/2016), p. 48.

Dr. Pitts said smart grids improve the integration of renewable energy resources and management of distribution infrastructure. They also facilitate ratepayer demand response to electricity usage information, greater use of plug-in electric vehicles and increased use of smart technologies in the home. She said behavioral change from ratepayers is required to realize the full ratepayer benefits, and PNM's plan is insufficient and lacking in details or metrics on how it will accomplish these goals. Pitts (7/15/2016), pp. 4-5.

CFRE witness, Timothy Schoechle, emphasized the limited role of smart meters in the achievement of the smart grid and the need for purposes broader than cost savings when designing a smart meter plan. His testimony stated that smart meters can be a component of a smart grid but that smart meters alone do not achieve a smart grid. He stated that the primary purposes of a smart grid are the balancing of supply and demand for electricity at any point in time and the integration of renewable energy resources. Dr. Schoechle cited the definition of a smart grid from an 2008 Xcel Energy report: "One generic functional definition of the smart grid describes 'an intelligent, auto-balancing, self-monitoring power grid that accepts any source of fuel (coal, sun, wind) and transforms it into a consumer's end use (heat, light, warm water) with minimal human intervention.'" Schoechle Exhibit CFRE TS2, p. 5.¹¹ Dr. Schoechle stated

¹¹ Dr. Schoechle stated that the renewable non-baseload supply system presents "significant technical challenges, requiring careful and rapid rebalancing by quick response to changes in supply and demand -- either by quickly adding fast peaking sources (e.g., hydro, storage sources, natural gas turbines) when needed or by quickly reducing or shifting demand (e.g., demand response). This rapid rebalancing represents the essential promise, and challenge, of smart grid technology." Schoechle Exhibit CFRE TS2, pp. 9-10.

that the current approach to smart meters does not contribute to the balancing of supply and demand or to the integration of renewable resources. Schoechle Exhibit TS 2, p. 11. Dr. Schoechle also questioned whether utilities actually have plans to make use of all the information that is collected by smart meters. Schoechle Exhibit CFRE TS2, p. 17.

2. CCNs and advance ratemaking treatment

Most of the non-PNM parties argue that PNM's AMI project requires a CCN and that advance ratemaking treatment is improper without a CCN request.

NMIEC argues that PNM is seeking to fundamentally change regulatory law in New Mexico by demanding prior rate approval as a condition precedent to its duty to provide efficient, cost-effective service. NMIEC notes that the CCN statute allows a utility to seek advance rate treatment for its new plant at the same time it is seeking certification (NMSA 1978 § 62-9-1.B) but that PNM is not seeking a CCN. NMIEC argues that prior approval of rate treatment is only afforded in the Public Utility Act to plant that has met the strict requirements of the CCN statute.

NMIEC argues that PNM's request violates the "regulatory compact." NMIEC states that the regulatory compact is a quid pro quo for being granted a monopoly in a geographical area for the provision of a particular good or service. In exchange for its monopoly status, the utility is subject to regulation to ensure that it is prudently investing its revenues in order to provide the best and most efficient service possible to the consumer and to charge rates that will allow it to earn a fair rate of return on its rate base. NMIEC states that a utility is provided a fair opportunity, but not a guarantee, to earn a return on its investments.

NMIEC argues that the Commission should not relieve PNM of the burden and risk associated with making the management decisions implicated by the AMI project. Otherwise, the Commission will be asked for prior approval of other management decisions, such as major

distribution and generation upgrades and repairs, that fall short of requiring CCNs. NMIEC Brief in Chief, pp. 9-10.

The City similarly argues that PNM's requests for advance ratemaking treatment are in blatant disregard of traditional elements and principles of rate-making -- that PNM has not incurred the costs at issue in a test year, historic or future, that PNM has not shown that the project is required by the public convenience and necessity, that PNM cannot show that AMI assets are used and useful, and that PNM has failed to provide the Commission with a detailed plan of action regarding any part of the AMI implementation, most especially, customer education and employee displacement. City Brief in Chief, pp. 4-5.

CFRE focuses directly on the language in §62-9-1(A) of the Public Utility Act which requires a public utility to obtain a CCN before beginning the "construction or operation of any public utility plant or system or of any extension of any plant or system." NMSA 62-9-1(A) (Emphasis added). CFRE argues that PNM's AMI Project is a new "system" of metering to PNM and that all of the components would be new equipment.

CFRE also argues that the scope of PNM's proposal is considerable, including all of PNM's service territory and all of PNM's customers, approximately 531,000 meters, and it would require customers who choose to opt-out to pay substantially higher rates. CFRE states that the costs of the new metering system are greater than the costs of many of the generating resources for which PNM and other New Mexico utilities have requested CCNs in the past few years.¹²

¹² CFRE incorporates the arguments from its Brief in support of the Motion to Dismiss it filed on February 8, 2017 and which the Hearing Examiner stated in his February 23, 2017 Order Addressing CFRE Motions to Suspend and Dismiss Proceedings that he would defer and address in the Recommended Decision.

NMIEC, Staff, the AG, the City of Albuquerque, and CFRE also argue that a CCN requires a finding that the system is required by the public convenience and necessity, while PNM admits that the project is discretionary and not needed to provide adequate service.

Staff and the AG argue further that the potential for cost savings is not a standard or a sufficient basis to approve a project, especially one like the AMI Project that will bind ratepayers for the next 20 years and require a capital cost outlay of \$95.1 million and \$26.4 million in regulatory assets. The Commission must ask if the project is necessary and of substantial benefit to ratepayers. Staff Post Hearing Brief, p. 6; AG Post Hearing Brief, p. 6.

Staff also goes further and argues that, even if the Commission decides to approve PNM's proposed AMI Project and issue a CCN, PNM's request for advance ratemaking treatment of the cost of the installation and equipment should be denied because the CCN section of the Public Utility Act provides for advance ratemaking determinations only for generation and transmission facilities. Staff Post-Hearing Brief, p. 9, citing NMSA 1978, § 62-9-1(B).

3. PNM's cost-benefit analysis

The opponents critique the cost-benefit analysis that PNM uses as the primary support for its project. They argue that the AMI project, with the ratemaking treatment proposed by PNM, will cost ratepayers substantially more over the 20 year estimated life of the project than if PNM were to continue to use its existing meters.

The AG's witness, Andrea Crane, stated that the project will likely produce a net cost to ratepayers. She said that PNM's analysis, which considers costs over the 20 year period of 2020-2039, should have also included incremental costs for the earlier years of the replacement program and that the analysis should discount the 2020 savings into current dollars. Crane (7/15/2016), pp. 15-16.

Ms. Crane also criticized PNM's estimate that the AMI Project would reduce PNM's bad debt expense by \$1,454,579 each year. She said PNM is allowed to disconnect service for non-payment after a customer is 21 days past due, and that disconnections currently do not occur on average until an account has been delinquent for 60 days. Since PNM already has right to disconnect customers sooner than 60 days and does not do so, she questioned the extent to which PNM would use the AMI meters to speed the process. She said PNM's estimated savings are not known with enough certainty to be included in the analysis. She also questioned whether it would be good public policy to accelerate disconnections, and whether this is something that the Commission wants to encourage. She said the net present value savings for the period 2020-2039 would decline by \$19.529 million, from \$20.927 million to \$1.398 million, if PNM's estimate of bad debt savings were removed. Crane (7/15/2016), pp. 17-18.

Ms. Crane also criticized PNM's estimated \$1,099,084 annual increase in residential revenues resulting from PNM's greater awareness of meter tampering and diversion of service. She said it is difficult to quantify the revenue impact of the project's enhanced system alarms and security systems and that enterprising customers may develop other means of meter tampering and energy diversions over the 20 year period examined by PNM. She said Mr. Monroy's net present value of the savings for the period 2020-2039 would decline by \$10.855 million, from \$20.927 million to \$10.072 million, if PNM's estimate of increased revenues were removed. Crane (7/15/2016), p. 19.

Ms. Crane said that the AMI Project (as proposed on February 26, 2016) would actually cost ratepayers up to \$12.342 million, instead of saving ratepayers \$20.927 million as alleged by PNM. Crane (7/15/2016), p. 28.

NMIEC's witness, Nicholas Phillips made similar criticisms and concluded that a more accurate estimate of the impact of the project would be a \$18.2 million net present value of costs. Phillips (2/14/2017), p. 22.

Ms. Crane subsequently updated her review of the revised cost-benefit analysis PNM submitted on September 5, 2017 after receiving new bids for the installation work. Instead of the reduced \$8.651 million NPV of lifetime savings claimed in PNM's September 2017 cost-benefit analysis, Ms. Crane estimated a net cost of \$12.141 million. Ms. Crane's estimates were based upon a \$1.635 million adjustment to reflect consideration of the first three years of the project omitted from PNM's analysis, a \$14.048 million adjustment to PNM's estimate of savings for bad debt expense, and a \$9.573 million adjustment to eliminate PNM's estimate of increased revenues due to PNM's greater ability to address meter tampering and diversion of services. Crane (9/29/2017), pp. 6-9.

Staff states that cost estimates are projections, not actual data, and that results can swing dramatically if actual results vary in just a few cost categories over the 20 years at issue here. Mr. Gunter testified that, if the actual escalation rate for O&M expenses increases from 2.5% to 3.0%, the NPV of PNM's purported net benefit would decrease from \$20.9 million to \$16.9 million. If the ultimate cost of the AMI Project increases by 8.9%, from \$87.2 million to \$95.1 million beginning in 2019, the NPV would decrease further, to \$8.4 million. Then, if the O&M expenses prove to be higher by 10% per year for the years 2020–2039, the NPV would decrease further, to \$2.9 million, and are almost eliminated. Gunter (7/15/2016), pp. 6-7.

Neither Staff nor the intervenors had the opportunity to revise their reviews of the October 13, 2017 cost-benefit analysis PNM submitted to reflect the concessions proposed in its rebuttal testimony of that date. The new cost-benefit analysis estimated an increase in the NPV

of benefits by \$7.5 million, from the \$8.6 million estimated on September 5, 2017 to \$16.1 million. Monroy (10/13/2017), pp. 6-7, Exhibit HEM-2.

CFRE argues that PNM's cost-benefit analysis did not address the risk of unanticipated costs. CFRE argues, for example, that PNM's estimated life spans of the AMI meters are speculative and that the need for earlier-than-estimated replacements will increase the project's costs. CFRE argues that the more intricate the parts and the more electronics a meter has, the more likely some piece or component will fail or become obsolete. CFRE states that PNM minimizes the differences between the AMI meters and the standard meters that PNM uses today but that the AMI meters have a remote disconnect switch and a heat sensor alarm that PNM's standard meters do not have.

CFRE also argues that unforeseen technological advances may make certain types of AMI meters obsolete prior to their projected meter-life. CFRE cites the meter replacements required with PNM's sister company, Texas New Mexico Power Co. ("TNMP"). CFRE argues that PNM was not forthright in that it did not disclose upfront, without being asked, that its sister company had an issue with technological obsolescence and, consequently, early meter replacements. CFRE states that three PNM witnesses claimed to have little knowledge of the TNMP replacements. Tr. 114 (Teague, 2/28/2017); Tr. 108 (Ortiz, 2/27/2017); Tr. 129 (Hawkins, 3/1/2017). CFRE states that some types of technological obsolescence are hard to foresee, but one must at least try to foresee the risk, in order to have an informed, duly diligent, and knowledgeable opinion and an ability to assess the risk.

NMUS argues that the costs of the AMI meters are speculative because PNM has not received a legal bid for them due to Itron's violation of New Mexico's contractor licensing laws. NMUS also cites the failure in PNM's cost-benefit analysis to include a meter failure rate and

costs to replace meters that fail early. NMUS points to PNM's claim that the AMI meters have a 20 year lifespan, although they are warranted for only one year, PNM's lack of an effort to determine what the failure rate of the new meters has been in other areas of the country despite known need for meter replacements elsewhere, and PNM's refusal to absorb the risk that the meters will actually last 20 years. NMUS Brief in Chief, pp. 30-33.

4. PNM's proposed opt-out fees

The opponents argue that customers not wanting to receive AMI meters should have a meaningful opportunity to opt out of the project. Most opponents appear to be amenable to a reasonable fee to recover PNM's costs to enable customers to opt out, but they argue that PNM's proposed fees are too high and make opting-out not realistic for most customers. The AG and CCAE/WRA argue further that customers with legitimate reasons for opting-out should be exempt from continuing monthly fees.

Staff researched opt-out fees in other states and utilities nation-wide. Pitts (7/15/2016), p. 41, Exhibit HMP-5. Dr. Pitts' research showed that the majority of utilities charge a higher one-time fee but a much lower monthly fee than what PNM has proposed.

If the Commission approves the AMI project (contrary to Staff's recommendation), Staff recommends initially that the Commission approve the one-time fees proposed by PNM, \$35.00 or \$60.00 depending on when the opt-out decision is made but that the monthly fee be set at \$22.00. Staff's recommendation reflects lower one-time fees than the national median and as a result, the monthly fee is slightly higher than the national median. Pitts (7/15/2016), p. 46.

Staff does not believe that any of those suggestions validate the idea that opting out should be free. If an existing meter or digital, non-communicating meter is being used, then costs will be incurred for a separate billing system and some degree of employee hours for meter readings. Pitts (7/15/2016), p. 45.

Staff also recommends, however, that cost-based rates be reviewed in the future. Pitts Staff disagrees with some of the assumptions and proxies for data that PNM used in its fee calculation and suggests better cost-based methods for the future, such as the recognition of economies of scale for meter reading of clusters of opt-out ratepayers, less frequent meter readings, and ratepayer reporting of monthly readings. Pitts (7/15/2016), pp. 43-46.

AG witness, Ms. Crane, said she generally supports the principle that costs attributable to specific customers should be borne by those customers, but she was concerned that the level of opt-out fees proposed by PNM could be prohibitive for customers that have a legitimate reason for opting out of the program. She said the average bill at the time of her July 15, 2017 testimony for a residential customer using 600 kWh per month was approximately \$71.84 per month, excluding any increase that would be approved in the rate case pending at that time, and that PNM's proposed \$46.96 monthly opt-out fee would represent an increase of approximately 65%. She said, in view of other parties' contentions that there are medical reasons that may require some customers to opt-out of the program, the Commission should approve an exemption for customers that opt-out for medical reasons (if, contrary to her primary recommendation, the Commission approves the AMI project). She also recommends further exemptions for customers if the Commission finds that the AMI meters pose other risks to New Mexico customers. Crane (7/15/2016), pp. 24-25.

5. Bill impacts

The non-PNM parties agreed with PNM that the AMI plan would cause rate increases in the first year after the meters are deployed, but they estimated the impact to be greater than PNM's estimate. Based upon the \$87.2 million capital costs in PNM's original application, Ms. Crane estimated the increase in PNM's annual revenue requirement in the first year after full deployment to be at least \$7,686,994, approximately 55% higher than the \$4,942.187 originally

estimated by Mr. Monroy. She did not update her estimate after PNM revised its estimate from \$4.9 million to \$5.9 million on September 5, 2017 to account for the increased costs after PNM re-bid the installation portion of the AMI project work.

Based on her initial revenue requirement estimate, she said the average cost per bill would increase from \$0.36 per month to \$0.56 per month, or \$6.71 annually. Crane (1/26/2017), p. 4. She said the impact of the AMI Project could also be higher (a) if the incremental revenue requirement associated with the program is higher than the amount reflected in her direct testimony, (b) if there is a decline in PNM's billing determinants, or (c) if the Commission adopts different class cost of service allocators that impose a greater share of the costs on residential customers. Crane (1/26/2017), p. 6.

NMIEC disagrees with PNM's bill impact calculations, arguing that they are not cost-based. NMIEC argues that PNM uses artificial distribution allocators in assigning the costs of the project to each rate class. NMIEC states that the bill impacts should be calculated based on the costs of the actual meters required by each rate class and a direct assignment of the back office costs on an equal per meter basis. NMIEC Brief in Chief, pp. 10-11.

6. Energy efficiency

The non-PNM parties criticized the deliberate exclusion of any attempts to incorporate the energy efficiency capabilities of the AMI infrastructure in PNM's plan. In their joint brief, CCAE and WRA state that they support AMI in general because of the benefits it can bring in terms of facilitating energy efficiency and demand reduction programs. But they state that PNM should be required to first work with stakeholders to develop specific plans and customer interfaces for the programs before it is granted prior approval for any cost-recovery related to the AMI program. CCAE/WRA Brief, pp. 1-2.

