

**Advanced Grid
Research**

OFFICE OF ELECTRICITY
US DEPARTMENT OF ENERGY



COMPENDIUM I:

Filing Document Details and Notes

As part of the analysis of regulatory filings, a database with over 250 relevant proceedings related to AMI deployment, cost recovery, commission rulemakings, smart grid reports, and other topics was developed. The following report compiles information from the more than 640 documents that were reviewed. It is organized alphabetically by state and provides links to significant documents from each proceeding along with the relevant page numbers and specific testimony presented. The following information is included in the report:

- AMI policy summary for each state
 - Links to notable state-level resources
 - Research category (detailed or summary)
 - Annual revenue in billions of U.S. dollars (per EIA 2018 Form data)
 - Regulatory structure/class
 - Year of AMI proposal
 - The type of benefits and cost included
 - Decision status (as of December 2019): approved (app), denial (deny), settlement (sett) or decision pending (pend)
 - Number of meters deployed (per EIA 2018 Form 861)
 - Overview of utility-specific AMI proceedings, activity, etc.
 - Proceeding details, including abbreviated titles, docket number, year of filing, and link
 - Proceeding Type, organized by category
 - AMI proposal: docket with request for AMI or other AMI information
 - Rulemaking: commission investigation/rulemaking related to AMI
 - Cost recovery: AMI cost recovery or rate case information
 - Tech upgrades: related technology upgrades to meter systems and related infrastructure
 - Report: AMI or smart grid reports
 - Opt-out: dockets which address opt-out issues
 - Reference: supplementary dockets which reference AMI
 - Summary of key documents filed in the proceeding with filing date, link, and page numbers for relevant information
-

State Summary

AR

In October 2008, the Arkansas PSC opened an exploratory docket to explore the expanded development of Sustainable Energy Resources (SER) in order to create a Sustainable Energy Resources Guide. This case requested utility comments and created workshops relating to smart grid, demand response, and AMI development. In 2010, the state established a docket to house utility smart grid reports.

Notable Resources:

Exploratory Docket: <https://e9radar.link/1kh>

Utility / Holding Company

Analysis

Entergy Arkansas		Entergy					Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters	
\$1.7	Integrated	2016	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>		511	

Summary In August 2016, Entergy Arkansas Inc. (Entergy) proposed a three-phase/five-year AMI Plan, which included an outage management and distribution management system. In August 2017, Entergy, commission staff, and the attorney general submitted a settlement agreement. The settlement was approved in October 2017, and Pre-Deployment Customer Education Materials were submitted in August 2018. The PSC approved the education materials in December 2018.

Proceeding:	Year	Type	url
Entergy AMI 16-060-U	2016	AMI Proposal	http://e9radar.link/gqoq

Description:

In September 2016, Entergy Arkansas submitted an application to deploy AMI throughout its territory. The plan included a MDMS, an update to its OMS and a new DMS. Entergy stated that their plan has a nominal net benefit of \$431M or a net present value of \$232M. This docket also contains updates to the rate schedule afterwards.

Document: Testimony 9/19/2016 <https://e9radar.link/e73ac>

Direct Testimony of Jay A. Lewis, Vice President, Regulatory Policy, Entergy Arkansas, Inc. on behalf of Entergy Arkansas, Inc.

The Lewis testimony includes the CBA and description of how benefits are derived. p. 9 has a summary chart of AMI benefits, p. 10 describes operational benefits; each category has its methodology explained. P. 12 notes the 90% O&M and 10% capital additions ratio.

Document: Application 9/9/2016 <https://e9radar.link/7a1af>

Application for an Order Finding the Deployment of Advanced Metering Infrastructure to be in the Public Interest and Exemption from Certain Applicable Rules (the "Application")

Page 5 begins to list capabilities and benefits of AMI, p. 8-10 list summary of lists consumer benefits and public interest

Document: 2019 Report 4/30/2019 <https://e9radar.link/4go>

Public version of Entergy Arkansas, LLC submits 2019 Advanced Metering Infrastructure Reporting Requirements.

States achieved costs and benefits so far.

Document: Order 10/30/2017 <https://e9radar.link/j84>

Order Approving Settlement Agreement

Approval of the Joint Motion (AMI)

Document: Testimony 9/19/2016 <https://e9radar.link/2934e>

Direct Testimony Of Richard C. Riley President And Chief Executive Officer Entergy Arkansas, Inc.

The Riley testimony elaborates on why AMI should be implemented now, why it is in the public interest, and more. P. 9-11 provides context, and p. 15 on explains consumer benefits in greater detail

Document: Testimony 9/19/2016 <https://e9radar.link/6281b>

Direct Testimony of Oscar D. Washington, Vice President, Customer Service, Entergy Arkansas, Inc. on behalf of Entergy Arkansas, Inc.

The Washington testimony discusses customer service and operational benefits (p. 9), future benefits (like grid resiliency, p. 16), and additional expected [qualitative] benefits (p. 26-34; p. 28 elaborates how consumption and peak capacity reduction are achieved)

Document: Testimony 9/9/2016 <https://e9radar.link/j4z>

Direct Testimony of Rodney W. Griffith, Director, AMI Implementation, Entergy Services, Inc. on behalf of Entergy Arkansas, Inc.

Griffith technology and O&M costs. p. 9 lists 9 categories of qualitative/future benefits (CVR, dynamic pricing, etc.), switching processes (p. 36). Also includes the Preliminary Deployment Schedule in Table 1, p. 12, and AMI Deployment costs and details starting on p. 42, Table 2

Utility / Holding Company

Analysis

Oklahoma Gas & Electric Co OGE						Summary
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$0.2	Integrated		• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		68,732

Summary In 2009 OG&E began a demonstration project, regarded as "Phase I" of its planned system-wide deployment. In December 2010, OG&E submitted its application for Smart Grid development, which cites OG&E's 2009 award of a \$130M DOE smart grid investment grant for implementation in Arkansas and Oklahoma. OG&E committed to the DOE to spending \$357.4M over a three-year period (2010-2012). The project was approved in August 2011.

Proceeding:	Year	Type	url
OG&E Smart Meter 10-109-U	2010	AMI Proposal	http://e9radar.link/8zpp

Description:

OG&E notes that it deferred its need for fossil fuel generation until after 2020, and its Smart Grid projects will help reduce system capacity needs by 300-400 MW. OG&E has already approved the deployment and cost recovery for meter deployment in all of its Oklahoma territory. OG&E also notes that it won a \$130M federal grant for deployment of Smart Grid technology, and this will alleviate 36% of the capital investment and O&M expense for AK. The company notes urgency in getting approval done on a timeline so that meters are installed in time to use the federal grant. The DOE grant covered 36% of total costs of deployment. In August 2011, the commission accepted the settlement agreement and implemented several filing requirements, including details on costs, a customer education plan, and other items.

