

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	Approximately 85,000 meters installed in New Mexico
	Commercial – Itron with cellular communications	

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