CCAIE and WRA state that the benefits to the utility system from AMI that PNM cites, such as lower meter reading costs, immediate disconnection and reconnection functions, power outage detection, service restoration notification, voltage monitoring, and automatic tamper and theft detection, are too limited. They state that PNM should be required to develop a plan to use the meters to measure and report usage data on short time intervals and allow customers to better monitor their electricity usage patterns. CCAIE/WRA Brief, p. 2.

CCAIE witness, Adam Bickford recommended that PNM should develop a plan that would include the following:

1. Web portal enhanced to enable customer-submitted premise data and standardized data reporting tools such as Green Button Connect, a service which allows customers to download detailed energy usage information.^{13,14}
2. Plan for increasing participation in demand side management programs, including providing measures that can access the information provided by AMI.
3. Home energy management equipment to enable load shifting, including the implementation of well-designed time-varying rates.
4. Plans for optimization of the distribution system through implementation of a voltage control protocol, such as Distributed Voltage Optimization ("DVO").¹⁵ Bickford (7/15/2016), pp. 4-5.

¹³ Mr. Bickford stated that reports on smart grid pilot projects funded by the federal Smart Grid Investment Grant Program, have concluded that, without devices to engage their participation, customers make little use of online data portals. Bickford (7/15/2016), p. 11.

¹⁴ Green Button Connect is a set of tools that implement a secure and standardized energy data interface designed to facilitate customer understanding of their energy usage. The Green Button Connect tools implement the North American Energy Standards Board's (NAESB) REQ 21 -- Energy Service Provider Interface (ESPI) energy usage information exchange standard, which allows for consistent reporting of energy information. This federal standard will make energy data more accessible to customers. Bickford (7/15/2016), pp. 24-25.

¹⁵ DVO is a way of controlling grid voltage at the final transformer or meter before electricity is delivered to a customer, at what is known as the "service entrance" to a building. Many electrical grids deliver energy at a higher

(continued on next page)

Dr. Bickford cited two examples of utilities with plans similar to what he asks PNM to develop. Commonwealth Edison of Illinois ("ComEd") and Consolidated Edison of New York ("ConEd") created plans for AMI and smart grid systems that include extensive discussions of ways to foster customer engagement, ways to use AMI information to enable time varying rate designs, gamification programs, and grid optimization. Bickford (7/15/2016), p. 28.

The ComEd AMI plan, developed in 2011, provided customers with real-time energy usage data through web portals and home energy management devices, i.e., in-home displays and programmable communicating thermostats. Dr. Bickford said the information, along with additional peak pricing or peak time rebate plans, would provide a strong incentive for customers to become engaged in managing their energy use. Similarly, he said the ConEd AMI plan uses AMI meters, a communication system, a web portal, home energy management devices, etc., with behavioral programs and strategies to encourage energy efficiency through its Digital Customer Experience initiative. Dr. Bickford said the common components of these plans, home energy management devices and innovative DSM programs, are absent from PNM's AMI proposal. He said they need to be included in a more detailed customer engagement plan before any cost recovery for PNM's AMI project is approved. Bickford (7/15/2016), pp. 28-30.

The City agrees. It argues that better-designed energy efficiency and demand reduction programs, including effective time-of-use rates are critical to realizing the benefits that could come with AMI. City Brief in Chief, p. 5.

voltage than necessary to compensate for transmission distance, weather, seasonal differences and other externalities. Often the voltage delivered exceeds the rating of electrical end uses, albeit within an acceptable range. The excess energy is then dissipated as heat. Using an AMI system, along with a set of appropriate controls, it is possible to lower the voltage delivered to customers and, by doing that, improve the efficiency of the grid. Bickford (7/15/2016), p. 18.

Staff states that ratepayers' ability to gain greater control over electricity consumption requires a behavioral change on the part of ratepayers in terms of how they receive and use their real-time electricity usage data. Dr. Pitts said a fully developed plan is needed to help ratepayers with the paradigm shift. Staff disagrees with PNM's approach to deploy the AMI meters first to see how customers interact with them before developing plans to use them. Dr. Pitts said there are sufficient utilities that have smart meters either partially or fully deployed along with federally-funded pilot studies that PNM could refer to in order to reasonably develop a consumer behavior plan to maximize ratepayer participation levels in using their electricity data. Pitts (7/15/2016), pp. 27-28.

7. Job losses

The non-PNM parties cited PNM's planned lay-offs as a reason to reject PNM's plan at this time. Ms. Crane stated that, in her opinion, eliminating meter readers and other company personnel would not be in the best interest of New Mexico at this time. She said the 125 PNM jobs that would be lost as a result of the AMI Project are good jobs for New Mexico, with relatively high pay and good benefits. She said now may not be the best time for the Commission to authorize a program that will result in the loss of 125 good paying jobs in New Mexico.

Job losses are also "a very large concern" for the City. The City argues that PNM has not developed any specific plans to retrain meter-readers and other employees who would be displaced by AMI. Tr. (10/25/2017), p. 209; Tr. (10/26/2017), p. 22.

Staff shares the concerns about job losses. Mr. Gunter testified that some of the 125 employees who will lose their jobs may re-deploy into vacant positions or new AMI positions at PNM, but there is no assurance that these employees will remain with PNM, a well-established New Mexico employer offering favorable salaries and benefits. Gunter (7/15/2016), p. 8.

8. Health risks

Staff and other intervenors presented a range of opinions on the health risks of smart meters. Except for NMUS, which adamantly opposes even the sufficiency of opt-outs, Staff and the other intervenors appeared to agree that the risks, and the public's perception of the risks, were sufficient to warrant giving customers a meaningful opportunity to opt out of the program.

Dr. Pitts stated that she is neither a medical nor a scientific professional in the matter of carcinogenic material or EHS. She said that she read background material from credible experts to form an opinion regarding whether negative health impacts are a sufficient reason to recommend disapproval of the project.¹⁶ Based upon her research, Dr. Pitts adopted what she described as "the seemingly overall consensus opinion that there do not appear to be confirmed, negative side effects" from smart meters. But she said "it is an individual's experience whether they are exceedingly sensitive to RF radiation or not" and that there should be an alternate option that allows them to keep their existing meter. Pitts (7/15/2016), p. 36.

Dr. Pitts stated that radiation is energy that radiates out from a source in energy waves, and that radiation is either ionizing or non-ionizing. Citing the EPA's website on radiation, she said the difference is that "ionizing radiation has so much energy it can knock electrons out of atoms."¹⁷ She said ionizing radiation can negatively affect the health of living people and animals through tissue damage and altered DNA. In contrast, she said the RF waves in smart meters, radio waves, visible light, and microwaves are examples of non-ionizing radiation.

¹⁶ The sources included the American Cancer Society ("ACS"), the U.S. Environmental Protection Agency ("USEPA"), Lawrence Berkeley National Laboratories ("LBNL"), National Cancer Institute ("NCI"), and the Maine Center for Disease Control & Prevention ("CDC"). Pitts (7/15/2016), pp. 30-31.

¹⁷ Dr. Pitts cited the U.S. Environmental Protection Agency website, Radiation Basics page, <https://www.epa.gov/radiation/radiation-basics>. Accessed on June 24, 2016.

Citing the same EPA website, she said "[n]on-ionizing radiation has enough energy to move atoms in a molecule around or cause them to vibrate, but not enough to remove electrons."

Pitts (7/15/2016), p. 31.

She stated that many arguments opposing the installation of smart meters cite a 2011 press release from the World Health Organization/ International Agency for Research on Cancer that classifies radiofrequency electromagnetic fields as a possible human carcinogen. This classification, known as 2B, applies when "there is limited evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals." Pitts (7/15/2016), p. 32. According to Dr. Pitts, the American Cancer Society stated that the study cited by the International Agency for Research on Cancer addressed the relationship between cell phone use and a specific type of brain tumor. She said the American Cancer Society asserted that the possibility that smart meters might increase cancer risk is unknown and may not exist at all. She said the American Cancer Society concluded that quantifying the possible, unknown risk from smart meters would be nearly impossible because there are many exposure sources for the radiofrequency radiation. Pitts (7/15/2016), p. 34.

Dr. Pitts also cited materials prepared by the Main Center for Disease Control and Prevention ("CDC") in 2010 in response to the request of the Maine Office of the Public Advocate to examine the health impacts of smart meters being installed by Central Maine Power. The CDC stated that "[w]hile some experimental data have suggested a possible link between exposure and tumor formation in animals exposed under certain specific conditions, the results have not been independently replicated. Many other studies have failed to find evidence for a link to cancer or any related condition." Pitts (7/15/2016), pp. 35-36, Exhibit HMP-3.

NMUS, on the other hand, presented the testimony of three witnesses opposing PNM's Application based on the adverse health effects they claim arise from the use of smart meters. The witnesses claimed that the radio waves from the meters can cause a variety of acute and chronic health effects to a subset of the population that is especially sensitive to the emissions.

Mr. Firstenberg represented and testified on behalf of NMUS at the hearing. Mr. Firstenberg is the founder and president of the Cellular Phone Task Force, which he stated is the oldest and largest organization in North America dedicated to reducing electromagnetic pollution. The goal of the task force is to stop the expansion of all wireless technology. Tr. 145 (3/2/2017). Mr. Firstenberg stated that he was testifying as an expert in bioelectromagnetics and as an individual who personally suffers from EHS (although Mr. Firstenberg used the term "electrosensitivity"). Id., pp. 133, 145.¹⁸

Mr. Firstenberg stated that most studies on chronic exposure from RF radiation have found that it causes cancer. He included two such studies in his prepared testimony. The first study was prepared under a contract with the U.S. Air Force. The study exposed one hundred rats to a "very low" level of microwave radiation for 21.5 hours a day throughout their lifetime. The exposed animals developed almost four times more primary malignant tumors than did the control animals. The second study was performed by Michael Repacholi, who was then the director of the World Health Organization's International EMF Project. He exposed 100 mice to low level microwave radiation for only one hour per day for eighteen months. The exposed mice developed lymphomas two and a half times as frequently as the unexposed control animals. Firstenberg (2/14/2017), pp. 10-11, Exhibits AF-6, AF-7.

¹⁸ Mr. Firstenberg is the author of two books: *Microwaving Our Planet: The Environmental Impact of the Wireless Revolution* (Cellular Phone Task Force 1996, 1997) and *The Invisible Rainbow: A History of Electricity and Life* (forthcoming, 2017). Firstenberg (2/14/2017), p. 2.

Mr. Firstenberg also stated that the main complaints about smart meters are not about cancer. He discussed with PNM's witness two studies that showed a link between RF frequencies and the symptoms associated with EHS. Tr. 221-227 (3/1/2017).

Mr. Firstenberg also included in his prepared testimony the sworn statements of Melissa Chalmers, Jeromy Johnson, Joe Esposito, Susan Brinchman, Michele Hertz, and Calista Woodbridge, who described the injuries they suffered immediately upon the installation of a smart meter on their home. They stated that they woke up the next morning, or within a very few days, hearing piercing sounds, dizzy, nauseous, with headaches and their hearts racing. Firstenberg (2/14/2017), p. 11, Exhibits AF-8 through AF-13

Mr. Firstenberg stated that the stories in the sworn statements are similar in every way to the stories of hundreds of people who he states have called him after smart meters were installed on their homes. He stated that they are also similar to the reports of injury that he has received over the last 20 years from thousands of individuals injured by other sources of electromagnetic radiation ("EMR") or electromagnetic fields ("EMFs"). Mr. Firstenberg stated that the injuries from smart meters are more intense, more immediate, and more difficult or impossible to tolerate than the injuries from any other commonly-encountered sources of EMFs.

Mr. Firstenberg stated that the most common effect of EMFs is insomnia. He said the next most common effects are dizziness, nausea, headaches, and heart palpitations. These are all more intense and happen quicker from smart meters than from other common sources of EMFs. He said ringing in the ears, which a minority of people complain of from other sources of EMFs, is almost universally reported to him by people who have smart meters on their homes, and it is reported by them as being piercing and painful. Firstenberg (2/14/2017), pp. 11-12.

As to his personal experience, Mr. Firstenberg stated that an x-ray overdose ended his medical career after three years of medical school. He stated that the injury made him hypersensitive to electromagnetic fields and that he could no longer tolerate the hospital environment. Firstenberg (2/14/2017), p. 3. He stated that he is on "that end of the spectrum of the human race that is more sensitive to electricity than most people." Tr. 146 (3/2/2017).

Mr. Firstenberg criticized the value of the material Dr. Pitts relied on for her opinion. He said the EPA has never issued an opinion about smart meters and that it has, instead, stated repeatedly that the human exposure guidelines adopted by the FCC are protective only against shocks, burns, and gross heating and do not protect against chronic, low-level exposure. He also attached a 1993 letter in which the EPA stated that "[t]he 1992 ANSI/IEEE conclusion that there is no scientific data indicating that certain subgroups of the population are more at risk than others is not supported by NCRP and EPA reports" and a further series of letters in which the EPA and the Radiofrequency Interagency Work Group¹⁹ stated that the FCC guidelines address thermal effects and not chronic, nonthermal exposure situations. Firstenberg (2/14/2017), Exhibits AF-2, 3, 4 and 5.

Mr. Firstenberg stated that neither NCI nor ACS has conducted any studies on RF radiation and cancer. He said that the webpages Dr. Pitts cited are unsigned, unattributed, unpublished, and not peer-reviewed and that they are political, not scientific documents. Firstenberg (2/14/2017), p. 10.

He said the materials from the Lawrence Berkeley National Laboratories and the Maine CDC are from agencies that have done no studies of their own, and are simply quoting the

¹⁹ The RFIAGW includes representatives of the FCC, EPA, Food and Drug Administration, Occupational Safety and Health Administration, National Institute for Occupational Safety and Health, and National Technical Information Agency.

statements of other people and agencies that also have conducted no studies of their own.

Firstenberg (2/14/2017), pp. 13-14.

He said the term EHS applies to people who are especially sensitive to electromagnetic fields. He said artificial electricity is a toxin and that some people are hardy and are more resistant to it than others. People who are injured by smaller amounts of it than others are called "electrosensitive." After someone is injured and they can tolerate none at all they are called "hypersensitive." Firstenberg (2/14/2017), pp. 16-17.

He said smart meters are worse than other forms of wireless technology, because (1) they are more powerful than any other common source of microwave radiation, (2) exposure to them is involuntary, (3) they pulsate all day and all night, up to 240,000 times a day, (4) the wiring in one's house and the entire power grid becomes polluted with their pulsations. He said the opt-out option in PNM's proposal is not sufficient. He said smart meters are a public health hazard as serious as lead, asbestos and tobacco smoke:

(1) You can't "opt out" of all the meters on the wall of your rental apartment complex. Or the ones on the wall of the complex right across the alley from your apartment.

(2) You can't "opt out" of exposure to your neighbor's meter, that is ten feet away from your bedroom window.

(3) You can't "opt out" of exposure to the meter on the other side of your bedroom wall if you are a baby in a crib.

(4) You can't "opt out" of exposure to transmissions from the relay antenna 10 meters from your house.

(5) An "opt out" doesn't protect people who DON'T opt out, if a health hazard is being produced.

Firstenberg (2/14/2017), pp. 21-22.

NMUS also presented the testimony of Dafna Tachover, an attorney who stated she was injured by wireless technology. Ms. Tachover testified that she started experiencing health problems when she purchased a new laptop computer in July 2009 for the private law practice

she was starting. She said she had been an avid user of wireless technology before that date and spent hours every day on her cell phone. She said when she tried using the new computer she experienced dizziness, nausea, chest pains, difficulty breathing, and weird cognitive problems. She said, from that time until today, she gets acutely ill when she is near cell phones, Wi-Fi, wireless "smart meters" or any other device that emits radio frequency or microwave radiation. She said she has had to give up her career, leave her home, divorce her husband, and give up on her hope to have children and family. She said she was forced to live in her car for seven months and moved into an isolated cabin in the woods where she stayed for three years as she could not be anywhere with wireless radiation. She said she lives in constant fear that a wireless electric meter will be put on the house she currently rents and that she will have to leave the house with nowhere to go. Tachover (7/15/2016), pp. 2-3.