Document: Rebuttal Testimony 5/20/2011 <https://e9radar.link/6i2>

Direct Testimony of J. Richard Hornby, Synapse Energy Economics, Inc., on behalf of The General Staff of the Arkansas Public Service Commission

Consultant, hired by commission Staff, contests the Scott testimony, esp. calculation of benefits on p. 11-15

Document: Testimony 12/17/2010 <https://e9radar.link/53y>

Direct Testimony of Bryan J. Scott on behalf of Oklahoma Gas and Electric Company

NPV table on p. 16, Table 9. P. 13-17 list out AMI benefits and avoided costs

Document: Order Approving Settlement 8/3/2011 <https://e9radar.link/8hd>

Order approving settlement agreement

Lists future reporting requirements and metrics in p. 36, Attachment 2

Document: Application 12/17/2010 <https://e9radar.link/lyz>

Application Of Oklahoma Gas And Electric Company For An Order Of The Commission Granting Pre-approval Of Deployment Of Smart Grid Technology In Arkansas And Authorization Of A Recovery Rider And Regulatory Asset

Describes history of AMI with OG&E, federal grant, and more

Document: Testimony 12/17/2010 <https://e9radar.link/ub9>

Direct Testimony of Jesse B. Langston on behalf of Oklahoma Gas and Electric Company

Primarily discusses benefits. P. 5 shows environmental benefits, including avoided truck rolls, p. 6 storm damage response, p. 9 environmental benefits (GHG), p. 10 demand reductions (375 MW reduction)

Document: Testimony 12/17/2010 <https://e9radar.link/i0x>

Direct Testimony of Kenneth Grant on behalf of Oklahoma Gas and Electric Company

Explains some AMI costs; p. 14 shows updates to the business case, esp. differences in meter installation. P. 4 describes technology.

State Summary

AZ

In 2013, a commission-requested study found that "exposure to electric meters is not likely to harm the health of the public," though some opponents cite weak associations described in the report. In 2014, over 20,000 APS customers refused smart meter installments.

Notable Resources:

Removal of opt-out: <https://e9radar.link/j0z3>

Smart Meter Criticism: <https://e9radar.link/hvov>

ADHS Report: <https://e9radar.link/ofzx>

Utility / Holding Company

Analysis

Arizona Public Service Pinnacle West

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$3.5	Integrated	2008		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1,215,804

Summary Arizona Public Service Co. (APS) began installing automated metering systems in its service territory in 2001. In 2004, the company began a formal pilot program, and in 2006 APS began a phased deployment of smart meters in specific areas of their territory. In March 2013, APS proposed an opt-out tariff which was rolled into its 2015 rate case. APS completed the deployment of 1.2M meters in March 2016.

Notable Resources:

APS AMI Data in use: <https://e9radar.link/psz>

Proceeding:

	Year	Type	url
Smart Meter Customer Information and Privacy RU-000000A-14-0014	2014	Rulemaking	http://e9radar.link/bm3k

Description:

In January 2014, commission staff opened this docket to investigate definitions and rulemaking for smart meter information and privacy.

Document: Memo 1 6/24/2019 <https://e9radar.link/u39>

Staff's Miscellaneous Memos

Draft rulemaking

Document: Memo 2 6/24/2014 <https://e9radar.link/icl>

Staff's Miscellaneous

Draft rulemaking by different commissioners

Proceeding:	Year	Type	url
APSCo AMI Opt-Out E-01345A-13-0069	2013	Reference	https://e9radar.link/pz7h

Description:

APS notes that it began installing automated metering systems in its service territory since 2001. In 2004, the Company began a formal pilot program, and in 2006 APS began phasing in automated meters in specific areas of their territory. In the proposed opt-out tariff, APS proposes a one-time \$75 set-up charge and recurring monthly meter-reading charge of \$30 ,which was later reduced to \$21. This case was recommended to be compiled with APS' next general rate case.

Document:	Application	3/25/2013	https://e9radar.link/tmf
	Application		
	Summarizes smart meter actions and proposing opt-out rates		

Document:	Decision	4/13/2015	https://e9radar.link/uj3
	Order On Rehearing Granting Interlocutory Relief and Rescinding Decision No. 74871		
	Order discussing opt-out prices and recommending deferral of case until next rate case		

Utility / Holding Company

Analysis

Tucson Electric Power Co	Fortis								Summary
\$B	Class	Year	ben/cost/net	app./deny/set/pend					AMI Meters
\$1.0	Integrated			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0

Summary In 2013, Tucson Electric Power Co. (TEP) began installing an AMR system across its territory. TEP offers an opt-out tariff option in its base rates.

Notable Resources:

Article: <https://e9radar.link/2hwt>

Opt-Out Report: <https://e9radar.link/yy5d>

Proceeding:	Year	Type	url
Smart Meter Customer Information and Privacy RU-00000A-14-0014	2014	Rulemaking	http://e9radar.link/bm3k

Description:

In January 2014, commission staff opened this docket to investigate definitions and rulemaking for smart meter information and privacy.

Document:	Memo 1	6/24/2019	https://e9radar.link/u39
	Staff's Miscellaneous Memos		
	Draft rulemaking		

Document:	Memo 2	6/24/2014	https://e9radar.link/icl
	Staff's Miscellaneous		
	Draft rulemaking by different commissioners		

State Summary

CA

In June 2002, the commission opened up a rulemaking proceeding to consider policies and comments regarding demand response, AMI, and dynamic pricing. In 2006, the California Public Utilities commission approved the 2005 PG&E petition for deployment of ten million smart meters. California implemented smart meter data policies with the passage of a commission rulemaking and legislative action Senate Bill 674 in 2011. A 2011 rulemaking established standards for data access and privacy concerns (third-party and customer-initiated), and required customer consent for data sharing. These policies required that utilities submit smart grid plans and business cases by July 2011. The state also experienced backlash against smart meters from customers who cited health issues. In 2011, smart meter deployments were halted as Assembly Bill 37 (AB-37) was considered. AB-37 required utilities to provide customers with technical details of their meters and an option for meter opt-out. A requested study found no causation between health risks and smart meter radio frequencies.

Notable Resources:

CPUC Smart Meters: <http://bit.ly/2LCM12E>

AB-37: <https://e9radar.link/gmjr>

CA Grid History: <https://e9radar.link/2etr>

Utility / Holding Company

Analysis

Pacific Gas & Electric PG&E

Summary

\$B	Class	Year	ben/cost/net	app/deny/set/pend	AMI Meters
\$13.6	Restructured	2005		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	?

Summary Pacific Gas and Electric (PG&E) began to discuss the benefits of AMI and other related technologies in a June 2002 commission rulemaking docket. In November 2004, PG&E filed its first AMI business case, followed by several revisions. PG&E filed its own docket to house its AMI application in June 2005, and filed a revision that modified cost recovery mechanisms the following October. PG&E expected deployment to take five years for the installation of 5.3M meters, with total estimated costs of \$1.7B and \$2.0B of benefits. In June 2006, after several settlement procedures, the commission approved PG&E's application and permitted commencement in 2007.