She said smart meters differ from other types of wireless technology because exposure to them is involuntary. For the most part, with much effort before the spread of wireless smart meters, a person who was injured by wireless technology could find a house and make sure there was no radiation in it. She said forcing smart meters on people and communities takes away that choice. Ms. Tachover said she has become a public advocate and litigator on the topic. She has been lecturing; doing public relations; working with the media; lobbying and litigating. She also described the similar injuries and experiences of other people with whom she has come into contact. Tachover (7/15/2016), pp. 3-8.

Joshua Hart, Director of Stop Smart Meters!, an organization fighting the forced deployment of smart meters said he has investigated hundreds of cases of reported health and environmental impacts of smart meters. Mr. Hart said he has personally interviewed, read first person accounts and listened to first and second hand accounts of smart meter victims suffering

from a wide range of health effects from mild to severely debilitating. He said he is familiar with well over 1,200 documented accounts. Hart (7/15/2016), pp. 3-4.

Mr. Hart said his organization has collected complaints about smart meters related to RF health impacts, fires, overcharging, and other issues since October 2011. He said complaints in California are periodically forwarded to Governor Jerry Brown, the customer's utility company, the California Public Utilities Commission, and the California Department of Public Health, which set up a special e-mail address to receive smart meter health complaints. He said more than 1,400 written complaints in total were received, of which a significant percentage were health complaints. He attached to his testimony 28 declarations received in response to an email request to complainants who entered an electronic complaint at smartmeterhelp.com. Hart (7/15/2016), p. 5 and Exhibit B.

Mr. Hart said a policy decision to blanket entire New Mexico communities with smart meters and associated infrastructure poses a serious threat to public health and safety. He cited in particular a recent study from the National Toxicology Program which found significant levels of DNA damage, and brain and heart cancer in rodents exposed to ambient RF-- of a type similar to that emitted by wireless utility smart meters. Hart (7/15/2016), p. 6.

The witnesses of CFRE testified about the uncertainties related to the health risks of exposures to electromagnetic fields. Dr. Schoechle, stated that "[t]he biological effects of electromagnetic fields are not fully understood and have become an established matter of public concern and active scientific inquiry. Public concern over smart meter EMF radiation has become a primary factor fueling public resistance to smart meter installation." Schoechle (7/15/2016), CFRE Exhibit TS2, p. 24. He stated that "more study is needed on the effects of wireless smart meters if they are to be installed in peoples' homes on a large scale. An array of

scientific opinions have been advanced and no general consensus has emerged on the question of whether significant EMF health risk exists from exposure to smart meters." *Id.*, p. 26.

Mr. Lambe, stated that Lloyds of London, the international reinsurance carrier, has issued an exclusion in its policies, indicating that it will not pay for any physical illness that is directly related to the insured's exposure to radiofrequencies. Lambe (7/13/2016), p. 9.

9. Safety

CFRE and NMUS argue that smart meters pose the risk of fires. CFRE witness, Norman Lambe, an insurance claims examiner for Precision Risk Management in Cypress California, presented testimony in which Mr. Lambe stated that smart meters have caused fires. He stated that, unlike analog meters, smart meters have a remote switch that enables the utility to turn power "on" or "off" remotely and that, sometimes, during activation of the remote switch, a burst of power can cause arcing in the meter, resulting in a fire. Lambe (7/13/2016), p. 6. He stated that it is often difficult to investigate fires suspected of being caused by smart meters, because the meters at issue are sometimes removed by utility companies before a proper investigation can be conducted. Lambe (7/13/2016), pp. 2-3.

Mr. Lambe stated that most smart meters have not been certified by any independent certification body, such as Underwriters Laboratory ("UL"). Instead "smart" meters are routinely certified by industry groups such as ANSI and IEEE. He stated that all of the models of meters that have burned have been certified by the industry groups. He also stated that UL has a new certification standard that is said to have been developed to insure the safety of smart meters, UL Standard 2735. But, he stated that even this certification is not sufficient, since the meters that have received this certification, Sensus and Landis & Gyr, have caused fires. Lambe (7/13/2016), pp. 9-10.

CFRE witness, Tony Simmons, a retired professional electrical engineer with 11 years of experience in electric utility meter operations, cited a report and order from the Ontario (Canada) Electrical Safety Authority ("ESA") that required the local distribution companies in Ontario to cease further installation of Sensus iConA Generation 3.2 remote disconnect meters and to remove meters that had been previously installed. The ESA report noted that more than 700,000 such Sensus meters had been removed for four utilities to address fires related to the use of the meters.²⁰ Simmons (2/14/2017), pp. 6-7, CFRE Exhibit TPS 5.

NMUS witness, Joshua Hart, said smart meters have been implicated in house fires and appliance failures and fires. He said thousands of such fires, explosions, and electrical problems have been reported over the past 6-7 years. He said his organization has reported on a number of such fires and electrical faults on its website StopSmartMeters.org. In particular, he said a series of 26 smart meter fires forced Peco Energy in Pennsylvania to halt its smart meter deployment in August 2012. He said hundreds of thousands of smart meters have been recalled, across several U.S. states and Canadian provinces due to fire safety problems. Hart (7/15/2016), pp. 4-5.

In specific regard to the Itron meters that PNM proposes to use, CFRE witness, Mr. Simmons, identified an error in the testing performed by an independent testing laboratory of the Itron meters proposed for use by PNM. Mr. Simmons also said the test protocol used by MET Labs applied lower fault current for less time than PNM protection philosophy specifies. The meters were tested at 12,000 Peak Amps for 4 cycles during TEST 20, while PNM limits fault current to 12 cycles duration and up to 22,000 Amps for single family dwellings. He said, under

²⁰ The Electrical Safety Authority (ESA) is an administrative authority mandated by the Government of Ontario to enhance public electrical safety in the province. It is both a safety regulator and advocate. ESA's primary activities are: identifying and targeting leading causes of electrical safety risk; ensuring compliance with regulations; promoting awareness, education and training; and collaborating with stakeholders to improve the state of electrical safety in Ontario. ESA is a private, not-for-profit corporation headquartered in Mississauga, Ontario with staff deployed across the province.

fault current conditions, the IOWR may fail, thereby imperiling life, health and property. Mr. Simmons, stated, based upon the testing error he identified, that a study certified by a licensed New Mexico professional engineer should be conducted to evaluate whether a meter with a higher fault current rating is needed.

More generally, CFRE also argues that PNM and Itron have not demonstrated that adequate steps were taken in order to ensure meter and socket compatibility. CFRE acknowledges that both Itron's and PNM's witnesses have repeated the assertion that the Itron OpenWay Riva (IOWR) meters meet ANSI C12.10 multiple times during the next year, including in sworn discovery responses and in sworn testimony. But CFRE argues that additional proof is needed. CFRE argues that Itron's and PNM's financial motivation to pursue the project is hampering candor on many matters covered in the testimonies of PNM's witnesses and that PNM and Itron cannot provide an objective, and therefore, reliable expert to testify on the meters' adherence to ANSI standards. CFRE Post Hearing Brief, p. 64. CFRE states that an unbiased due diligence performed by a third party or qualified New Mexico professional engineer is required. CFRE Post Hearing Brief, p. 57. CFRE seeks third-party documentation that clearly states that the meters meet the ANSI C12.10 standard. CFRE Post Hearing Brief, pp. 54-55.

10. Privacy and cyber security

The non-PNM parties agreed that privacy and cyber security are important issues, but they had differing views on the adequacy of PNM's plan to address them. Staff believes that PNM's proposed measures to protect privacy and security of the data are reasonable. Staff notes that the smart meters will only be transferring data usage information and a customer identification number. In addition, Dr. Pitts notes that PNM states that no personally identifiable information will be stored in or transmitted via the AMI networks, and that PNM will not store

social security numbers, medical or health data, credit card information, payment histories, or bank account information within any of the AMI systems. She also notes that the MDMS, which is the back-end system of the AMI project that aggregates and validates meter data before sending it to PNM's existing customer information system will not contain any personally identifiable information. She concluded that the hacking risk would be approximately the same as it is now if the personal customer data will be stored only in the existing customer information system. Pitts (7/15/2016), pp. 39-40.

NMUS cites the evidence presented by CFRE that AMI meters cause fires and explosions, compromise customer privacy, and are inherently inaccurate and insecure. NMUS also cites the projected \$406,000 cost per year that PNM proposes for IT security as its acknowledgment that connecting the metering system wirelessly to the Internet is a security risk. More generally, NMUS also cites news reports of the electronic theft of private information of billions of customers of Yahoo!, Ebay, Equifax, Target, Home Depot, and J. P. Morgan Chase, as well as the hacking of the Democratic National Committee, the U.S. presidential elections, and the National Security Agency as proof the risk of hacking and theft of PNM's customers' personal information. NMUS argues that PNM's existing metering system presents no such risks. NMUS Brief in Chief, pp. 44-45.

CFRE argues that PNM acknowledges that there is a cyber security risk associated with AMI implementation. In particular, CFRE contrasts Mr. Hawkins' testimony that there is no cyber security risk²¹ with Mr. Hawkins' sworn statement in support of PNM's request for confidential treatment of the cyber security portions of Itron's proposal to PNM's RFP. In the affidavit prepared by Mr. Hawkins in support of the confidentiality request, Mr. Hawkins stated

²¹ Hawkins (2/14/2017), p. 7.

that Itron's material includes descriptions of processes for accessing the electronic functions of the customer meters in sufficient detail such that it could facilitate unauthorized access to data contained in, or operations of, the meters. He said, if unauthorized people were to acquire the security information, they could conceivably use the information to harm PNM and its customers, including by altering meter information to inaccurately report data; updating the firmware in the meter to do malicious things; or even operating the remote disconnect to put people out of power. CFRE Post Hearing Brief, pp. 43-44, citing Hawkins Affidavit to PNM's Notice of Intent to Use Confidential Material and Request for Confidential Treatment of Confidential PNM Exhibit RRT-2, April 24, 2017. CFRE argues that the inconsistencies in Mr. Hawkins' statements render his testimony unreliable, and that it should not be relied upon to support the implementation of the PNM's AMI proposal. CFRE Post Hearing Brief, p. 46.

11. Public participation

The non-PNM parties argued that any future AMI plans be developed with the input of the public. Dr. Bickford stated that the installation of AMI is a huge undertaking, one that has the potential to impact not only the company's operations, but customers' ability to control their energy use. He said PNM should consult with the stakeholders in this case as it prepares a customer engagement plan, grid optimization strategy, and new rate designs facilitated by AMI. He said the further consultation and review should be conducted and approved before cost recovery is approved and PNM begins implementation of AMI. Bickford (7/15/2016), pp. 27-28.

The City also asks the Commission to order PNM to work with stakeholders to develop a cost-effective AMI program that includes a customer education program that maximizes energy management and conservation and an employee retraining program that avoids employee displacement as much as possible. City Brief in Chief, p. 6.

12. Variances

Ms. Crane objected to PNM's variance request to eliminate certain of the ratepayer protections in the Commission's disconnection rule. She said that the new procedures will not provide the same level of safeguards as the existing rules. She said, at a minimum, the Commission should require a notice to be posted at the customer's site if the Company is unable to speak directly with the customer. The Commission should also extend the window for personal notification from two days to five days to allow more time for customer notification that their service is about to be terminated. If the Company is unable to reach the customer directly, then a notice should be posted should be posted at the residence at least three days prior to disconnection. Crane (7/15/2016), p. 26.

Staff recommends that PNM's variance requests regarding the filing requirements in this case for the proposed opt-out rates be approved. Staff states that it is unnecessary to provide the full list of data requirements Rule 530 (NMAC 17.9.530.13), since PNM has provided its calculations. Staff also recommends that PNM need not comply with the requirement in 17.1.2.10.B(2)(b) NMAC to compare the proposed new rates present rates, since PNM is proposing a brand-new rate for opt-out fees, so there can be no comparison with present rates. Pitts (7/15/2016), p. 47.

NMUS argues that the variance request for the filing requirements for PNM's proposed opt-out rates should be rejected because PNM has not strictly complied with the requirements for a variance request, i.e., that the request "(3) describe the effect of complying with the rule or order on the applicant if the variance is not granted," and "(5) describe how the proposed alternative will achieve the purpose of the rule, and why it is in the public interest." NMUS states that the full submission of all data required in the Commission's rules is necessary to resolve the

serious questions that have been raised about the reasonableness of the proposed opt-out fee schedules. NMUS Brief in Chief, pp. 15-16.

NMUS also opposes PNM's variance requests to facilitate remote disconnections. NMUS states that a phone call and a posted notice are no substitute for the in-person communication that takes place under the rule when a PNM employee physically disconnects service. NMUS states the variance would cost customers their lives and should be denied. NMUS Brief in Chief, p. 30.

G. Hearing Examiner recommendations

1. Summary

Smart meters can provide benefits to utilities and ratepayers. Most significant, smart meters can give consumers greater control over their energy use and help them manage their use more efficiently.

PNM's plan, however, does not incorporate smart meters' potential for energy efficiency measures. The primary purpose of PNM's project is cost savings. PNM's proposal focuses on the elimination of 125 meter reading jobs, faster disconnections of late- and non-paying customers, and increased revenues by preventing tampering and diversion of service.

PNM designed its project without public input and without examining alternatives. Not surprisingly, all of the eight non-PNM parties oppose PNM's requests.

PNM also emphasizes that the project is discretionary. PNM states that the project is not needed to provide adequate service or to comply with any Commission rules or other regulatory requirements. As a result, PNM will proceed with the project only if the Commission approves it on PNM's terms in their entirety and without modification.

PNM cites no statute as direct authority for the approvals it requests and cites no direct authority for the standards the Commission should apply to its requests. PNM argues that the

approval should be issued on the basis of its claim that the project's benefits will exceed its costs over the 20 year estimated life of the meters.

The non-PNM parties in this case include advocates of residential, industrial, municipal, environmental, health and public interests. They include the AG, the City of Albuquerque, CCAE, CFRE, NMIEC, NMUS, WRA and Staff. All question the legal authority for PNM's requests for approval of the project outside a CCN proceeding and for approval of advance ratemaking treatment. Most support the benefits that can potentially be achieved with smart meters, but they complain about the narrow focus of PNM's plan, its cost, its unfair balancing of investor and ratepayer interests, and its inflexibility in addressing the concerns of PNM's customers. They ask that PNM come back with a better plan, after obtaining input from the public.

The primary justification PNM offers for the project is the net savings it says the project would produce for ratepayers. PNM acknowledges that the immediate impact would be rate increases. But it says that, over the 20 year expected life of the AMI meters, it would eventually produce savings.

The non-PNM parties disagree with PNM's savings estimates. They agree that the immediate impact would be rate increases, but they say the lifetime savings would not occur. They recommend rejection, because they do not see any benefits sufficient to compensate for the rate increases. The non-PNM parties show that the immediate result of PNM's \$121.5 million plan would be rate increases (at least \$5.9 million per year after the meters have been installed), that PNM's projections of long-term savings are uncertain and that PNM ratepayers would likely pay more over 20 years with AMI meters than the existing non-AMI meters.

The terms of PNM's plan include full cost recovery of the \$95.1 million cost of the new AMI meters, \$24.9 million for PNM's existing non-AMI meters that will be replaced and will no longer be serving customers, and \$1.5 million in PNM's customer education costs. In addition, while ratepayers would be paying more, PNM's shareholders would earn a \$42.8 million pre-tax return on the new AMI meters, a \$11.0 million pre-tax return on the non-AMI meters that will be replaced, and a \$183,000 pre-tax return on PNM's customer education costs.²²

The Hearing Examiner agrees with the non-PNM parties that the plan does not fairly balance the interests of investors and ratepayers. Ratepayers should not bear 100% of the risk that PNM's savings predictions will occur, while shareholders earn an additional return on the new investment and continue to earn a return on the replaced investment. In addition, the prudence of the \$95.1 million capital cost of the project is questionable, given the \$6.2 million cost increase resulting from PNM's re-bidding of the installation portion of the project. PNM re-bid the installation work because the contractor it initially selected violated New Mexico's contractor license requirements.

Further, PNM's proposed \$42.72 per month opt-out fee is too high. Several of the non-PNM parties have raised concerns about the health impacts, safety, and security of the AMI meters. While PNM contests the validity of the concerns and PNM's plan allows customers who have such concerns to choose not to receive an AMI meter, the magnitude of the monthly opt-out fee is too high to provide customers with a meaningful choice.

As a discretionary project, the timing is also not good. PNM hopes to achieve its predicted savings largely by laying off 125 employees who perform meter reading and related functions. In addition, PNM ratepayers have experienced a recent series of rate increases -- an

²² The AG's witness testified that 65.7% of these returns represent profit to PNM shareholders. Crane (9/29/2017), p. 11.

increase in October 2017 and an increase effective in February of this year. Further rate increases also appear to be on the horizon as PNM seeks unrecovered costs of coal plants that it plans to retire and new generating resources to replace them.

To be clear, the Hearing Examiner is not recommending that PNM be prohibited from adopting an AMI project. The recommendation is that PNM's AMI project not be approved at this time in its current form. PNM should engage in the planning process it told the Commission in 2012 was necessary for a project of such a scope. The planning process should examine reasonable alternatives and solicit public input to develop a plan that fairly addresses the needs of its customers and its service territory.

2. Legal standards for approvals

a. Standards for advance approval to construct utility plant

PNM's characterization of the AMI project as discretionary (i.e., not necessary for the provision of adequate service, and not required by any Commission rule or regulatory mandate) draws into question which, if any, legal authorities and standards apply to PNM's requests.

The only provision in the Public Utility Act that contains an express authorization for advance approval of a construction project and advance ratemaking treatment for such a project is the CCN statute at §62-9-1 of the Public Utility Act. Section 62-9-1.A requires public utilities to obtain a CCN before beginning the construction or operation of any public utility plant or system. NMSA 1978, §62-9-1.A.

PNM argues that the CCN statute does not apply, claiming that the AMI infrastructure does not constitute utility plant or a utility system. As discussed above, Staff and the other parties disagree, arguing that a CCN is necessary.

The standard for the issuance of a CCN to construct or operate a public utility plant or system is whether the *public convenience and necessity* require construction or operation of a

facility. NMSA 1978, §62-9-1.A. The "public convenience and necessity" standard has been interpreted as requiring the showing of a "net benefit to the public." *Re Southwestern Public Service Co.*, Recommended Decision, Case No. 07-00398-UT, February 6, 2008, p. 6, approved in Final Order, Case No. 07-00398-UT, February 14, 2008; *Re Southern Union Company*, Final Order, Case No. 1891/1892 (December 12, 1984). Utilities also need to show that the proposed project is the most cost effective alternative to satisfy the utility's needs. *Re Public Service Company of New Mexico*, Case No. 2382, 166 P.U.R.4th 318, 337, 355-356 (1995); Corrected Recommended Decision, Case No. 15-00261-UT, August 15, 2016, pp. 89-99, approved in Final Order Partially Adopting Corrected Recommended Decision, September 28, 2016; Certification of Stipulation, Case No. 13-00390-UT, November 16, 2015, pp. 95-96, approved in Final Order, December 16, 2015, p. 7.

Although PNM states that a CCN is not necessary, it nevertheless argues that the evidence it has presented in this case satisfies the standard for the issuance of a CCN, should the Commission determine that a CCN is necessary for the project.

b. Standards to approve PNMs ratemaking requests

There is little legal authority in the Public Utility Act for the approval of ratemaking treatment to recover a utility's costs before the costs are incurred and outside the context of a rate case. Under the CCN statute, a utility may ask the Commission to approve ratemaking treatment for a project for which a utility seeks a CCN. The statute provides that, in such a case, the Commission shall, in the order granting the certificate, set forth the ratemaking principles and treatment that will be applicable to the public utility's stake in the certified facilities in all ratemaking proceedings on and after such time as the facilities are placed in service. NMSA 1978, §62-9-1.B. The Commission, however, need not approve the ratemaking treatment

proposed by the applicant. The ratemaking treatment the Commission ultimately approves depends upon the reasonableness of the applicant's proposal and the supporting facts.²³

More generally, the Public Utility Act requires that public utility rates be just and reasonable. NMSA 1978, § 62-8-1. "Section 62-8-1 offers no guidance to the Commission for achieving this goal, nor does it specify procedures." *Otero County Electric Cooperative, Inc. v. New Mexico Public Service Commission*, 108 N.M. 462, 464, 774 P.2d 1050, 1052 (1989). "To set a just and reasonable rate, the Commission must balance the investor's interest against the ratepayer's interest." *Behles v. New Mexico Public Service Commission*, 114 N.M. 154, 161, 836 P.2d 73 (1992). As the Supreme Court has concluded, "Neither [interest] is paramount . . . we cannot focus solely on investor interests." *Mountain States Tel. & Tel. Co. v. New Mexico State Corporation Commission*, 99 N.M. 1, 7-8, 653 P.2d 501 (1982). The implementation of this standard normally occurs in a rate case. Costs have traditionally been authorized for recovery based upon an historic test year or, more recently, a future test year. Ratemaking treatment outside of a rate case is disfavored as being contrary to the policy of piecemeal ratemaking.

²³ The following is an example of the Commission's deferral of ultimate ratemaking treatment until a subsequent rate case:

The Hearing Examiner disagrees that future events, beyond the uncertainty of the exact closing date, could increase or decrease the purchase price to be reflected in rate base. PNM has demonstrated that its purchase of the Delta Plant under the terms of the Purchase and Sale Agreement would result in significant savings to ratepayers, and it is reasonable to allow PNM to include the Delta Plant in rate base in its next general rate case, in an amount up to \$37.7 million [subject to adjustment based on the actual closing date], less applicable depreciation and amortization, *and subject to customary used and useful review to determine whether its inclusion in rate base in an amount up to \$37.7 million results in just and reasonable rates*. The Hearing Examiner declines at this time to make a finding that the Delta Plant is used and useful. It is possible that future events could affect the used and usefulness of the Delta Plant at the time that PNM files its next general rate case or future rate cases.

Recommended Decision, Case No. 13-00004-UT, May 23, 2013, p. 19 (Emphasis in original), approved in Final Order on Recommended Decision, June 26, 2013.

c. Implicit discretionary authority

PNM argues that Commission's authority to approve the AMI project and PNM's proposed ratemaking treatment before the project is constructed and the costs are incurred is based upon what PNM describes as the expansive power conferred upon the Commission in the New Mexico Constitution and the Public Utility Act to supervise and regulate public utilities. PNM cites the Commission's "general and exclusive power and jurisdiction to regulate and supervise every public utility in respect to its rates and service regulations . . . all in accordance with the provisions and subject to the reservations of the Public Utility Act . . . and to do all things necessary and convenient in the exercise of its power and jurisdiction." PNM Post Hearing Brief, p. 10, citing NMSA 1978, § 62-6-4(A). In regard to the approval of the AMI project, PNM further cites the authority the Commission has exercised in its rules relating to customer meters and the proceedings the Commission has previously docketed to consider how advanced metering technology and time-based rates might benefit utility customers. *Id.*, 11-12. PNM acknowledges, however, that the exercise of such implicit authority outside the context of a CCN request is discretionary. PNM Response Brief, p. 18.

The Hearing Examiner agrees that the Commission's authority over public utilities is broad and that it is not limited to specific powers expressly stated in the Public Utility Act. The Hearing Examiner also finds that the Commission has the implicit authority, upon a proper showing, to approve the types of requests made by PNM in this case. Nevertheless, the Hearing Examiner finds that PNM has not made a sufficient showing in this case to justify the Commission's exercise of its implicit authority to grant the approvals PNM requests.

As PNM acknowledges, the exercise of the Commission's implicit authority lies within the Commission's discretion. In exercising its discretion, the Commission must act reasonably

and not arbitrarily. Its decision must be based upon the evidence. Most important, the Commission should consider the public interest and fairly balance the interests of investors and ratepayers. As Staff argues in its brief, "[a]ny notion that a capital project should be approved only because it is 'cost effective' should be explicitly rejected. 'Cost effective' is not a standalone standard of review." Staff Post Hearing Brief, p. 6.

The recent San Juan abandonment case at 13-00390-UT cited by PNM in support of its request for the Commission to exercise its discretionary authority is a good example of a case in which there was a clear showing of net public benefit and the public interest.²⁴ The San Juan case involved an abandonment request (for San Juan Units 2 and 3), two CCN requests (to acquire additional capacity in San Juan Unit 4 and to include Palo Verde Unit 3 in PNM's rate base) and a request to approve the recovery of the costs of the selective non-catalytic reduction ("SNCR") pollution controls required by the EPA and the New Mexico Environment Department to continue operating San Juan Units 1 and 4. The abandonments and the capital spending on SNCR pollution controls were part of a comprehensive agreement negotiated between PNM, the U.S. EPA and the New Mexico Environment Department to enable PNM to satisfy the Regional Haze requirements of the Clean Air Act and continue to operate Units 1 and 4. Need and the public interest were clearly at stake there, and the Commission approved a stipulation that provided for PNM's recovery of 50% of the undepreciated costs of Units 2 and 3 (instead of the 100% recovery PNM originally requested) and the full recovery of the SNCR costs.

In addition, the Certification of Stipulation issued by the Hearing Examiner on the initial stipulation negotiated in that case recommended that advance ratemaking approval not be granted for the SNCR spending, contrary to the stipulating parties' request. Certification of

²⁴ See PNM Post Hearing Brief, p. 19.

Stipulation, Case No. 13-00390-UT, April 8, 2015, pp. 138-139. The Hearing Examiner questioned, in particular, the prudence and reasonableness of the balanced draft portion of the SNCR work and recommended that the stipulation be modified to provide for the review of the SNCR costs in a future ratemaking proceeding. The Commission thereafter approved a modified stipulation that included the signatories' agreement to defer ratemaking treatment of the balanced draft costs to a future general rate case. Final Order, Case No. 13-00390-UT, December 16, 2015, p. 22.²⁵

In regard to PNM's requests here, the Hearing Examiner recommends, at a minimum, that the Commission insist that PNM make a showing sufficient to obtain a CCN. That includes proof that the project will produce a net public benefit and that PNM has conducted an evaluation of reasonable alternatives to its proposal. The Commission should also carefully evaluate the public interest and ensure a fair balancing of the interests of investors and ratepayers. Furthermore, given the discretionary nature of PNM's request, the standard should be higher than for a CCN, and the scope of the Commission's considerations should be broader. The Commission should consider the extent of any public opposition, the extent to which PNM's justifications are not clearly demonstrated, and the extent to which any uncertainties will impact the public interest and create unreasonable risks for ratepayers.²⁶

The need for a strong justification for the advance approvals is reinforced by the fact that other New Mexico utilities have installed certain types of advanced meters without seeking

²⁵ The Commission ultimately determined in Case No. 15-00261-UT that PNM failed to prove the prudence of the balanced draft portion of the SNCR project. Final Order Partially Adopting Corrected Recommended Decision, Case No. 15-00261-UT, September 28, 2016, pp. 47-52.

²⁶ Given the Hearing Examiner's finding that the standard to approve a discretionary request is higher than the standard that applies to CCNs, the Hearing Examiner does not find it necessary to address the issue of whether a CCN is required for PNM's pursuit of the AMI project proposed here. In addition, the record indicates that other New Mexico utilities (investor-owned utilities and rural electric cooperatives) have implemented some form of advanced metering projects without seeking CCNs.

advance approval of their plans and advance ratemaking treatment. One example is the installation of 345,000 advanced meters (i.e., AMR²⁷ devices) by New Mexico Gas Company ("NMGC") in the central Rio Grande corridor, from Belen to Santa Fe after the transfer of PNM's natural gas assets to NMGC in 2009. NMGC installed the AMR system to be operational when the agreement between NMGC and PNM providing for joint meter reading in that area expired on January 30, 2011. NMGC did not request or receive advance approval for the installations, nor did it request or receive advance ratemaking treatment. As is the normal practice, the Commission did not issue an advance approval for the project and it considered cost recovery for the meters in a general rate proceeding after their installation. Certification of Stipulation, Case No. 11-00042-UT, January 27, 2012, pp. 34-35, *adopted by* Final Order Approving Certification of Stipulation, January 31, 2012.

PNM's AMI project carries a significant \$121.5 million cost -- \$95.1 million for the AMI infrastructure and \$26.4 million in regulatory assets.²⁸ The AMI Project would result in "profound changes to PNM's traditional interactions with customers." Gunter (7/15/2016), p. 15. It would involve a major change to the company's infrastructure that would require installations by a non-PNM contractor at the homes and businesses of each of PNM's more than 500,000 customers (approximately 531,000 meters). For a project of such cost and significance that is admittedly discretionary, PNM's proof of the project's compensating value should be strong.

As is discussed below, the Hearing Examiner finds that PNM's showings are not sufficient to recommend the exercise of the Commission's implicit authority to approve PNM's requests.

²⁷ See note 10 supra for a description of the difference between AMR and AMI infrastructure.

²⁸ PNM's original filing estimated the capital costs at \$87.2 million and requested \$39.5 million in regulatory assets.

3. No net public benefit, no evaluation of alternatives and the public interest

a. Public opposition and the need for better planning

i. Lack of public input conflicts with PNM's 2012 advanced metering report

PNM's 2012 report on advanced metering recognized the need for public input and a detailed implementation plan before coming to the Commission for approval of a project. PNM has not adopted that approach here.

In 2006 and 2012, the Commission asked PNM to investigate the costs and benefits of implementing some form of advanced metering infrastructure. Both times, PNM stated that advanced metering was not cost effective, but, in its 2012 Report, PNM described the process it would use to implement a project if it were to become cost effective.²⁹

PNM's 2012 report compared the costs and benefits of the two types of automated meter reading -- AMR versus AMI technologies. 2012 Report, p. 1. PNM also stated that "[b]efore beginning a transition to automated meters, PNM would need to more fully evaluate and refine the estimated costs and potential benefits and the impacts for customers of such a transition. Especially if an AMI technology were implemented, many major business functions and employees at PNM and many of the communications mechanisms between PNM and customers would be affected." *Id.*, p. 9.

Accordingly, PNM's 2012 Report emphasized the importance of a public participation process and the preparation of a detailed implementation plan before seeking Commission approval of an AMI project:

²⁹ See White Paper on Time-Based Rates and Advanced Metering, Case No. 06-00391-UT, December 29, 2006 and Report on Costs and Benefits of Transitioning to Automated Meter Reading, Case No. 12-00238-UT, October 12, 2012, pp. 1-2.

Before beginning a transition to automated meters, PNM would need to more fully evaluate the cost impacts and potential benefits of such a transition, which would need to include the following activities:

1. RFP: Develop specifications for a Request for Proposal ("RFP") to request firm bids from experienced vendors for AMR or AMI meters with cellular or RF communications and to conduct the meter exchange throughout PNM's service area.
2. Public Participation Process: Identify and address any customer concerns about automated metering by conducting customer outreach and communications through a public participation process in which customers, stakeholders and public advocacy groups could participate, perhaps including a Commission workshop process.
3. Automated Metering Transition Plan: Develop a transition plan to: (a) address customer issues identified through the public participation process, (b) describe the meters' technology and proposed communication system, (c) specify the schedule and Report on Costs and Benefits of AMR anticipated costs and benefits for conducting the meter exchange, (d) detail the plans and costs for any new data management systems and PNM back-office operations, (e) address any employment contract issues and set forth an employee transition plan, and (f) provide for cost recovery.
4. Commission Approval Process: Based on the results of the public participation process and the transition plan, PNM would bring to the Commission its proposed plan(s) for its review and approval. This plan could include proposed modifications to NMPRC rules that could help realize the potential benefits of automated metering.

Report on Costs and Benefits of Transitioning to Automated Meter Reading, Case No. 12-00238-UT, October 12, 2012, pp. 1-2 (Emphasis added).

PNM's proposal in this case did not provide a comparison of AMR and AMI technologies. PNM also did not solicit public participation in the preparation of its proposal, and it did not prepare a detailed implementation plan. PNM proposes to prepare the plan after obtaining Commission approval of its AMI proposal. Ms. Teague, stated that "[w]e felt that since this report was issued, so many more smart meters had been installed. And there have even been communicating meters in New Mexico installed. So it's not such a new technology anymore. It's more accepted." Tr. 179 (2/28/17). She said "I don't think there are as many concerns as there might have been in 2012. I do understand some customers have concerns." Tr.