Notable Resources:

Report: <https://e9radar.link/qjr>

Article : <https://e9radar.link/3iwu>

Proceeding:	Year	Type	url
PG&E Costs to Deploy Advanced Metering Infrastructure A.05-06-028	2005	AMI Proposal	http://e9radar.link/dxs7

Description:

Following several business case applications in rulemaking docket no. R.02-06-001, in June 2005, Pacific Gas & Electric (PG&E) opened up a proceeding to house its independent AMI application. In October 2005, PG&E submitted a revised application which clarified several aspects of cost recovery, including the provision to recover \$1.6B without further review, incorporation into the 2006 rate case, and recovery of \$49M of pre-deployment costs. Total costs were estimated at \$1.7B with a present value revenue requirement (PVRR) of \$2.3B; calculated benefits revealed a PVRR of \$2.0B. PG&E also included a critical peak pricing tariff to utilize AMI functionality. PG&E also estimated DR benefits, discussed data access issues, and selected a 20-year meter life calculation, however, the full details of the CBA document requires purchase from the CPUC website. PG&E expected deployment to take five years, starting in 2007. In June 2006, after several settlement procedures, the commission approved PG&E's application. The approval also ordered PG&E to file public monthly reports on the status of the project.

Document: Decision	7/20/2006	http://bit.ly/2xzCtgF
Decision 06-07-027		

Summarizes the proceeding; P. 29-30 shows cost/benefit charts, p. 18 describes technology, p. 54 describes societal benefits

Utility / Holding Company

Analysis

Southern California Edison Edison International		Summary			
\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$11.8	Restructured	2006		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	5,110,245

Summary Southern California Edison Co. (SCE) utilized AMR meters in the early 2000s prior to filing an AMI business case in 2004. In 2005, SCE engaged in collaborative processes with meter and communication system vendors, and in July 2007, SCE filed an application to approve its Edison SmartConnect™ meter deployment program. The program proposed to deploy 5.3M meters to all residential and business customers under 200 kW during a five-year period, beginning in 2008. SCE noted that meters would enable TOU pricing options. SCE requested \$1.7B for its meter deployment costs (Phase III of its project), and estimated \$109M in net benefits (PVRR).

Proceeding:	Year	Type	url
SCE Grid Resiliency Program A.18-09-002	2018	Reference	https://e9radar.link/q06x5

Description:

This proceeding addresses SCE's updates to its grid in response to California wildfires. Its primary proposal is for grid hardening. The grid updates do not include provisions for AMI.

Document: Application	9/10/2013	https://e9radar.link/1bsp
Application Of Southern California Edison Company (U 338-e) For Approval Of Its Grid Safety And Resiliency Program		

Proceeding:	Year	Type	url
SCE AMI A.07-07-026	2007	AMI Proposal	https://e9radar.link/ewrv

Description:

In July 2007, Southern California Edison Company applied to deploy AMI to all residential and business customers under 200 kW during a 5-year period, beginning in 2008. SCE requested \$1.7B for Phase III costs. This proceeding was specific to Phase III of SCE's AMI deployment strategy (Phase I was dedicated to developing the functional requirements; Phase II was focused on procuring new AMI technologies; Phase III involved deployment of SCE's cost-effective AMI solution). This project was estimated to deliver \$109M in net benefits (PVRR).

Document: Deployment Plan 7/31/2007 <https://e9radar.link/yjng>

Edison Smartconnect™ Deployment Funding And Cost Recovery Volume 2: Deployment Plan

P. 3 describes SCE experience with AMI so far, p. 24 explains cost categories, p. 16 and 27 describe technology and deployment, p. 78 compares costs and benefits

Document: Decision 9/22/2008 <https://e9radar.link/o95>

Decision Approving Settlement On Southern California Edison Company Advanced Metering Infrastructure Deployment

AP. 22 addresses issues with the business case, and other benefits/costs

Document: Proposed Decision 8/19/2008 <https://e9radar.link/g23>

Proposed Decision

p. 32 contains the uncontested business case

Document: Application 7/31/2007 <https://e9radar.link/1py>

Southern California Edison Company's (U 338-e) Application For Approval Of Advanced Metering Infrastructure Deployment Activities And Cost Recovery Mechanism

Provides a summary with some procedural interactions

Document: Cost Recovery 7/31/2007 <http://bit.ly/2STHWsq>

Edison Smartconnect™ Deployment Funding And Cost Recovery Volume 5: Cost Recovery Proposal

Discusses AMI recovery; p. 2 addresses how to pay for Phase I and II.

Utility / Holding Company

Analysis

San Diego Gas & Electric Sempra

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Summary AMI Meters
\$3.8	Restructured	2005		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1,435,218

Summary San Diego Gas & Electric Co. first filed a draft AMI business case in October 2004 in the commission's AMI investigation docket. SDG&E formally proposed its 1.4M smart meter project in March 2005. The project was approved in April 2007 for approximately through a stipulation agreement for \$572M over a five-year deployment period (2007-2011). Net benefits were estimated between \$40-51M. In September 2010, SDG&E petitioned for cost recovery and a slight delay in the implementation schedule, which were granted. In 2010, SDG&E was awarded a SGIG to upgrade its communications infrastructure to build off of its AMI.

Proceeding:	Year	Type	url
SDG&E AMI A.05-03-015	2005	AMI Proposal	https://e9radar.link/z23x

Description:

In March 2005, San Diego Gas & Electric Company applied for approval of its AMI deployment schedule and rate recovery, referred to as Phase 1. Phase 2 would address AMI-related dynamic rates (case no. A.07-01-047). The AMI plan proposed to deploy 1.4M meters from 2008-2011. In May 2005, SDG&E filed supplemental testimony to revise pre-deployment costs to authorize \$3.4M for activities from September 2005-March 2006, with an additional \$5.9M to be spent in 2006. In February 2007, SDG&E filed a settlement agreement with various stakeholders which agreed upon a budget of \$572M with \$40-51M in net benefits. The commission approved the settlement in April 2007. In September 2010, SDG&E requested the modification of several accounting rules and regulatory procedures because the company would not reach full deployment by the end of 2011. In March 2011, the commission approved the extension of cost recovery mechanisms.

Document: Brief 10/27/200 <https://e9radar.link/tth>

Opening Brief of San Diego Gas & Electric Company

P. 12 outlines the business case/cost effectiveness, p. 16-19 summarizes operational benefits, p. 45 describes other AMI benefits, p. 53 provides cost recovery info

Document: Decision 07-04-043 4/12/2007 <http://bit.ly/2LsVWla>

Decision 07-04-043

P. 9-11 describes SDG&E's petition, p. 13-16 summarizes settlement agreement,

Document: Order approving 3/15/2005 <https://e9radar.link/1wa>

Order Approving Petition for Modification

Petition to modify the decision; provides a good summary, issues with deployment, p.5

State Summary

CO

In August 2009, the Colorado PUC opened an investigatory docket to consider smart meter technology data and privacy issues. The commission opened a separate investigatory docket in March 2010 to inform regulatory issues, research, technology evaluation methodologies, and requirements for smart grid and AMI applications. The Colorado legislature passed SB 10-180 in June 2010 to create an interim task force to study smart grid development issues. The study called for technology and data protocols for smart meters. After a formal rulemaking procedure, data privacy and security policies were approved in January 2012.

Notable Resources:

2015 Smart Grid Report: <https://e9radar.link/3vee>

Boulder Smart Grid City: <https://e9radar.link/6yva>

Utility / Holding Company

Analysis

Public Service Company of Colorado (PSCo) Xcel						Detailed
\$B	Class	Year	ben/cost/net	app/deny/set/pend		AMI Meters
\$2.7	Integrated	2016	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>		12,374

Summary PSCo first became involved with the smart grid in 2008 through a Smart Grid City pilot. In 2016, PSCo proposed its "Our Energy Future" plan which emphasizes an intelligent, interactive grid. Later that year, PSCo filed an application for its Advanced Grid Intelligence and Security (AGIS) initiative, which included integrated Volt-VAr Optimization, Field Area Network, and the installation of 1.5M advanced meters over 2016-2021. PSCo later asked to delay AMI deployment to 2019.

Notable Resources:

Press Release: <https://e9radar.link/ncjf>

Proceeding:	Year	Type	url
PSCo Advanced Grid Intelligence 16A-0588E	2016	AMI Proposal	http://e9radar.link/uwhr

Description:

In August 2016, PSCo submitted an application for VVO and AMI to support its Advanced Grid Intelligence and Security (AGIS) initiative. The total cost of AMI, integrated VVO and the associated portions of the FAN and IT is estimated to be approximately \$562M, and in the Final Order this was raised to \$612M over 5 years. In an effort to keep the Commission and interested parties up to date on project status and costs, the company proposes filing two annual reports. CPCN Capital costs for AMI 2016-2021 were estimated at \$238.1M, and for CPCN O&M Costs 2016-2021 were \$10.2M. The timeline for AMI deployment is anticipated installation of the first AMI meter in 2018, with an anticipated installation of 95% of AMI meters by the end of 2020.

Document: Testimony 8/2/2016 <http://e9radar.link/k69>

Direct Testimony and Attachments of Russell E. Borchardt - Hearing Exhibit 103

Discussion of benefits and costs begins on p.36, p. 46 quantitative benefits. Cites that full deployment is necessary to measure data, p. 37 cites \$2.2M benefits of distribution system management benefits 2020-21. p. 57 mentions opt-out.

Document: Attachment REB-1 8/2/2016 <https://e9radar.link/u0w>
 Direct Testimony and Attachments of Russell E. Borchardt Attachment REB-1
 Quantifies estimated AMI benefits

Document: Testimony 8/2/2016 <https://e9radar.link/4167d>
 Direct Testimony and Attachments of Samuel J. Hancock on behalf of Public Service Company of Colorado
 CBA Methodology explained. Model looks to 2035 instead of 2021 (Borchardt's model). p. 23 details different capital costs and which testimony addresses them. p. 37 contains AMI evaluation study

Document: Attachment SJH-2 8/2/2016 <https://e9radar.link/t4l>
 Attachment SJH-2, Samuel J. Hancock - Hearing Exhibit 108 - AMI Cost & Benefit Summary, Includes Escalation and Applicable Loaders
 Compares estimated costs and benefits for a full CBA, lists which testimonies describe AMI (mostly Mr. Borchardt's)

Document: Final Order 7/25/2017 <https://e9radar.link/nmz>
 Decision Granting Joint Motion to Approve Unopposed Comprehensive Settlement Agreement
 Order approving Joint Stipulation. Estimated cost of AGIS initiative adjusted from \$562M to \$612M

Document: Application 8/2/2016 <https://e9radar.link/2tm>
 Verified Application For An Order Granting A Certificate Of Public Convenience And Necessity For Distribution Grid Enhancements Including Advanced Metering And Integrated Volt-VAR Optimization Infrastructure
 Summary of projects

Document: Attachment REB-2 8/2/2016 <https://e9radar.link/18v>
 Direct Testimony and Attachments of Russell E. Borchardt Attachment REB-2
 Quantifies estimated AMI costs

State Summary

CT

In 2007, the Energy Efficiency Act (PA 07-242) required large electric utilities to submit advanced metering deployment plans and provide TOU price options. In response, United Illuminating Co. planned to use its existing system to support net metering and other functions, while Connecticut Light & Power Co. was directed to study advanced metering further through pilot programs. While CL&P's pilot programs were under consideration, the newly-created Department of Energy and Environmental Protection (DEEP) requested suspension of all smart meter cases while Public Act No. 11-80 was considered. This 2011 legislation directed DEEP to set energy policy through two proceedings, which included smart meter policy development: the Comprehensive Energy Plan and Integrated Resource Plans. The act also required utilities to implement demand-side management programs and notification of TOU meter availability. In October 2019, the PURA approved its Framework for an Equitable Modern Grid to advance Connecticut's "green economy" and support a decarbonized future. This framework reopened several grid-related cases, including a renewed investigation into statewide AMI deployment and a modern business plan.

Notable Resources:

Grid Mod Article: <https://e9radar.link/pyep>

AG Press Release: <https://e9radar.link/79I7>

Public Act 07-242: <https://e9radar.link/vkc1>

Utility / Holding Company

Analysis

Connecticut Light & Power Eversource

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$2.9	Restructured	2010	• • •	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Summary In March 2007, CL&P proposed AMI deployment in compliance with a DPUC order in their TOU rate proposal, which was also created under a DPUC directive. In July, CL&P filed a Revised AMI Plan to comply with the Energy Efficiency Act, which included several options for deployment. In December 2007, the PUC approved several pilot programs. Study results were published in 2009. In August 2010, CL&P proposed system-wide rollout in conjunction with a review of its pilot programs. A draft decision in August 2011 recommended gradual deployment of smart meters due to the low cost-benefit ratio of the proposal; additionally, the DPU found a net negative CBA from its own analysis. The decision directed CL&P to generate four reports on the latest advancements in AMI technology in 2012-2013. This case was put on hold as the newly-created Department of Energy and Environmental Protection considered statewide clean energy goals. Though a final decision was not published, AMI was effectively denied. In October 2019, PURA reopened CL&P's rate pilot case and requested the development of a statewide AMI deployment business case.

Notable Resources:

State Website: <https://e9radar.link/0wt>

Smart Grid Summary : <https://e9radar.link/0wt>

Proceeding:	Year	Type	url
CL&P Rate Pilots 05-10-03RE01	2007	AMI Proposal	https://e9radar.link/8m0x

Description:

This case was opened in response to a Commission order in Case No. 05-10-03 (CL&P's plan to implement TOU rates) for CL&P to file a net metering plan under which it could achieve the Department's TOU objective. CL&P acknowledged that AMI rollout was a necessary cornerstone to achieve Commission directives. PURA approved the AMI and TOU pilot program in December 2007, and CL&P reported the results in 2009. Order no. 4 requested a CBA for full AMI deployment, and the CBA was published in March 2010.

Document: CBA 3/21/2010 <https://e9radar.link/0dyc>
CL&P AMI and Dynamic Pricing Development Cost Benefit Analysis

Contains proposal, CBA starting on p. 7. P. 8-9 shows distinct costs and benefits. Appendix A details benefits further.