180 (2/28/17). She said she did not know whether PNM would have gotten more support for the project if it had conducted a public participation process. Id.³⁰

Perhaps most troubling, PNM has presented its plan in inflexible terms, refusing to consider and address the concerns expressed by the non-PNM parties. If the terms of PNM's proposal are not approved in full, PNM will not implement the project.

By contrast, CCAE's witness, Dr. Bickford, cited the AMI plans of Consolidated Edison of New York and Commonwealth Edison Company in Illinois.³¹ Both documents are extensive. The Con Edison and ComEd plans are 188 and 134 pages long respectively. Both involved public input. The ComEd Plan, in particular, was prepared after an extensive public participation process that included formal Commission proceedings, numerous public workshops, and other stakeholder discussions over several years. ComEd's formal workshops addressed the desired characteristics of an AMI system, including interoperability and flexibility to respond to technological change and evolution, and criteria for meter and network vendor selection. They also established priorities for security, network performance, obsolescence risk, and cost-effectiveness. PNM Exhibit 20, p. 8. The Con Edison plan also noted an Advisory Community survey that indicated customer preferences for remotely read meters. PNM Exhibit 19, p. 11.

The Hearing Examiner does not find that the number of pages in a plan necessarily determines its value, but the scope of the issues addressed in a plan can provide some assurance

³⁰ Indeed, PNM's Application has not actually presented a plan for the Commission's review. In support of PNM's Application, PNM provided direct testimony that included the usual double-spaced testimony with a two page overview of the AMI project, a three paragraph high-level schedule for deployment, a detailed 33 page analysis of cost savings with exhibits, a cost-benefit analysis that shows a net present value savings to customers over a 20 year period, a three page description of operational benefits, a one page description of PNM's customer outreach and education plan, a 6 page description of PNM's opt-out fees, and an excerpt from the Request for Proposals for the project. No formal plan document was presented. PNM provided no direct testimony by an engineer regarding the proposed infrastructure, any alternatives that were considered or a detailed plan for deployment.

³¹ October 15, 2015 Advanced Metering Infrastructure Business Plan of Consolidated Edison of New York (PNM Exhibit 19) and the October 3, 2012 Revised Smart Grid Advanced Metering Infrastructure Deployment Plan of Commonwealth Edison Company of New York (PNM Exhibit 20).

that issues have been considered in a meaningful way. PNM's proposal focuses extensively on the issue of cost savings, but the extensiveness of the discussion on savings compared to the perfunctory or lack of discussion of other issues suggests that considerably less thought has been given to other equally important issues.

ii. PNM's unlicensed contractor

PNM's repeated inability to accurately specify the qualifications required for a contractor raises questions about the thoroughness of PNM's internal planning. As is discussed further in section 3.c(iii) below, the original RFP PNM issued in September 2015 for the project did not require that bidders have the New Mexico contractor licenses required to perform the work. Eighteen months later, a New Mexico CID official testified at a hearing on March 30, 2017 that a contractor's license was required to perform the installation portion of the contract (i.e. removal of existing meters and replacement with AMI meters). After checking with PNM's selected contractor during the hearing, PNM discovered that its selected contractor lacked the necessary license.

While CID and PNM's contractor subsequently went on to negotiate and resolve the violation (i.e., submitting a bid without the proper license) and the contractor paid a \$65,000 fine, PNM issued a further RFP on May 26, 2017 for the installation work. Despite the attention brought to the issue and PNM's newly-acquired familiarity with the CID's licensing requirements, the May 26, 2017 RFP still did not correctly specify the necessary qualification (i.e., the type of license required), and PNM had to reissue a further RFP on July 27, 2017 to obtain a qualified bidder. The final meter installation cost ultimately increased by \$7,002,478 over the amount in the original bid. Teague (Sept. 5, 2017), p. 9

PNM's repeated mistakes are surprising. They raise questions about the thoroughness of PNM's planning and the reliability of the cost estimates PNM uses to justify the project. It is difficult for the Commission to approve the project with any confidence that other similar mistakes have not been made and that the project, which will involve physical installations at the service locations of more than 500,000 of PNM's customers, will be performed without additional unanticipated problems and costs.

b. The uncertainty of savings for ratepayers

(i) Imminent rate increases

All parties, including PNM, agree that the incremental costs of the AMI project would exceed the project's incremental savings for at least the first several years after the AMI meters' deployment. They agree that the initial impact of the project would be a rate increase, although they disagree on its likely size.

PNM estimated an increase for the first year after the project is deployed ranging from \$4,942,187 (based upon PNM's original \$87.2 million capital cost estimate) to \$5,859,380 (based upon PNM's \$95.1 million updated estimate). PNM also projected residential bill impacts ranging from \$3.84 per year to \$6.36.

PNM's estimates depended in large degree upon the savings the project would achieve, and the non-PNM parties dispute PNM's savings estimates. Ms. Crane estimated a minimum first year increase of \$7,686,994 (based upon PNM's original \$87.2 million cost estimate). Based on this higher revenue requirement, the average cost per bill would increase from \$0.36 per month to \$0.56 per month, or \$6.71 annually. Crane (1/26/2017), p. 4.³² NMIEC witness,

³² She said the impact of the AMI Project could also be higher, (a) if the incremental revenue requirement associated with the program is higher than the amount reflected in her direct testimony, (b) if there is a decline in PNM's billing

(continued on next page)

Nicholas Phillips, stated that the rate impact for an average residential customer would be \$9.53 per year. Phillips (2/14/2017), p. 6; Tr. 14 (March 2, 2017). Ms. Crane and Mr. Philips did not update their estimates to reflect the impact of PNM's revised overall \$95.1 million estimate.

The parties agree that the project's incremental costs will decline over time as the capital costs of the project are depreciated and any regulatory assets that are approved are amortized. They disagree, however, about when, if ever, the project's savings will exceed its incremental costs. PNM estimated that the savings will exceed the costs in four to five years after the meters' deployment. The other parties argue that the crossover may never occur.

(ii) The risk that lifetime costs will exceed savings

The net savings over the lifetime of the project that PNM relies upon to support the reasonableness of the AMI project are uncertain. Indeed, PNM's savings estimates have changed substantially during the pendency of this case. PNM's cost-benefit analysis also fails to include likely costs, and, based upon these uncertainties and omissions, the project's lifetime costs appear likely to exceed its savings. PNM is further unwilling to guarantee that the savings it predicts will occur or to share in the risk that they will not.

PNM's primary justification for the project is its claim that it will save ratepayers money, not immediately, but over the 20 year expected life of the project. PNM witness, Mr. Ortiz, stated that PNM is "justifying [the AMI project] on O&M savings primarily. We will spend less on meter reading, we will spend less on credit collections, we will spend less on cut-ins, cut-outs. There's a whole list of things that we'll spend less money on. The installation of this metering infrastructure will allow customers to reap those benefits." Tr. 55 (2/27/17).

determinants, or (c) if the NMPRC adopts different class cost of service allocators that impose a greater share of the costs on residential customers. Crane (1/26/2017), p. 6.

PNM stated in its original filing that \$11.3 million in operations and maintenance savings would result from employee reductions, faster disconnections to avoid bad debt, and the ability to more easily discover and stop customers' tampering and diversion of PNM's service. PNM stated that these savings would result in \$20.9 million in net present value of savings (in excess of the project's costs) over the 20 years PNM estimates as the useful life of the AMI meters.

PNM, however, reduced its estimate of operations and maintenance savings on September 5, 2017 to \$10.7 million and its estimate of net lifetime savings to \$8.6 million. Teague (9/5/2017), Exhibit RRT-7. The reduced lifetime savings were largely the result of the higher cost for the AMI removal and installation work that PNM re-bid in the summer of 2017. Teague (9/5/2017), pp. 2-3. As a result, PNM dropped its request for a \$5 million regulatory asset to recover the severance costs for laid-off workers and modified its request for the recovery of the undepreciated costs of its existing meters, increasing PNM's final estimated net benefit for ratepayers to \$16.1 million. Ortiz (10/13/2017), pp. 2-3.

Staff states that cost estimates are projections, not actual data, and that the results could swing dramatically if actual results were to vary in just a few cost categories over the 20 years at issue here. Mr. Gunter found it particularly troubling that PNM's forecasts for six of the first seven years indicated that the project will be more costly than under the current meter system. Gunter (7/15/2016), pp. 6-8.

Ms. Crane initially estimated that the project's costs would actually exceed its savings by a net present value of \$12.3 million over the 20 year period evaluated by PNM. Crane (7/15/2016), p. 20. Based upon PNM's September 5, 2017 update and the further revision of her adjustments, Ms. Crane revised her estimate to a net present value cost of \$12.1 million. Crane (9/29/2017), pp. 8-9. Ms. Crane did not have the opportunity to update her estimates based

upon the further concessions offered by PNM in its October 13, 2017 rebuttal testimony. But considering PNM's estimate of an additional NPV of \$7.5 million in lifetime savings resulting from the withdrawal of its request to recover the \$5 million in employee severance costs, Ms. Crane's estimate of a NPV cost of \$12.1 million could be reduced by \$7.5 million to \$4.6 million -- still a net cost to ratepayers.

NMIEC witness, Mr. Phillips, estimated, based upon PNM's original filing, that the project's costs would exceed savings by \$18.2 million. Phillips (2/14/2017), p. 22.³³ Mr. Phillips did not update his estimate after PNM's changes and concessions on September 5 and October 13, 2017.

Furthermore, PNM's cost-benefit analysis excluded a variety of additional costs that are likely to be incurred. PNM's analysis did not include a contingency allowance for delays, project changes and other unforeseen events that might occur during the implementation of the project. Tr. 101 (2/28/17). PNM also did not include a cost for any replacement meters during the 20 year estimated lives.³⁴ PNM's cost-benefit analysis also relied upon the high end of its depreciation expert's advice that the AMI meters would have service lives of 15 to 20 years. No consideration was given to replacement costs if the more conservative low end of the 15 to 20 year range proved accurate. Tr. 120-121 (2/28/17). The exclusion of replacement costs is also dubious given the short warranty periods at issue. Itron's AMI meters are generally sold with a

³³ The AG's witness, Andrea Crane, stated that PNM's cost-benefit analysis ignores the costs to ratepayers in the first three years of the program, includes unjustified savings in bad debt expense and an overly optimistic increase in revenue from reduced tampering and diversion. Crane (7/15/2016), p. 20. NMIEC's witness, Nicholas Phillips makes similar criticisms. Phillips (2/14/2017), p. 22.

³⁴ PNM states that it excluded replacement costs, because it expects the AMI meters to fail at a lower rate than its existing meters because the AMI meters will be newer. There would therefore be no incremental costs for replacements. Monroy (2/26/2016), p. 7. The approximately \$98 per meter cost of an AMI meter, however, substantially exceeds the \$25 per meter cost of PNM's non-AMI meters. Tr. 174 (10/25/2017); Tr. 124 (10/26/2017). PNM's analysis did not acknowledge this difference.

three year warranty, but PNM negotiated a reduced meter price in exchange for a warranty of only one year. NMUS Exhibit 1, Tr. 125 (2/28/17); Tr. 45-47 (10/26/2017).

Further, PNM's analysis does not include replacement costs that might arise from the obsolescence of the meters over their physical service lives and their potential incompatibility with future applications that might be used with the AMI system. As an example of the potential for such costs, Arizona Public Service Company and Texas New Mexico Power Company ("TNMP") were both forced to replace AMI meters that relied upon 2G cellular service after their telecommunications carriers stopped providing 2G service. The replacements cost TNMP an additional \$3 million. Teague (4/24/2017), p. 5.³⁵

PNM's analysis does not include estimates of cost to remediate a hacking incident, such as costs to restore lost data and other billing information. Tr. 21 (2/28/17).

Mr. Ortiz testified that PNM is not willing to guarantee its savings estimates. He said it might be possible to guarantee that certain costs that PNM proposes to totally eliminate will be eliminated, such as the termination of the meter readers. But he said it would be difficult to guarantee and verify the extent to which expenses that are expected to continue will have been reduced. Tr. 42-47 (2/27/2017).

³⁵ PNM stated initially that it was generally aware of the replacements, but that it was unaware of when they were made or the number of meters that were affected. CFRE Exhibit No. 5, Tr. 114-116 (2/28/17). Mr. Hawkins stated that the replacements may have occurred in the 2009 - 2010 time frame, and that the replacements took place before TNMP had fully deployed them. Tr. 129 (3/1/2017). Later, when presented with TNMP's 2014 Application to the Texas Public Utility Commission in which TNMP (PNM's affiliate) sought recovery of the additional costs to replace the meters, PNM referred to TNMP's testimony in the Texas docket which indicated that TNMP's contribution to the replacement costs was \$3 million. The TNMP witness said the remainder of the costs were covered by TNMP vendors and that there was no delay in TNMP's deployment schedule. Teague (4/24/2017), p. 5.

c. Disproportionate benefits for investors

(i) Elimination of financial risks for investors

PNM's primary motive for filing this case is to eliminate the risk that it would proceed with the AMI project and not be able to recover all the costs it seeks. PNM states that, if the Commission does not approve PNM's requests for cost recovery, it will not pursue the project.

As Staff and other parties argue in connection with their claims that PNM should have sought a CCN, however, the general practice is that utilities make investment and managerial decisions based upon their own managerial judgments without advance Commission approval and they seek to recover their costs later in a rate case. Utilities have the opportunity to earn favorable returns with good management decisions, and they bear the risk of earning lesser returns with poor management decisions. Thus, it is that the Public Utility Act provides expressly only for advance Commission review and approval of utility investments requiring CCNs and advance ratemaking treatment in connection with CCN applications.

As Ms. Crane notes, however, PNM and other utilities have with increasing frequency been seeking to reduce their risks with requests for advance ratemaking treatment and regulatory assets for expenses that occur outside the test year of a rate case.³⁶ PNM states here that the cost estimates in its cost-benefit analysis are reliable, but it is not willing to bear the risk that its \$95.1

³⁶ For example, the Recommended Decision in PNM's recent rate case at 15-00261-UT stated that the creation of regulatory assets and liabilities should be the exception, not the norm:

It appears that utility requests for creation of regulatory assets and liabilities are becoming more frequent. It also appears that this Commission has not discussed the circumstances in which creation of a regulatory asset or liability is appropriate. The significant evidence on this issue in this case creates a good opportunity for the Commission to provide guidance on this issue: the Commission shares the concerns expressed by AG witness Crane about creating regulatory assets. Ms. Crane said that the AG opposes creation of regulatory assets in principle because they insulate shareholders from risk and shift risk to ratepayers. Ms. Crane believes that a utility's incentive to manage its business gets lost when regulatory assets are permitted.

Corrected Recommended Decision, Case No. 15-00261-UT, August 15, 2016, p. 131, approved in Final Order Partially Adopting Corrected Recommended Decision, September 28, 2016 (Transcript citations omitted).

million in estimated capital costs (revised upward from its initial \$87.2 million estimate) and its estimated \$16.1 million of lifetime savings (revised from previous estimates of \$20.9 million and \$8.6 million) will not materialize. Tr. 74 (2/27/17). Mr. Ortiz states PNM's position clearly:

Although implementation of AMI will provide significant financial and operational benefits, this project is not necessary for the provision of adequate service nor is it required by any Commission rule or other regulatory mandate. It will, however, require a significant capital investment by the Company. Consequently, PNM has asked the Commission to approve its proposed regulatory assets and the future capital investments prior to AMI implementation. *Simply stated, before proceeding with a discretionary expenditure of this magnitude, PNM needs assurance that all of the costs of the project as well as the costs of its remaining investment in existing meters will be recoverable in rates.*

Ortiz (2/26/2016), p. 8, lines 6-14 (Emphasis added).

(ii) Immediate increase in investor earnings

PNM's recent presentations to investors have identified the AMI Project as a source of earnings for PNM. See June 2016 Presentation (CFRE Exhibit 9, p. 6); January 12-13, 2017 Investor Meetings (CFRE Exhibit 10, p. 27). In addition to the full recovery of PNM's \$95.1 million in capital costs, the \$26.4 million in regulatory assets and \$10-12 million in annual expenses for the AMI infrastructure, PNM's shareholders would earn a profit on the funds invested. Staff calculated the following net profits from the newly-installed AMI infrastructure for the years 2019 through 2023 (based upon PNM's originally proposed \$87.2 million investment).