Document: Revised AMI Plan 7/2/2007 <https://e9radar.link/ky35>
CL&P Compliance with section 98 of Public Act 07-242
Describes deployment options; does not quantify total costs or benefits

Document: Order 12/19/2007 <https://e9radar.link/k8d1>
Final Decision
Order approving AMI pilot

Document: Application 4/4/2007 <https://e9radar.link/63pv>
Application of The Connecticut Light and Power Company to Implement Time-of-use, Interruptible or Load Response, and Seasonal Rates – Review of Metering Plan
First mention of AMI deployment plans

Utility / Holding Company

Analysis

United Illuminating Avangrid						Detailed AMI Meters
\$B	Class	Year	ben/cost/net	app./deny/set/pend		
\$0.8	Restructured	2011		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		230,870

Summary In 2010, United Illuminating (UI) began deploying a hybrid AMR/AMI solution and mesh network. According to a review of 2014 Connecticut IRPs, the Department of Energy & Environmental Protection stated that as of January 2015, UI had replaced 161,000 of its 350,000 meters with AMI, with projected completion in 2020. UI's parent company at the time, UIL Holdings company, also committed to installing 210,000 AMI gas meters in its subsidiary territories by 2015. In UI's 2016 rate case, the company cited installation of grid technology that build off of AMI.

Notable Resources:

Draft IRP discussion: <https://e9radar.link/s4mb>

Article: <https://e9radar.link/clt6>

Vendor Report: <https://e9radar.link/atb8>

2008 IRP: <https://e9radar.link/gzux>

Proceeding:	Year	Type	url
United Illuminating Rate Increase 16-06-04	2016	Tech Upgrades	http://e9radar.link/qbrw

Description:

In June 2016, United Illuminating (UI) filed an application to increase revenues of up to \$120M over three years (through 2019). Prior to the rate case, a rate freeze was in effect as part of the agreement of the UI-Iberdrola merger. Despite the agreement, UI cited increased capital improvements. In December 2016, PURA issued an order approving the rate case (for reduced amounts of \$43M, \$11.5, and \$2.9M 2017-2019) and directing UI to file annual reports on its grid modernization costs, including its DSM and grid analytics initiatives. The grid modernization projects build off of AMI investment but do not include direct AMI support. The final order also cited a petition to change the cost of service model for AMI, but the PURA denied the request.

Document: Grid Analytics & DMS Initiatives Reporting 3/29/2018 <https://e9radar.link/951b2>

UI Annual Grid Analytics & DMS Initiatives Reporting
Report outlines technology that builds off of AMI

Document: Final Order 12/14/2016 <https://e9radar.link/xh7f>

Final Order
See ordering paragraphs for information on required grid reporting

State Summary

DC

The Washington D.C. PSC approved an initial test of smart meters and time-varying rates in 2005 through the PowerCentsDC program. In March 2007, the commission issued order 14239 to create a Smart Meter Working Group to address AMI technology. In 2009, the legislature passed D.C. Act 18-107, AMI Implementation and Cost Recovery Authorization Emergency Act of 2009, to authorize electric companies to implement and recovery costs for AMI projects for a limited time, provided that the company obtain sufficient funding through the ARRA. The legislation was extended through several additional emergency acts. In 2012, the DC Office of People's Council and a City Councilmember requested a study to determine the safety of smart meters. The results found no credible, scientific threats of radiofrequency radiation from PEPCO meters.

Notable Resources:

OPC Smart Meter Page: <https://e9radar.link/a4cd>

AMI Act: <https://e9radar.link/0370>

Utility / Holding Company

Analysis

Potomac Electric Power Co Exelon		Summary				AMI Meters
\$B	Class	Year	ben/cost/net	app./deny/set/pend		
\$0.8	Restructured	2007		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		277,998

Summary In April 2007, Pepco filed an application to approve a DSM and AMI surcharge. Within this case, Pepco included its Blueprint For The Future, which laid out a long-term strategy for the company. Pepco's AMI plan included the deployment of 280,000 meters over two years, a cost estimate of \$60M, the creation of an AMI Advisory Group, and recovery through an AMI Adjustment Mechanism. Pepco emphasized the importance of integrating smart meters with smart thermostats and other DSM programs. Revenue requirement of costs over fifteen years was estimated at \$52.2M, and revenue requirement of operating benefits was estimated at \$28M. The commission responded with requests for additional information, especially initial business case components. In February 2012, the commission requested an updated installment plan to address meter deployment delays.

Document: Opening

3/10/2014

<https://e9radar.link/62iz>

DC Climate Action's Statement of Proposed Issues for the April 23, 2014, informal hearing that was convened through Commission Order No. 17375.

States general scope of proceeding; does not mention AMI

Proceeding:	Year	Type	url
Rulemaking: Modernizing Energy Delivery <i>FC 1130</i>	2015	Rulemaking	https://e9radar.link/cvfl

Description:

This docket was opened to house the DCPSC's investigation into technologies and policies supporting the Modernizing the Distribution Energy System for Increased Sustainability (MEDSIS) initiative. Most notes on AMI reference data privacy, usage, and integration with other technology. The MEDSIS Vision Statement calls for the optimal combination of distributed energy resources with traditional capital investment by exploring non-wires alternatives, enhanced data and communication, and more. This docket also is linked to several other rulemaking cases, ranging from cable television to natural gas license cases.

Document: Proposal	8/2/2019	https://e9radar.link/c1uv
MEDSIS Final WG Report		

Launch of the next phase of grid modernization in DC, "PowerPath DC." P. 72 notes a requirement that utilities maximize the use of AMI data

Document: Vision Statement	2/14/2018	https://e9radar.link/t4hm
MEDSIS Vision Statement		

P. 5 of pdf, Attachment A starts MEDSIS Vision Statement

Document: MEDSIS Report	1/25/2017	https://e9radar.link/qb6u
MEDSIS Staff Report		

P. 85 discusses AMI data

Proceeding:	Year	Type	url
Pepco DSM and AMI Surcharge <i>FC 1056</i>	2007	AMI Proposal	http://e9radar.link/06g6

Description:

In April 2007, Pepco filed an application to approve establish a DSM surcharge and collaborative in addition to an AMI surcharge and advisory group. The rates and advisory groups described in this application were designed to support the implementation of Pepco's Blueprint For The Future, which was included as an attachment. In its application, Pepco noted that it was already involved with smart meter deployments in DC, which was the subject of the commission's Smart Meter Working Group (established by order no. 14239, March 2007, in DC 1049). In July 2010, the commission established several AMI deployment reporting requirements in order no. 15878. The order also required Pepco to file additional information regarding its AMI plan. Pepco filed its Amplification of Meter Installment Plan in September 2010, followed by monthly updates. In February 2011, the commission identified a delay in implementation of 3,282 meters, and required Pepco to file an update to its Meter Installment Plan, in addition to various metrics and performance reports.

Document: Business Case	10/1/2007	https://e9radar.link/a4da
Business Case In Support of Pepco's Blueprint For The Future Application, Workpapers and the Brattle Report		

Additional information on the business case. P. 12 summarizes PVV and benefits, p. 14 starts section on energy delivery cost reduction benefits of AMI, p. 27 shows additional benefits, p. 29 shows costs to deploy.

Document:	Application	4/4/2007	https://e9radar.link/05ac
	Application Of Potomac Electric Power Company For Authorization To Establish A Demand Side Management Surcharge And An Advance Metering Infrastructure Surcharge And To Establish A DSM Collaborative And An AMI Advisory Group.		
	Contains AMI proposal and business case components. P. 2 explains integration of other AMI groups and cases, p. 8-9 describes AMI technology. P. 20 of pdf begins a copy of the Blueprint Of The Future. P. 68 of pdf estimates costs, p. 72 of pdf discusses benefits.		
Document:	Order	6/10/2019	https://e9radar.link/c4c0f
	The District of Columbia Public Service Commission, in FC 1056 and FC 1070, Order No. 15629 dated December 17, 2009 granted Pepco's Motion for an Expedited Sufficiency Determination and Approval of it.		
	Order approves the vendor selection for AMI technology		
Document:	AMI Plan	2/27/2012	https://e9radar.link/shtm
	Revised AMI Meter Installation Plan		
	Addresses under-delivery of meters and new deployment timeline		
Document:	Order	2/15/2011	https://e9radar.link/208f5
	Order Denying Initial AMI Consumer Outreach Application		
	Identifies delay in deployments, directs Pepco to file additional information about their AMI plan		
Document:	Acceleration Plan	9/7/2010	https://e9radar.link/bt8h
	Potomac Electric Power Company's Amplification of Meter Installation Plan		
	Details the meter exchange process and updated deployment strategy		
Document:	Order (requesting information)	7/9/2010	https://e9radar.link/ka95
	Order (requesting information)		
	Requests additional details about the AMI deployment plan, requests monthly progress updates		

State Summary

FL

In September 2012, the Florida PSC held a workshop to consider smart meter concerns and commission jurisdiction. Following the workshop, the commission published a memorandum which addressed smart meter jurisdiction, health, and data/privacy concerns. Utilities are required to use accurate metering devices and the commission "cannot mandate metering technology deployed by IOU." Additionally, the FPSC declares that energy consumption data must be encrypted, confidential except for regulated business purposes, and must omit customer identification information. Smart meter installations began in 2009, and by May, 2012 four counties passed anti smart meter resolutions. In 2012, the FPSC held an opt-out workshop and created a brief to summarize customer concerns, but no formal policy was generated.

Notable Resources:

Smart Meter Brief: <https://e9radar.link/9i0il>

FP&L Completion: <https://e9radar.link/u5yt>

State Website: <https://e9radar.link/8f2h>

Utility / Holding Company						Analysis	
Florida Power & Light						NextEra	Summary
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters	
\$10.7	Integrated	2009		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?

Summary FPL began the process of replacing electromechanical and digital meters with smart meters through two separate early deployment programs initiated in 2007 and 2008. Each of these programs involved the installation of approximately 50,000 smart meters. Thereafter, the smart meter rollout to all residential and small business customers commenced in September of 2009. FPL's smart meter project was reviewed and approved by the commission in FPL's 2009 rate case. The commission approved FPL's AMI project, and deployment began in 2009. In March 2010, the DOE awarded FPL a \$200M grant from the American Recovery and Reinvestment Act ("ARRA") stimulus funds for its Emergency Support Function (ESF) proposal, which incorporated smart meter functionality.

Notable Resources:

Article: <https://e9radar.link/2ac77>

2009 Rate Case Order: <http://floridapsc.com/library/filings/2010/01885-2010/01885-2010.pdf>

DOE filing: <https://e9radar.link/wu6>

Proceeding:	Year	Type	url
FPL 2009 Rate Case 080677-EI	2009	AMI Proposal	https://e9radar.link/cc364

Description:

In March 2009, FPL filed its 2009 rate case, which included plans to install smart meters over a 5-year period. FPL expected to retire 4.3M meters in that time. The new meters would be equipped with two-way communications, remote reading, connection, and disconnection capabilities and will be able to collect data regarding consumption at predetermined intervals. Selected meters had life expectancies of 20 years. AMI was estimated to create a capital cost of \$645M, and once fully implemented, generate cost savings of \$36.9M. Beginning in 2012, the O&M savings were anticipated to exceed initial costs. Beginning 2013, the net O&M savings were predicted to exceed \$30M annually.

Document: Order 3/17/2010 <https://e9radar.link/t7an>

Order Denying in Part, and Granting in Part, FP&L Co's Request for a Permanent Rate Increase and Setting Depreciation and Dismantlement Rates and Schedules

Order overviews all parts of the rate case. P. 72 notes commission reduction of removal costs; p. 96 addresses other cost issues; p. 139-140 overviews AMI costs and inclusion in rates

Document: Petition 3/18/2009 <https://e9radar.link/lIs>

Petition

P. 11 mentions deployment of AMI for a cost of over \$600M.

Utility / Holding Company						Analysis
Duke Energy Florida Duke						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$4.5	Integrated	2017		<input checked="" type="checkbox"/>	<input type="checkbox"/>	77,429

Summary In August 2017, Duke Energy Florida filed a second revised settlement agreement to address adjustments in its base rates and several new programs. The second settlement agreement included brief information about AMI deployment at a cost of \$336M. As settled, upon completion of AMI meter deployment, Duke will introduce a residential Time of Use rate. Details relating to AMI were limited.

Proceeding:	Year	Type	url
Duke Energy AMI Opt-Out 20180088-EI	2018	Opt-out	https://e9radar.link/00vci

Description:

In April 2018, Duke Energy petitioned for the approval of an opt-out provision for its customers. This case references case no. 20170183-EI, which approved Duke's smart meter installation, set for completion in 2021. Customers who use the opt-out program may pay a \$96.34 installation fee and customers who do not use the meter must pay around \$15.60 a month due to the manual labor required for non-smart meters.

Document: Application 4/4/2018 <https://e9radar.link/Onb>

Petition for Limited Proceeding for Approval of a Smart Meter Opt-Out Tariff

P. 2-3 describes history of smart meter workshops and deployment approval

Proceeding:	Year	Type	url
Duke Energy Florida Revised 2017 Settlement Agreement <i>20170183-EI</i>	2017	AMI Proposal	https://e9radar.link/d024c

Description:

In August 2017, this case was opened to house a second settlement agreement with rate adjustments. The settlement agreement addressed base rate, infrastructure, nuclear cost recovery, new billing options, and clean energy matters, in addition to installation of smart meters. Much of the settlement agreement focuses on the Levy Nuclear project and associated costs. The AMI portion discusses the intention of deployment and cost recovery. There is no business case for AMI or proper proposal, just an intention of deployment and cost recovery.

Document: Data (6th request) 9/27/2017 <https://e9radar.link/xs2d>

Duke Energy Florida, LLC's (DEF) Response to Staff's Sixth Data Request (Nos. 17-53)

P. 12 lists a 15 yr depreciation rate for AMI and a cost of \$336M.

Document: Order 11/20/2017 <https://e9radar.link/ya4ib>

Final Order PSC-2017-0451-AS-EU approving Duke Energy's petition for the 2017 revised and restated settlement agreement and all matters contained in attached exhibits

Approves transfer of net book value of mobile meter reading assets to a regulatory asset, p. 41.