Year	Weighted After-Tax Return on Common Equity
2017	\$ 204,696
2018	1,429,662
2019	2,698,017
2020	2,750,354
2021	2,400,877
2022	2,111,695
2023	1,876,712

Gunter (7/15/2016), pp. 9-10.

Ms. Crane calculated a pre-tax return for PNM's shareholders of \$54.621 million (based upon PNM's finally estimated \$95.1 million capital costs) over the life of the project. Ms. Crane also pointed out that while the increase in installation costs in the summer of 2017 hurts ratepayers, the increases actually benefit PNM's shareholders, since shareholder returns are based on the amount of investment in utility plant and higher project costs will result in higher profits for the PNM's shareholders. She testified that PNM's September 5, 2017 position (prior to PNM's October 13, 2017 revisions) included a pre-tax return of \$54.621 million for shareholders -- \$42.843 million on the new meters, \$11.023 million on the existing meters that would no longer be in-service and benefitting customers, \$572,000 on its severance costs, and \$183,000 on customer education costs

	Pre-Tax Return 2018-2040 (\$ Million)
Return on New Meters	\$42.843
Return on Existing Meters	\$11.023
Return on Severance Costs	\$0.572
Return on Customer Education Costs	\$0.183
Total Pre-Tax Return	\$54.621

Crane (9/29/2017), p. 11. Ms. Crane said 65.7% of the return would be a return on equity and profit to PNM's shareholders. She also said New Mexico ratepayers would pay a tax gross-up of \$1.41 in utility rates for every \$1.00 of return on equity. Crane (9/29/2017), pp. 10-11.

With PNM's October 13, 2017 withdrawal of its request for a regulatory asset for the employee severance costs, the \$572,000 return in the table above would be eliminated. The total return would thus be reduced to \$54.049 million.

(iii) PNM's requests that the Commission find the AMI capital costs and expenses are reasonable and prudent

PNM has not met its burden to prove the reasonableness and prudence of its anticipated capital costs and expenses. PNM solicited competitive bids for the project, but its bidding process was complicated with errors that raise questions about the reasonableness of the costs PNM seeks to recover. In addition, as is discussed in section 3.e below, PNM has not shown that it considered any potentially less costly alternatives to the project it put out to bid.

As noted earlier, PNM's initial RFP, issued in September 2015, failed to insist that bidders be properly licensed to perform the project's installation work. The RFP sought comprehensive bids to include the costs for the provision of equipment (e.g., AMI meters, communications network hardware and software, back office and related applications and support services) and installation of the new AMI meters and related equipment. The installation work included the removal of PNM's existing meters and their replacement with AMI meters. PNM sent the RFP to eight vendors and received responses from six. Teague (2/26/2016), pp. 31-33. PNM proposed to accept a bid from Itron in the approximately \$82 million. Teague (2/26/2016), Exhibit RRT-15. With internal labor costs and capital loads, PNM estimated the total capital costs at \$87.2 million. Monroy (2/26/2016), Exhibit HEM-3.

During the hearing held on March 30, 2017, PNM learned that Itron lacked the necessary New Mexico contractor's license to perform the installation work in Itron's bid.³⁷ Learning that Itron could not legally perform the installation work, PNM responded by negotiating a reduction in Itron's proposed price to remove the installation work. PNM did not re-bid the entire AMI project, nor did it re-bid the equipment portion of the work. Instead, it issued a series of further

³⁷ PNM's original RFP did not specifically require bidders to have a New Mexico contractor's license. PNM's May 27, 2017 RFP required bidders to provide such a license with their RFP responses. Teague (9/5/2017), Exhibit RRT-1, p. 4 of 60.

RFPs for the work that was excluded from Itron's proposal. Itron's revised bid totaled approximately \$76 million. Teague (9/5/2017), Exhibit RRT-6.

While PNM was re-bidding that portion of the work, Itron and the New Mexico CID negotiated a resolution of Itron's violations. Itron's submission of its bid for the removal and installation work violated New Mexico contractor licensing requirements. In the final Stipulated Agreement between CID and Itron, Itron agreed to pay a \$65,052 fine and to make commercially reasonable efforts to become properly licensed with 30 days after the execution of the agreement. The agreement was formally approved by the Construction Industries Commission on June 26, 2017. Teague (9/5/2017), Exhibit RRT-21.

PNM's May 26, 2017 RFP solely for the removal and installation work required bidders to have proper contracting licenses to perform the work at the time their bids were submitted. It was sent to 12 vendors, of which five submitted responses. Teague (9/5/2017), p. 4. In reviewing the bids, PNM decided to seek clarification from the CID about the specific type of license necessary to perform meter installations. Based upon the clarification, PNM re-issued the RFP again on July 27, 2017 to the five vendors that responded to the May 26, 2017 RFP. Four vendors submitted responses. *Id.*, pp. 5-6.

The ultimate result was a \$7 million increase in the cost of the installation work to \$14 million. Teague (9/5/2017), Exhibit RRT-6.³⁸ Combined with other changes, internal labor costs and capital loads, PNM estimated the total capital costs to be \$95.1 million -- an \$8 million (9.2%) increase. Monroy (9/5/2017), Exhibit HEM-3.

PNM stated that it did not need to re-bid the equipment portion of the project. Ms. Teague cited PNM's Legal Memorandum filed on May 12, 2017, in which PNM argued that

³⁸ The \$7,002,478 increase includes \$6,224,923 in installation costs, \$270,000 to dispose of the old meters and \$507,555 due to an increase in gross receipts tax. Teague (9/5/2017), p. 9.

Itron's lack of a license from CID had no impact on Itron's legal ability to provide the meters, software, communications equipment and other equipment for the AMI Project. She said that, with Itron's guarantee of the original pricing on the meters, related equipment and software through March 31, 2018, Itron remains the optimal vendor for the project. She said Itron was the only vendor who offered an integrated end-to-end solution from the software to the meters, that "Itron's equipment pricing also compared very favorably to the other vendors," that PNM has a good working relationship with Itron and experience with Itron equipment and software currently in use. Teague (5/12/2017), pp. 4-5.

NMUS argues that the entirety of Itron's bid, including the revised \$76 million portion of the contract for equipment and support services, is illegal, based upon Itron's failure to have obtained a license prior to submitting its bid. NMUS argues therefore that any contract resulting from the illegal bid will be illegal and unenforceable.

PNM also argues that the capital costs ultimately recovered will be reasonable and prudent, because PNM is proposing to apply the Commission's cost overrun rule (17.3.580 NMAC) that applies to CCN proceedings to any final costs that exceed PNM's capital cost estimates in this case. The cost overrun rule would require PNM to justify the recovery of capital costs in excess of 10% of PNM's capital cost estimates here.³⁹

PNM, however, has already exceeded its original capital cost estimate by 9.2%, and the prudence of that exceedance is in question. In addition, the cost overrun rule only applies to

³⁹ The Commission's cost overrun rule provides that a utility may not "obtain rate recovery of any cost overrun in the construction of electric generating plant until the Commission determines, upon notice and hearing, whether those costs have been incurred prudently." 17.3.580.11 NMAC. The rule defines "cost overrun," in instances where a utility has not included an allowance for contingencies in its cost estimate, as "that portion of the costs of construction which exceeds the certificated estimated cost by ten percent (10%) or more." 17.3.580.7.D NMAC.

capital costs. It would not apply to the estimated O&M savings and increased revenues on which PNM relies to justify the project.

The Hearing Examiner does not find that the equipment portion of Itron's bid is illegal. But PNM's bidding decisions raise questions about the reasonableness of the project's costs, and there is therefore sufficient uncertainty for the Commission to decline to exercise its discretion to make an advance ruling on the issue. Under the circumstances, the Hearing Examiner cannot recommend that the Commission make an advance determination that the prices proposed by either PNM's newly-selected installation contractor or Itron (for the remainder of the AMI work) are prudent and reasonable. In addition, Itron's pricing is guaranteed only until March 31, 2018. Teague (5/12/2017), p. 5.

(iv) Full recovery of undepreciated costs and customer education costs as regulatory assets

PNM's requests for the approval of regulatory assets to recover the undepreciated costs of the existing meters that PNM intends to replace and the estimated costs of a customer education program do not, in the context of PNM's current plan, fairly balance the interests of investors and ratepayers.⁴⁰ First, as discussed throughout this Recommended Decision, PNM has not presented sufficient justification to retire the existing meters and replace them with AMI meters.

Second, PNM's proposal would provide for the full recovery of all of PNM's costs while ratepayers would bear the risk that the cost savings PNM uses as the justification for its project would materialize.

⁴⁰ In its October 13, 2017 rebuttal testimony, PNM withdrew its request to establish a regulatory asset to recover the employee severance expenses associated with the employees PNM would lay off to pursue the AMI project. PNM did so to increase the lifetime savings of the project to ratepayers upon discovering the cost increases that would result from PNM's re-bidding of contracts for the project's installation costs.

Third, it is not clear that full recovery of the \$24.9 million of undepreciated costs of the meters and a return on those costs until the costs are fully recovered would be reasonable. The existing meters would no longer be used to provide service and would therefore no longer be used and useful. PNM is correct that the used and useful concept in New Mexico is flexible and that it does not *per se* require the total exclusion of the costs of non-used and useful plant from rates. But the ratemaking treatment for such plant must still fairly balance the interests of investors and ratepayers. In the San Juan abandonment case, for example, the Commission approved a stipulation that provided for PNM's recovery of 50% of the undepreciated costs of the two San Juan units it proposed for abandonment -- not the 100% recovery PNM seeks here. See Final Order, Case No. 13-00390-UT, December 16, 2015, pp. 21-22.

Finally, PNM's testimony does not provide sufficient detail for the Commission to determine at this point in time whether PNM's customer education plan and its individual components are reasonable and whether the \$1.5 million in costs that PNM estimates for the plan are reasonable and prudent.

d. Discretionary project -- insufficient demonstration of need and no plans to use AMI for energy efficiency

(i) No plans for energy efficiency measures

PNM makes little effort to show that the AMI project is actually needed. PNM argues that the project is discretionary and is not needed to provide adequate and reliable service.

In particular, PNM's plan also sidesteps the potential to use AMI to implement energy efficiency programs more effectively. Ms. Teague stated that PNM has no plans at this time to implement any specific new measures related to demand side management, in home displays, time-of-use rates, or other efficiency measures. She said it is premature to consider specific measures before the AMI meters have been deployed and PNM has thoroughly evaluated the

additional load data that the new meters will provide and how customers interact with AMI.

Teague (5/20/2016), p. 2.

Mr. Ortiz went further, suggesting that PNM might not pursue any AMI-related energy efficiency programs. He stated that PNM's plans for such measures will depend upon the availability of funding under the Efficient Use of Energy Act, which requires and limits the cost of energy efficiency programs under the Act to 3% of customer bills. NMSA 1978, §62-17-6.A. He stated that there are many energy efficiency and demand response programs that PNM can undertake that do not require AMI, and that any AMI-related programs will have to compete for energy efficiency budget dollars with the other programs. He said that energy efficiency programs are approved annually, and that any programs that use AMI will not be considered until after full-scale AMI deployment in 2020 or beyond. He said, if PNM's budget is already fully allocated with existing programs, there will not be incremental dollars available to implement AMI-related programs:

Any energy efficiency programs or demand response at this point would be speculative for what's going to happen four years down the road, because four years down the road we will have a fixed pot of money in terms of demand response and energy efficiency, and if those costs are already fully allocated with existing programs, there won't be incremental dollars available to implement these kinds of programs.

Tr. (2/27/2017), p. 113.

The non-PNM parties criticize PNM's plan for its narrow focus on cost savings. They argue that sufficient information already exists on the types of programs that are successful based upon other utilities' experiences.

Staff, in particular, cites studies by ten utilities conducted through the federal Smart Grid Investment Grant program administered by the U.S. Department of Energy.⁴¹ Pitts (7/15/2016), pp. 17, 28. Staff also cites a recent proceeding in Colorado in which Public Service Company of Colorado ("PSCo") agreed to an advanced grid implementation plan that will allow PSCo "to integrate into the system the new technologies that are developing, such as solar, storage and electric vehicles, and will provide the transparency, reliability and enablement that customers are seeking."⁴² PSCo agreed to select and install meters that incorporate Home Area Network hardware, providing interfaces into the premises for energy consumption monitoring and support for demand response functionality. PSCo's web portal will also enable all customers to access their energy usage data and to provide that data to third parties. Staff Post Hearing Brief, pp. 7-8.

Dr. Pitts stated that PNM's plan should include a web portal that allows ratepayers to easily access and understand their energy consumption data, a ratepayer outreach and education program to encourage the necessary behavior changes, new rebates for smart appliances that can more effectively employ the grid, and better time-of-use or critical peak pricing programs. Pitts (7/15/2016), p. 54. She recommended that PNM return to the Commission with a new application that includes revised costs and a detailed project implementation plan that describes the metrics and goals that PNM will use to educate its ratepayers on how to manage and understand the real-time electricity consumption data. Pitts (7/15/2016), pp. 55-56.

⁴¹ Participating utilities included Green Mountain Power (VT), Detroit Edison (now known as DTE Electric), First Energy, Lakeland Electric, Marblehead Municipal Light Department, Minnesota Power, NV Energy, Oklahoma Gas and Electric, Sacramento Municipal Utility District, and Vermont Electric Cooperative.

⁴² Staff Post Hearing Brief, p. 7, citing In the Matter of the Application of Public Service Company of Colorado for an Order Granting a Certificate of Public Convenience and Necessity for Distribution Grid Enhancements, including Advanced Metering and Integrated Volt-Var Optimization Infrastructure, 2017 WL 3263777, Proceeding No. 16A-0588E, Decision No. C17-0556 (Colo. PUC 2017).

CCAIE witness, Dr. Bickford, stated that PNM needs to identify the services PNM anticipates providing for customers to help them manage their energy use, informed with stakeholder input, before the Commission allows PNM to proceed with the project. Tr. 77-78 (3/2/17).

We don't see many instances working in the Southwest where utilities create a plan, come to a point where we are now in testimony, and then change that plan based on stakeholder input. This is -- you know, it's certainly possible that PNM may decide to engage in stakeholder input to develop some of these materials, some of these components, but this is far after, you know, they have made their original plan. Mr. Ortiz talks about putting the cart before the horse. Seems to me that PNM has proposed the cart and left the horse in the garage, you know, in the barn. They have not done the work that they should have done, I believe that they should have done, to develop a plan, even if it's a set of contingencies, to improve customer engagement with this program before proposing its program.

Tr. 79-80 (3/2/17).

Parties such as CCAIE also argue that the selection and installation of AMI infrastructure before identifying how customers will use it might result in an infrastructure that is not compatible with the uses that are ultimately selected. Dr. Bickford testified that CCAIE wants to make sure that programmable thermostats and other energy efficiency offerings will work with the AMI system they implement. Tr. 76, 84-87 (3/2/17).

The Hearing Examiner finds that the role of advanced metering in developing future energy efficiency programs and a smart grid should be addressed in any future proposal. PNM should ensure that the infrastructure it installs will be technologically compatible with the interests of PNM and its customers in such programs. These are issues that should be discussed and resolved in the public input process recommended in section 3.a.i above.

(ii) Operational benefits

PNM describes certain unquantified operational benefits that it claims the project will provide, but it does not attempt to argue that the value of the benefits is sufficient to justify approval of the project.

PNM cites the following operational benefits for customers:

- On-line customer web portal that will allow customers access to energy use information in near real time to help them make informed decisions about energy use and control costs.
- Ability of customers to choose their bill due date for better account management and budgeting.
- Ability to remotely transfer, disconnect and reconnect service for a customer, without having to send a technician to the property.
- Elimination of the need to estimate bills due to property access or weather issues and the avoidance of meter reading errors.
- Increased security and privacy due to the reduced need to enter customer property.

Teague (2/26/2016), p. 42.