Document: Data (4th request) 9/26/2017 <https://e9radar.link/jvi5>

Duke Energy Florida, LLC's (DEF) Response to Staff's Fourth Data Request

P. 2 describes new Customer Information System which integrates with AMI.

Document: Application 8/29/2017 <http://e9radar.link/7qfy>

Duke Energy Florida, LLC [Duke Energy] (Triplett) - [Application] for limited proceeding to approve 2017 second revised and restated settlement agreement, including certain rate adjustments

P. 41 mentions full meter deployment.

Utility / Holding Company

Analysis

Tampa Electric Emera

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Detailed AMI Meters
\$2.0	Integrated	2016		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	4,885

Summary In 2003, Tampa Electric Co. implemented an AMR system across its territory. In November 2015, the company filed a tariff with the Florida commission to provide an optional AMI meter as part of its "Advanced Metering Program" for residential owners of PV systems. In 2017, Tampa Electric began to deploy approximately 800,000 electric AMI meters, with estimated functionality in 2021-2022. As the company deployed AMI, it installed back-end systems concurrently. In January 2019, Tampa Electric filed a petition for an opt-out tariff, and in April 2019 filed a petition to begin tracking AMI program asset depreciation.

Proceeding:	Year	Type	url
TECO AMI Depreciation	2019	AMI Proposal	https://e9radar.link/n3c920190107-EI

Description:

In April 2019, Tampa Electric noted that it was in the process of replacing its AMR meters with 750,000 AMI meters by the end of 2021. The upgrade began in 2018. Benefits were cited to be realized in 2022, at which time all AMI technology and functionality would be in place. An opt-out plan was offered at \$20.64 for customers who opt-out of the smart meter program. The project was estimated to cost \$235M

Document: Brief 7/25/2019 <https://e9radar.link/95v>
Brief

Staff brief summarizes the case

Document: Application 4/23/2019 <https://e9radar.link/rkh>
Application

Does not discuss the business case, states some costs, poses the project as a necessity. Entire document discusses AMI/AMR. P. 2 discusses benefits.

Utility / Holding Company

Analysis

Gulf Power NextEra

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Summary AMI Meters
\$1.2	Integrated	2009		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	461,710

Summary Gulf Power initiated an AMI pilot program in 2008, and completed full deployment from 2009-2012. In its 2016 depreciation study, the company noted various AMI node failures and costs. Gulf Power also stated that it did not record any retirements, gross salvage, or cost of removal in any other rate case during the installation process.

Notable Resources:

Comments: <https://e9radar.link/8pun>

Case Study: <https://e9radar.link/3w3x>

Proceeding:	Year	Type	url
Gulf Power 2016 Depreciation Rates 20160170	2016	Cost Recovery	

Description:

In July 2016, Gulf Power filed several adjustments to its depreciation schedules. The case includes discussion of AMI accounts and recovery, including a brief overview of company deployment. The AMI account balance in December 2016 was \$36.6M.

Document: **Petition** 7/14/2016 <https://e9radar.link/8zwj>

Petition

P. 90 discusses the AMI account and some system failures, p. 92-93 discuss the company's lack of recovery since the meters were installed, p. 113 (Exhibit A-3) and p. 120 (Exhibit B) show AMI depreciation rates; other exhibits also feature AMI information

State Summary

GA

In 2011, Georgia established its Energy Assurance Plan to address cybersecurity and grid resiliency issues.

Notable Resources:

PSC Page: <http://bit.ly/2KhuYlx>

State Brief: <https://e9radar.link/a7l>

Utility / Holding Company

Analysis

Georgia Power Southern Company

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$7.8	Integrated	2006		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2,461,469

Summary Georgia Power proposed AMI in its 2007 rate case, though specific costs and benefit data is marked as confidential. In December 2007, the Georgia Public Service commission approved Georgia Power's request to replace 2.5M mechanical meters in its distribution system over six years. In January 2008, Georgia Power's parent company, Southern company, announced an agreement to purchase 4.3M meters and noted that Georgia Power began deploying at this time. Georgia Power finished deployment in 2012.

Notable Resources:

GPSC Website: <https://e9radar.link/d0s>

Article (Southern Co. announcement): <https://e9radar.link/3pdm>

Proceeding:	Year	Type	url
Georgia Power 2007 Rate Case 25060	2007	AMI Proposal	https://e9radar.link/3b07

Description:

Georgia Power requested an increase of over \$675M from 2008-2010, which included provisions for environmental compliance and a pilot program for AMI customers to save money and control energy through Critical Peak Pricing TOU rate design. All AMI exhibits (Data Requests STF-GDS-KM-1-12, -13, and -14) are marked as confidential, and no specific costs or plans can be found. The approved settlement increased base rates by \$99.7M annually, and allowance to collect another \$222M per year for environmental costs.

Document: Order 9/17/2009 <https://e9radar.link/gtny>


Order Adopting Stipulation

Does not provide any extra details

Document: Staff Data Request 8/15/2007 <https://e9radar.link/qse>

Staff Data Request Set STF-GDS-KM-1

One of the only citations of AMI data requests for amortization and cost data; Requests for STF-GDS-km-1-12, -13, and -14. Notably, GP's responses were confidential.



Document: **Application**

6/29/2007

<https://e9radar.link/590>

2007 Rate Case

Zipped folder of various parts of the application. In the Daiss folder, ADP
Testimony, p. 27 discusses amortization of AMI meters

State Summary

HI

In January 2017, after the first submission of their Smart Grid Foundation Project, the Hawaii PUC rejected HECO's initial plan. The order directed the HECO companies to develop a comprehensive and holistic grid modernization strategy. In June 2018, the HECO companies filed the first phase of their Grid Modernization Strategy implementation plan, proposing to deploy Phase 1 in a targeted manner. In September 2019, HECO filed their Phase 2 component, which consists of system-wide ADMS deployment.

Utility / Holding Company

Analysis

Hawaiian Electric HEI

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.8	Integrated	2018	•	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Summary HECO's AMI proposal, which was included in the Phase One Grid Modernization Plan, was approved in March 2019. The approval was preceded by the denial of their Smart Grid Foundation Project in January 2017, in which the commission required HECO to develop a Grid Modernization Strategy (GMS) with stakeholder input. The commission advised HECO to consider grid investments separately, as part of a broader strategy which identifies technology priority, minimized risk, customer benefits, and DER/renewable energy integration. The GMS was approved in February 2018, and was followed by separate applications for the phases of technology deployment. HECO's Phase I application for AMI deployment was filed in June 2018 and included a telecommunications network and MDMS.

Proceeding:

	Year	Type	url
HECO Phase 1 Grid Modernization Project 2018-0141	2018	AMI Proposal	https://e9radar.link/fc555

Description:

Phase I of the HECO joint-company grid modernization project primarily involves investments in three technologies: AMI with integrated communications, a meter data management system, and an interoperable, scalable telecommunications network. Phase I will occur over 2019-2023 and cost approximately \$86.3M. The companies highlighted the state's high penetration of customer-owned solar generation, and noted that a modern grid will enable the incorporation of more renewable energy and integration of new technologies, including DR, Distributed energy resources, TOI rates, and better insight. The application was approved in March 2019 with a request for additional information. In September 2019, HECO filed two compliance documents: its Advanced Rate Design Strategy (ARDS), and Data Access and Privacy Policy. The ARDS evaluates and outlines its plans for time-of-use rates, critical-peak pricing, peak-time rebates, multi-part time-variant rate design, and dynamic rates from 2019 to 2024 and beyond. HECO noted a robust stakeholder engagement process and provides a high-level summary of recent tariffs and a variety of current programs (DR, DER, etc.).