PNM, however, has not shown how strongly customers actually want any of these benefits. PNM has not conducted any customer surveys regarding the AMI Project. Pitts (7/15/2016), p. 15. Ms. Teague also stated that only six to ten of PNM's more than 500,000 customers have expressed an interest in switching from their current analog meter to a smart meter and that no customers have asked that human beings not read their meters. She stated that approximately 100 customers have asked for the level of detail about their consumption that can be provided by AMI meters. She also stated that 100 customers have specifically asked that they not receive smart meters. Tr. (2/28/17) 24-25, 146-148.

PNM's proposed web portal also appears to be of limited value. Ms. Teague said that the web portal will not make consumption data available in real time. She said the "near real time" availability of the data would be at least the following day but that PNM has not yet determined how frequently it will pull data from the meters. Tr. (2/28/17) 60-61.

PNM also states that AMI will provide better information for PNM to manage the distribution system such as interval consumption data, voltage data collected at each customer location and momentary outage information. PNM states that it will be better able to respond faster to emergencies, when a disconnection of service is necessary due to a fire or other emergency. AMI also will have a positive impact on staff safety by eliminating physical trips to the customer location for meter reads and disconnects. Teague (2/26/2016), p. 44-45.

PNM acknowledges, however, that other means are available to achieve these benefits. Mr. Ortiz, for example, states that PNM has the ability to implement time of use and demand response programs with means other than AMI technology. Tr. 110 (2/27/17).

Thus, the value of the operational benefits appears to pale in comparison to the financial risks and the potentially negative impact on the public interest.

e. No evaluation of alternatives

PNM's proposal provides no discussion of the comparative advantages, disadvantages and costs of AMR infrastructure versus AMI infrastructure and why PNM chose AMI infrastructure.⁴³ Ms. Teague stated that PNM did not evaluate an AMR alternative for its current

⁴³ See note 10 supra for a description of the differences between AMR and AMI technology.

filing, although PNM's 2012 report on the cost-effectiveness of advanced metering did compare the costs and benefits of AMR versus AMI technologies. Tr. 102 (2/28/17).⁴⁴

Mr. Hawkins' rebuttal testimony, which showed the extent to which advanced metering is used by other entities in New Mexico, also showed that the majority of the advanced metering projects in New Mexico consist of AMR, instead of AMI. PNM cited eight New Mexico utilities (i.e., municipal, cooperative and public utilities) that have adopted some form of advanced metering. El Paso Electric Company, NMGC, the Town of Silver City and PNM (with 34,000 AMR meters installed by PNM) use AMR technology. At least two, Kit Carson Electric Cooperative and Los Alamos Department of Public Utilities, use some form of AMI technology. The technology used by the Albuquerque Bernalillo County Water Utility Authority and the City of Santa Fe Water Division is not clear. See Hawkins (2/14/2017), p. 10.

Similarly, prior to NMGC's installation of an AMR system in the central Rio Grande corridor from Belen to Santa Fe, NMGC evaluated four alternatives for meter reading: (1) continuing to utilize PNM as its manual meter reading service provider; (2) utilizing another third party under a manual meter reading contract; (3) performing manual meter reading using NMGC employees; and (4) implementing an AMR system. NMGC determined that the AMR was the least costly meter reading option for customers in areas where the AMR system was to be deployed. Specifically, the Company's financial analysis projected that the AMR system would save customers more than \$31 million over its 18-year expected life when compared to the next best alternative. See Certification of Stipulation, Case No. 11-00042-UT, January 27, 2012, p. 35, approved in Final Order Approving Certification of Stipulation, January 31, 2012.

⁴⁴ See White Paper on Time-Based Rates and Advanced Metering, Case No. 06-00391-UT, December 29, 2006 and Report on Costs and Benefits of Transitioning to Automated Meter Reading, Case No. 12-00238-UT, October 12, 2012, pp. 1-2.

The failure to evaluate alternatives prevents the Commission from determining that PNM's plan is the most cost effective option of feasible alternatives.

f. Opt-out fees do not provide meaningful opportunity to opt-out

(i) Unreasonableness of fees

The opt-out fees proposed by PNM are not based upon a realistic assessment of the costs PNM would incur to manually read the meters of customers who choose not to receive AMI meters. PNM's fees are based upon the assumption that meter readers would make separate meter reading visits from their PNM work locations to each customer that opts out. PNM assumes that no more than one meter would be read in each trip.

PNM states that the cost of a meter failure order is a good proxy for expected costs because opt-out customers will be geographically dispersed. The \$46.96 monthly opt-out fee originally proposed by PNM included PNM's \$29.93 fee for a non-standard service order, plus costs for testing and inventory administration, depreciation expense, a return on the meter reading hardware and software, an administrator for the manual meter reads, and the cost of technology support. *Teague* (2/26/2016), pp. 48-49. *Id.*, p. 48. PNM later reduced the fee to \$42.72 per month based upon the reduced \$25.69 fee for a non-standard service order in effect on September 5, 2017. *Teague* (9/5/2017), Exhibit RRT-20.

PNM did not consider scenarios in which opting-out customers might be located in sufficient geographic proximity to have meter readers visit more than one customer location per trip. In response to Commissioner Jones' bench requests, PNM indicated that the monthly cost of meter reading would be substantially lower to the extent that the opting-out customers were geographically concentrated:

PNM's proposed monthly opt-out fee (as of 2/26/2017)	\$46.96
PNM's proposed monthly opt-out fee (as of 9/5/2017)	\$42.72

Monthly costs to manually read meters if all customers decide to opt-out of AMI

Silver City	\$6.61
Alamogordo	\$5.54
Lordsburg	\$31.33
Silver City, Alamogordo and Lordsburg combined	\$4.75

Monroy (3/14/2017), pp. 10-13.

PNM's proposal is also on the high end of the range nationally and appears to be designed to encourage customers not to opt-out. PNM's proposal ignores the interests of low income customers and customers who believe they have good reasons not to participate.

Dr. Pitts agreed that opt-out customers should pay a monthly fee but disagreed with PNM's proposal. She stated that PNM's fee, based in large part upon the cost of an individual service order, could be reduced to the extent opt-out customers are clustered geographically. She also stated that meters for opt-out customers might be read quarterly instead of monthly, with monthly bills based upon past consumption. Tr. 44-45. She ultimately recommended a monthly fee of \$22.00 based upon her review of opt-out rates nationally -- in the event the Commission approves the AMI plan (contrary to Staff's primary recommendation).⁴⁵ She noted that PNM's

⁴⁵ Other utility one-time opt-out fees range from \$20 to \$564, with California setting a one-time fee of \$10 for low income customers. Including PNM's proposed fees, which are on the lower end of the scale, the median fee is \$75.00.

Monthly fees range from \$8.72 to \$51.00, with California establishing a \$5 monthly charge for low-income customers and a \$10 monthly charge for other customers. The median monthly fee is \$17.00. Pitts (7/15/2016), pp. 42-43.

The following utilities do not charge ratepayers who wish to opt-out: Ashland (OR) Electric Department (municipal utility), Eugene (OR) Water & Electric Board (customer-owned utility), Memphis (TN) Light, Gas and Water Division (municipal utility), Green Mountain Power (VT, subsidiary of Gaz Metro), and Dominion Virginia Power (subsidiary of Dominion Resources). Pitts (7/15/2016), p. 43.

Delaware, Idaho, Indiana, Kansas, Kentucky, Pennsylvania, Wisconsin, and the District of Columbia do not allow opt-out for utilities. Utilities in states, such as South Dakota, New York, New Hampshire, Mississippi, North

(continued on next page)

proposed rate is near the high end of the \$8.72 to \$51.00 range (Tr. 42). She stated that these are her initial recommendations to reflect the uncertainties about the actual monthly costs incurred and stated that cost-based rates could be proposed in a later rate case. Tr. 46.

Ms. Crane noted that the average bill for a residential customer using 600 kWh per month is approximately \$71.84 per month, and the PNM's proposed opt-out fee would increase the bill by approximately 65%. Crane (7/15/2016), p. 24. She stated that PNM's proposed fee could be prohibitive for customers that have a legitimate reason for opting out of the program. She stated that, if the Commission approves the AMI project (contrary to her primary recommendation), the Commission should exempt from the fees customers that have medical or other legitimate reasons to opt-out. Crane (7/15/2016), p. 25.

CCA/E/WRA agree with Staff's proposal that opt-out fees should be set at \$35.00 (one-time fee if opt-out is done prior to installation of smart meter), \$65.00 (one-time fee if opt-out is done after smart meter is installed). They state that the opt-out fee should not be a financial burden to someone who has strong feelings about the health effects of the metering devices. They also state that there should not be an ongoing monthly charge. They argue that the absence of a monthly fee may result in a slight subsidization of such customers, but it is unlikely that the costs will be significant. CCA/E/WRA Joint Brief, pp. 3-4.

CFRE presented evidence showing that a residential customer using between 250 and 300 kWh per month who chooses to opt out would see their monthly bill more than double. Tr. 63-65 (3/30/2017); CFRE Exhibit 22.

A further PNM proposal should be informed with the public participation process described in PNM's 2012 AMI Report. Such a process could likely address PNM's needs in

Carolina, Ohio, Louisiana, Connecticut, and Alabama, do not provide on-line information regarding offered opt-out programs, but the opt-out option may be available if a customer calls the utility. Pitts (7/15/2016), p. 42.

encouraging maximal participation while at the same time addressing the concerns of customers who desire to opt out.

(ii) Health concerns

A great deal of evidence has been presented on the health effects of smart meters and the extent to which all or a subset of the population experience health effects. There was evidence of the thermal and non-thermal effects; cancer effects and non-cancer effects; "measurable physiologic abnormalities" and "symptoms that warrant medical treatment;" plus testimony about scientific studies and testimony from and about people describing individual sensitivities ("electromagnetic hypersensitivity" or EHS). There was also evidence of EHS and the particular sensitivities some people may have to RF emissions. The evidence was conflicting.

The Hearing Examiner cannot determine, based upon this evidence, that the AMI infrastructure poses an unacceptable risk to public health and safety generally. The evidence suggests that that a certain percentage of the population may experience EHS and be particularly sensitive to electromagnetic waves, and that electromagnetic waves might produce painful and disabling symptoms for some people, even if they do not cause a measurable physiologic abnormality. Dr. Gelmann and Mr. Firstenberg agreed that the most common health effects identified by patients are sleep disorders (e.g., insomnia), tinnitus (i.e., ringing in the ears), and dizziness. Mr. Firstenberg also added nausea, headaches and heart palpitations to the list. Gelmann (2/14/2017), pp. 8-9; Firstenberg (2/14/2017), pp. 11-12.⁴⁶

The evidence, however, does not indicate how many people are sensitive to the electromagnetic emissions from smart meters, the extent to which smart meters, including the particular AMI meters proposed by PNM, may cause or aggravate the condition compared to the

⁴⁶ Ms. Tachover said she "experienced dizziness, nausea, chest pains, difficulty breathing, and weird cognitive problems." Tachover (7/15/2016), pp. 2-3.

emissions from other sources of radio waves in the environment. The Hearing Examiner, thus, cannot, based upon this record, make definitive findings on the health impacts of emissions from PNM's proposed AMI Project or recommend that PNM's Application be denied on the basis of adverse health conditions.

The testimony of PNM witness, Dr. Gelmann, is instructive of the uncertainty regarding the non-cancer effects of electromagnetic waves and the questionable significance of characterizing effects as a "measurable physiologic abnormalities" versus "symptoms that warrant medical treatment." He acknowledged that EHS is a label used by some for a long list of symptoms that they attempt to attribute to sources of radiofrequency electromagnetic fields, but he stated that EHS is not recognized as a medical condition that reflects any underlying measurable physiologic abnormality. Gelmann (2/14/2017), p. 9. He acknowledged that "some of the citations in the literature review state that radiofrequency EMF cause[s] various symptoms, [but he stated that] there does not appear to be any link to disease and there is no citation that describes progression from symptomatology to an actual disease state." Gelmann (2/14/2017), p. 10. Still, Dr. Gelmann stated that the symptoms do warrant medical treatment even if they not amount to medical disease. Tr. 237-244 (3/1/2017).⁴⁷

What is not in question, however, is that a substantial number of people believe they experience adverse health symptoms, and they firmly believe the symptoms are caused by

⁴⁷ Similarly illustrative of this uncertainty is a New Mexico District Court decision that recognized the condition of EHS. In a case regarding Mr. Firstenberg's action for injunctive relief and monetary damages against a neighbor for the neighbor's use of various electronic devices in her home, the court stated that it had no doubt that Mr. Firstenberg suffered the ill effects he alleged. It stated that "[a]s noted by the World Health Organization ('WHO'): 'The symptoms [of electromagnetic hypersensitivity] are certainly real and can vary widely in their severity. Whatever its cause, EHS can be a disabling problem for the affected individual.'" Order on Motions to Exclude Expert Testimony Under Daubert/Alberico, *Firstenberg v. Monribot and Leith*, No. D-101-CV-2010-00029, September 18, 2012, p. 2, fn. 4 (citation omitted) (PNM Exhibit 23). The District Court, however, ruled that Mr. Firstenberg failed to present scientifically reliable evidence showing that the cause of EHS is low level electromagnetic fields exposure. The District Court's decision was later upheld on appeal in *Firstenberg v. Monribot and Leith*, 2015-NMCA-062, 350 P.3d 1205. PNM Exhibit 24.

electromagnetic waves and smart meters, in particular. The Hearing Examiner therefore agrees with Staff, the AG, CCAE, WRA and CFRE that customers who have strong feelings about the health effects of the meters should be allowed to protect their stated health concerns without a prohibitively high cost.

The Hearing Examiner acknowledges PNM's statement that 65 million premises (more than 50% of the residential customers in America) are being served with AMI meters and that the number is projected to grow to 70 million premises by 2020. Tr. 51 (2/27/2017). The acceptance of the technology in other states and the apparent absence of any utility commission decisions rejecting the technology's implementation are factors that should be considered.

Nevertheless, the conditions of the portion of the population who believe they are electromagnetically sensitive deserve acknowledgment and consideration as decisions are made regarding the implementation of an AMI Project. Accommodations could include reasonable opt-out provisions and fees and perhaps the selection of technologies that minimize the impacts on such people. Such accommodations may be desirable to minimize health risks to customers and address the needs and preferences of PNM's customers. These are issues that can and should be addressed in a public input process of the sort PNM stated in its 2012 Report that it would conduct before bringing a smart meter proposal to the Commission for approval.

(iii) Safety concerns

CFRE argues that the AMI meters proposed by PNM create an unacceptable risk of fires. CFRE provided evidence of fires caused by AMI meters manufactured by companies other than Itron, the manufacturer selected by PNM. CFRE also pointed to the improper performance of a test on the Itron meters by an independent laboratory (although the laboratory subsequently performed the test correctly and identified no issues). CFRE also tried to show that the remote

switch in an Itron meter could cause arcing, resulting in a fire. But, despite the widespread use of Itron meters, CFRE did not present any evidence of any problems experienced by Itron meters. CFRE also presented no evidence that the Itron meters have failed any industry standards.

PNM states that it plans to ensure the safety of the meters through its contract with the vendor of the meters. PNM states that the contract language requires that the meters satisfy all applicable safety standards. Tr. 117-18 (3/1/2017). Mr. Hawkins also stated that the standard meter that PNM would install today for new construction or a replacement is the same type of solid-state digital readout meter that PNM is proposing for the AMI meters, except that the AMI meters have a remote disconnect switch and a communications module. Tr. 147 (3/1/2017).

Itron states that its own testing confirmed its meters' satisfaction of the industry standards cited by Mr. Simmons. Itron witness, Larry O'Dell, also stated that Underwriters Laboratories has tested and found Itron's meters to be compliant with UL's 2735 standard, which Mr. O'Dell stated overlaps with many of the ANSI standards. O'Dell (2/27/2017), p. 3.

The Hearing Examiner finds that PNM satisfied its burden of proof on this issue and that CFRE's evidence was insufficient to overcome PNM's evidence. Nevertheless, as with the health concerns that customers may have with respect to AMI meters, customers should have a meaningful opportunity to opt out if they believe the AMI meters pose a safety concern.

g. Additional public interest considerations

(i) Job losses

Staff and others argue that the timing of the project is bad -- with its immediate impacts on jobs. The project would terminate 125 meter reader and collection positions.

	CURRENT	POST AMI PROJECT
Meter Reader	73	0
Supv, Customer Service Meter Reading	6	0
Mgr, Meter Reading	1	0
Coord, Meter Reader	4	0
Coord, Customer Svc	3	0
Collector	11	0
Meter Department Positions	39	12
Total	137	12

AG Exhibit 1.

As Ms. Crane testified, these are good jobs for New Mexico, with relatively high pay and good benefits. New Mexico was hard hit by the recession and its recovery continues to lag both the national recovery and the recovery in neighboring states. According to an economic summary by the New Mexico Legislative Council Service, New Mexico's recovery is approximately two years behind the rest of the national average. In addition, New Mexico's population grew only 1.3% over the past five years, much slower than the 7% in Arizona or the 9% in Texas.⁴⁸ One of the reasons for this slow growth is that New Mexico has not provided the employment opportunities found elsewhere. Crane (7/15/2016). p. 27.

PNM's CEO, Pat Vincent-Collawn acknowledged the impact of the project on jobs in PNM Resources' October 28, 2016 conference call on the company's third quarter financial results for 2016. The conference call took place between the August 9, 2016 date of PNM's request that this proceeding be suspended and PNM's November 22, 2016 request to restart the proceeding:

Paul Patterson

Okay. All of my questions have been answered, but just the smart [indiscernible] thing, I know it's been suspended, I think what's the outlook for that? I do not think it is in your plan but is that just off the table for now or how should we think about that?

⁴⁸ Crane (7/15/2016). p. 27, citing New Mexico's Population Struggle, Albuquerque Journal, January 28, 2016.

Pat Vincent-Collawn

We are still looking at that. Talking with folks that are part of the case we would obviously still like to do that, it is a little tough cell [sic] right now given the economy in New Mexico because obviously one of the things that AMI does is, over time it will eliminate meter reading jobs but we're still working on that one.

CFRE Exhibit No. 11 (Emphasis added).

This is not a good time to approve a project whose primary purpose is to eliminate 125 jobs.

(ii) Recent and future rate increases

Staff and the AG both questioned the timing of PNM's proposal in light of PNM's recent rate increases and the further rate increase that would likely follow after implementation of the project.

PNM implemented a \$61.2 million rate increase on October 1, 2016 in Case No. 15-00261-UT, raising residential rates by approximately 7%. Sixteen months later, PNM implemented a further increase in Case No. 16-00276-UT. The Commission approved a stipulation that initially provided for a \$62.3 million increase, but the effect of the corporate tax cuts in the 2017 Tax Cuts and Jobs Act warranted a reduction to \$10.3 million. In addition, under the stipulation in Case No. 16-00276-UT, PNM is able to file for its next rate increase to be effective January 1, 2020.

As noted earlier, PNM's original proposal here would have increased PNM's revenue requirement by a minimum of \$4.9 million in 2020. Monroy (2/26/2016), Exhibit HEM-2. PNM

states that its final proposal would increase the first year of its revenue requirement after deployment by \$5.9 million. Other parties claim the increase would be at least \$7.7 million.⁴⁹

4. Other issues

a. Variance requests

Given the recommendation that PNM's AMI proposal be denied, no rulings are required on PNM's variance requests from the Commission's disconnection provisions in NMAC 17.5.410 and the filing requirements for its opt out rate proposal in 17.9.530 NMAC (minimum standard data requirements) and 17.1.2.10.B(2)(b) NMAC (comparison of existing and proposed rates).

b. Privacy

The issue of customer data privacy was not discussed in the Application and testimony filed by PNM. In the course of cross-examination, PNM indicated that customers' personal information, such as social security numbers, medical or health data, credit card information, payment histories, or bank account information, will not be kept in the back office system for the AMI infrastructure. It will be kept in PNM's billing system. Staff recommended that PNM's proposed measures to protect privacy are reasonable. Pitts (7/15/2016), pp. 39-40.

Nothing was said, however, about the privacy of the consumption data collected by the advanced meters. CFRE witness, Dr. Schoechle stated that the granular meter data reported by AMI meters is capable of identifying information about customers, such as how many people are in a household, the appliances they use and how and when customers use energy. He stated that such information can be of interest to third party data miners, intrusive law enforcement and commercial interests. Schoechle (7/15/2016), Exhibit CFRE TS2, pp. 5, 21.

⁴⁹ Ms. Crane's \$7.7 million estimated first year revenue requirement increase was based upon the costs identified in PNM's original application. She did not update her estimate after PNM in September 2017 increased its estimated first year revenue requirement from \$4.9 million to \$5.9 million.

PNM may have more of a plan to address the privacy of customers' consumption data, but they have not provided it. This issue should be addressed in any future AMI plan filing.

c. Cyber security

CFRE witness, Norman Lambe, Senior Property Claims Adjuster for Precision Risk Management in Cypress, California, cited an article in which it was claimed that the ability to hack into a smart meter's remote disconnect switch could turn off large numbers of customers or turn meters off and on, causing significant damage. Lambe (7/13/2016), p. 10. The article also described the potential impact of a cyber-attack on the electricity grid and the dismissive attitude of utilities in the United Kingdom to the risk. The article further cited to the 2015 hacking of a portion of the electrical grid in the Ukraine (not related to smart meters). Lambe (7/13/2016), Exhibit CFRE NL 6.

In the prepared testimony filed with PNM's Application, Ms. Teague stated that PNM proposes \$406,000 in incremental spending for IT security and support, including costs of security assessments to be conducted by outside consultants two times each year, and the cost of one additional IT security FTE to manage the additional security requirements of the AMI technology. She said these incremental resources are necessary to manage the security of the technologies associated with the AMI Project. Teague (2/26/2016), p. 41.

As PNM's Manager of Advanced Technology and Strategy, Mr. Hawkins testified that smart meters do not pose a cyber security risk.⁵⁰ He said PNM will implement Itron's cyber security solution, which, he said, has been implemented successfully at several other utilities. He

⁵⁰ Mr. Hawkins manages the PNM team that monitors advancements in technology that pertain to the electric utility industry, the team that designs and monitors network management and cyber security for PNM's energy delivery systems, including control centers, substations, and generation plants. He is also responsible for ensuring PNM's compliance with North American Electric Reliability Corporation ("NERC") Critical Infrastructure Protection ("CIP") standards. Hawkins (2/14/2017), p. 1.

said the Itron system incorporates state of the art encryption, authentication, authorization and accounting of each device on the system; access control lists; digital certificates; and data integrity methodologies at various and multiple points throughout the AMI network. He said that no cyber system is completely without risk of compromise, but the multiple, resilient cyber controls on Itron's system greatly reduce any such risk. He also said that no personally identifiable customer information such as names or addresses will be transferred over PNM's AMI networks. Hawkins (2/14/2017), p. 8.

Mr. Hawkins also stated that PNM has a substantial amount of experience with cyber security. PNM already implements several cyber security standards, including NERC's CIP. NERC issues alerts and recommendations regarding cyber security events, and PNM implements all applicable recommendations. Hawkins (2/14/2017), pp. 8-9.

Mr. Hawkins stated that the level of controls in Itron's system, added to the controls that PNM would implement through its Operations Technology Group, would create an extremely low risk of having a system hacked. Tr. 138 (3/1/2017).

Responding to the arguments of CFRE, Mr. Hawkins stated that CFRE does not provide any specific evidence of vulnerability to cyber-attacks in Itron's security system or in any other AMI security system. He said CFRE supported its claim that the remote switch in a smart meter could be hacked in a way that could "cause significant damage" only by citing to testimony provided in the House of Commons of the United Kingdom by Nick Hunn. He said CFRE did not provide any foundation for Mr. Hunn's testimony, including his qualifications and the supporting evidence for the testimony, did not state the weight, if any, the House of Commons afforded the testimony, and did not explain what decision the House of Commons ultimately

made or what the issue before it was. He said CFRE also did not identify the mechanism by which someone could hack a smart meter's remote switch. Hawkins (2/14/2017), pp. 7-8.

Responding to the CFRE article's reference to a cyber-attack involving a Ukrainian utility, Mr. Hawkins stated that the incident had nothing to do with smart meters. He said the attack involved the utility's SCADA and control center systems. He said, to the best of his knowledge, there have been no instances where a utility's AMI system has been hacked. Hawkins (2/14/2017), pp. 7-8.

Nevertheless, in its April 24, 2017 request for confidential treatment of Exhibits RRT-2 and RRT-3, PNM stated that the information in Itron's proposal could be used to compromise the cyber security protections for the AMI Project. Mr. Hawkins wrote in an affidavit filed by PNM that Itron's proposal includes descriptions of processes for accessing the electronic functions of the customer meters in sufficient detail such that it could facilitate unauthorized access to data contained in, or operations of, the meters. He stated that the redacted information contains sensitive information describing the security features and capabilities of the AMI Project, including detailed design specifications of the AMI Project's security infrastructure and a description of how the security software and meter firmware are updated and maintained. He stated that, if unauthorized people were to acquire this security information, they could conceivably use the information to harm PNM and its customers, including by altering meter information to inaccurately report data; updating the firmware in the meter to do malicious things; or even operating the remote disconnect to put people out of power. Hawkins Affidavit in Support of Claim of Confidentiality, attached as Exhibit C to PNM Notice of Intent to Use Confidential Material and Request for Confidential Treatment of Confidential PNM Exhibit

RRT-2 (April 24, 2017 Supplemental) and Confidential PNM Exhibit RRT-3 (April 24, 2017 Supplemental), April 24, 2017, paras. 3-4.

Cyber security is obviously an important issue for any AMI plan. It continues to deserve attention in any future plan filing.

d. Meter testing requirements in NMAC 17.9.560.

This case was initiated under a different caption pursuant to PNM's "Petition for Variance from Rule 17.9.560 NMAC & Case No. 2124 Order on Meter Testing Program," filed on September 25, 2015. PNM asked for permission to suspend the requirements associated with the periodic test schedule in Rule 17.9.560 NMAC and the Commission's Order in Case No. 2124, to allow PNM to undertake a cost benefit analysis of an AMI deployment program and to prepare an application for the Commission's consideration if the analysis were to PNM demonstrate that AMI deployment is cost-effective. Otherwise, PNM stated that it would be required to replace approximately 58,000 meters during 2016 that were associated with sample lots of meters that failed the statistical sampling formula. PNM stated that it was not in the financial interest of customers for PNM to replace meters associated with the failed meter group when the new and otherwise functional meters would thereafter be removed and replaced by AMI.

After receiving the input of Staff, the Commission granted the variance on January 20, 2016. The Commission directed, however, that the variance would automatically terminate if the Commission were to ultimately reject the AMI program. See Order Granting Variance, Case No. 15-00312-UT, January 20, 2016, ordering para. B.

Given the recommended rejection of PNM's AMI proposal here, the variance granted earlier in this case should terminate, and PNM should reinstate its meter testing program as approved in Case No. 2124, which approved and adopted PNM's "In-Service Performance

Testing of Revenue Meters Periodic and Statistical Sampling Plan" as proposed in its application and modified and clarified in the stipulation in that case.

e. CFRE Motion to Dismiss

On February 13, 2017, two weeks before the scheduled start of the hearings (and almost one year after the February 26, 2016 filing of PNM's Application), CFRE filed a motion to dismiss PNM's Application without prejudice for the following reasons: (i) PNM's failure to seek the requisite CCN for the new AMI "system" of metering; (ii) failure to have the project certified by a licensed NM professional engineer; (iii) failure to satisfy PNM's *prima facie* burden of proof regarding the safety of the project as would be presented to the Commission by project certification and supporting testimony of a NM professional engineer; and (iv) failing to satisfy PNM's *prima facie* burden of proof by not providing a justified and justifiable cost-benefit analysis based upon information that includes the total time-frame of the project's expenditures.

On February 23, 2017, the Hearing Examiner issued an Order denying a motion filed by CFRE to suspend the proceedings, and, in the same Order stated that, given the timing of CFRE's Motion to Dismiss, the substantive arguments raised in CFRE's Motion regarding the need for a CCN and the applicability of the New Mexico Engineering and Surveying Practice Act would be addressed in the recommended decision the Hearing Examiner issues in this case.

CFRE first argues that PNM's AMI Project is a new "system" of metering that falls within the requirement in NMSA 1978, § 62-9-1.A that a public utility not begin construction of any public utility plant or system or any extension of any plant or system without first obtaining from the commission a CCN. Second, CFRE argues that PNM has engaged in the evaluation, planning, and design of engineering works and systems and submitted expert technical testimony

in support of the new metering system without NM licensed professional engineer oversight and certification.

On February 22, 2017, PNM filed its response. In regard to the substantive issues, PNM argues that improving or replacing an electric utility's metering system does not constitute the "construction or operation" of any "public utility plant or system" as such terms are used in Section 62-9-1.A. PNM states that the fact that the AMI Project or any other distribution infrastructure project may involve one or more physical or procedural "systems or subsystems" does not make the AMI Project a "public utility plant or system." PNM states that, by requiring electric utilities to file a Rule 440 report describing "[s]ystem improvements of an overall or system wide nature," the Commission has determined that a CCN is not needed in this circumstance. 17.5.440.9.A.4 NMAC.

PNM also argues that the authorities cited by CFRE in regard to the Engineering Surveying and Practice Act do not apply. PNM states that any engineering work performed by PNM personnel is exempted pursuant to NMSA 1978, § 61-23-22.B and that the requirement in NMSA 1978, §61-23-26.A also does not apply, because PNM is not a state or local subdivision and the project is not a "public work."

The Hearing Examiner finds that the requirements alleged by CFRE for a CCN request and for professional engineering certifications for the AMI project were not issues that could be determined as a matter of law. The issues could not be determined without an evidentiary hearing on the full nature of the project for which PNM was seeking Commission approval.

On the substantive merits of the issue considered after the evidentiary hearing, the Hearing Examiner finds it appropriate to recommend the rejection of PNM's Application on grounds other than those presented in CFRE's Motion to Dismiss. This Recommended Decision

discusses the uncertainty regarding the need for a CCN for this type of project and the lack of a need to decide the issue in this case, given the other grounds for rejection discussed herein.

These grounds include the use of a standard for discretionary approvals higher than the standard that is applied for CCNs. Further, CFRE has failed both to show that the exemption in section 61-23-22.B of the Engineering Surveying and Practice Act does not apply to the work at issue in this proceeding and that the AMI project is a "public work" within the meaning of the Act.

III. FINDINGS OF FACT AND CONCLUSIONS OF LAW

The Hearing Examiner recommends that the Commission **FIND** and **CONCLUDE** as follows:

1. The foregoing statement of the case, discussion, and all findings and conclusions contained therein, whether or not separately stated, numbered or designated as findings and conclusions, are hereby incorporated by reference as findings of fact and conclusions of law of the Commission.
2. The Commission has jurisdiction over the subject matter of the proceeding and the parties.
3. Reasonable, proper and adequate notice of this case has been given.
4. The Commission should not exercise its discretionary authority to approve PNM's Application. The plan presented in the Application does not provide a net public benefit and it does not promote the public interest.
5. Advice Notice No. 522 should be disapproved for the reasons stated above.

IV. DECRETAL PARAGRAPHS

The Hearing Examiner recommends that the Commission **ORDER** as follows:

- A. The findings, conclusions and the decretal paragraphs herein are adopted, approved and ordered by the Commission.
- B. PNM's Application is disapproved.
- C. Advice Notice No. 522 is disapproved.
- D. Copies of the Commission's Final Order shall be sent to all persons on the attached Certificate of Service.
- E. This Docket is closed.

ISSUED at Santa Fe, New Mexico on **March 19, 2018**.

NEW MEXICO PUBLIC REGULATION COMMISSION



Ashley C. Schannauer
Hearing Examiner

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

**IN THE MATTER OF THE APPLICATION OF)
PUBLIC SERVICE COMPANY OF NEW MEXICO)
FOR PRIOR APPROVAL OF THE ADVANCED)
METERING INFRASTRUCTURE PROJECT,)
DETERMINATION OF RATEMAKING)
PRINCIPLES AND TREATMENT, AND ISSUANCE)
OF RELATED ACCOUNTING ORDERS)**

Case No. 15-00312-UT

CERTIFICATE OF SERVICE

I CERTIFY that on this date I sent, via email only, to the individuals listed below a true and correct copy of the Hearing Examiner's **Recommended Decision**, issued March 19, 2018.

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DATED March 19, 2018.

NEW MEXICO PUBLIC REGULATION COMMISSION


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