Document: Application and Exhibits 6/21/2018 <https://e9radar.link/qh8>

Application of Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc., Maui Electric Company, Limited for Grid Modernization Strategy Phase 1

GMS Phase 1 Benefits are listed on page 28, and Exhibit B (p. 58 of the PDF) gives a detailed project justification with business case support. Discussions of costs begin at p. 10 of Exhibit B. Discussions of cost-effectiveness framework begins at p. 19 of Exhibit B.

Document: Decision and Order 3/25/2019 <https://e9radar.link/ooy>

Decision and Order No. 36230

Summary on p. 54, case history and background p. 2

Proceeding:	Year	Type	url
Grid Modernization Strategy 2017-0226	2017	Rulemaking	https://e9radar.link/e149f

Description:

The Commission opened this docket after rejecting HECO's Smart Grid Foundation Project Application (docket no. 2016-0087) in order to develop a statewide grid modernization strategy that is informed by stakeholder input. The strategy categorizes AMI as both a customer-facing and grid-facing technology, and notes that Hawaii utilities intend to launch full deployment. Final objectives were determined to include: 1) empowering customers' choice and provide safe, reliable and affordable services; (2) enable distributed resources to become a vital part of Hawaii's renewable portfolio; and (3) leverage the electric grid to spur economic growth in Hawaiian communities. The strategy attempts to coordinate resources between customers, the distribution system, and the transmission system.

Document: Final Order 2/7/2018 <https://e9radar.link/fd6a0>

Decision and Order No. 35268

P. 15 addresses particular AMI concerns of stakeholders, P. 11 includes cost estimates for major projects,

Document: Order 8/29/2011 <https://e9radar.link/jr9>

Order Opening Docket

Proceeding:	Year	Type	url
HECO Smart Grid Foundation Project 2016-0087	2016	AMI Proposal	http://e9radar.link/stqo

Description:

In this docket, the Hawaiian Electric Companies (HECO) submitted their five-year Smart Grid Foundation (SGF) Project application to implement the initial Smart Grid capabilities. The project was cited to serve as the platform to support immediate customer benefits and the cornerstone for additional projects that can expand customer options, such as optimizing the integration of DERs, implementing demand response, TOU rates, and real-time pricing. The SGF project consisted of ten interrelated components. Eight of those ten components would utilize proven, cost-effective technology, such as installation of AMI, creation of customer-facing solutions, conservation voltage reduction, data collection, MDMS, and expansion of the OMS. The final two components related to customer engagement and project management. The total estimated cost of the SGF Project, including on-going costs and non-AMI meter amortization was \$736M. In January 2017, the Hawaii PUC rejected the project.

In January 2017, the Hawaiian Public Service Commission denied the application, citing shortcomings in the Grid Modernization Strategy and the cost effectiveness of the application. The order stressed the Commission's commitment to grid modernization efforts and is requiring the utilities to submit a reworked the Grid Modernization Strategy by June 30th with guidance from the order and stakeholder engagement incorporated. The commission also requested a more "holistic" application which breaks out costs, implementation timelines, and priorities.

Document: Order (rejection) 1/4/2017 <https://e9radar.link/ql8>

ORDER NO. 34281 DISMISSING APPLICATION WITHOUT PREJUDICE AND PROVIDING GUIDANCE FOR DEVELOPING A GRID MODERNIZATION STRATEGY; Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc., and Maui Electric Company, Limited; Docket No. 2016-0087

Describes deficiency in application and requirement to re-file

Document: Application 3/31/2016 <https://e9radar.link/ay5>

Application of Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc., and Maui Electric Company, Limited; Exhibits A - I; Verification; Docket No. 2016-0087

P. 18 provides background, and p. 22 gives summary of the project. AMI information found on p. 25, the bundled business case located on p. 36-45 (costs on p. 37 and benefits p. 40)

State Summary

IA

In 1999, the Iowa legislature modified its administrative code to require that utilities assess potential energy and capacity savings from available technology. In 2008 and 2012, the Iowa Utility Board's compliance reports studied AMI-enabled DR and EE programs. The reports also tracked Alliant and MidAmerican program advancements.

Notable Resources:

Alliant opt-out: <https://e9radar.link/9cdm>

Iowa Brief: <https://e9radar.link/o6vc>

2012 Energy/Capacity Savings Study: <https://e9radar.link/nc8t>

Utility / Holding Company

Analysis

Interstate Power and Light Alliant						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$1.6	Integrated	2017	• •	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>		

Summary Interstate Power and Light (IPL) began evaluating AMI in 2009, and incorporated deployment into its strategic planning in 2017. IPL's initial plan was to deploy AMI from 2018-2019, but the company decided to accelerate deployment to begin in 2017 due to meter replacement needs. IPL filed full AMI deployment plans with the commission in its 2017 opt-out tariff request, and requested cost recovery for the project in its 2019 rate case. IP&L cited AMI as an enabling technology; key to addressing customer preferences and grid modernization strategy. By March 2019, IPL had installed 470,000 residential and small commercial electric meters and approximately 30,000 commercial and industrial electric meters.

Notable Resources:

Proceeding:	Year	Type	url
IPL 2019 Rate Case RPU-2019-0001	2019	Cost Recovery	http://e9radar.link/3fed

Description:

In March 2019, IPL filed their 2019 rate case, which requested to increase rates through two interim phases: in April 2019 and January 2020. The rate case requested an increase of \$203.6M in electric rates. Within the 2019 rate case, IPL filed CBA tables for the AMI project to date.

Document: Bauer Exhibits (CBA)	3/1/2019	https://e9radar.link/d2b8a
IPL Bauer Direct Exhibit 1, 2, 4, 5 (Final)(E/G)		
See tables for CBA		
Document: Bauer Testimony	3/1/2019	https://e9radar.link/7b2c0
IPL Bauer Direct Testimony		

Proceeding:	Year	Type	url
IPL AMI Opt-Out Program <i>SPU-2018-0007</i>	2018	Opt-Out	https://e9radar.link/1a3rv

Description:

In March, 2018 Interstate Power and Light Company (IPL) filed with the Utilities Board a proposed tariff regarding non-standard meter alternatives for its electric service customers. IPL proposed to charge customers who opt out of AMI meter installation a \$15 per month charge per meter. In July, 2018 the board consolidated the AMI tariffs together with formal complaints against IPL's proposed AMI upgrade and program opt-out procedures.

Document:	Order	7/30/2018	https://e9radar.link/c6kt
Order Providing Notice of Hearing, Establishing Procedural Schedule, Setting Procedures, and Granting Admission Pro Hac Vice			
Order initiating the case; provides general overview of the case.			

State Summary

IL

In 2006, the Illinois Commerce commission amended the Illinois Customer Choice and Rate Relief Law of 1997 to require utilities to provide customers hourly-recording smart meters. The following year, the commission filed an order which required the formation of the Illinois Statewide Smart Grid Collaborative (ISGC). The report filed by the ISGC included recommendations for smart grid definitions, recovery mechanisms, technical requirements, privacy, data access, and a strategy for building the grid. In 2011, the General Assembly overrode a Governor veto to pass the Energy Infrastructure Modernization Act, which instituted regulatory reform, new ratemaking procedures, reliability performance metrics, and mandatory smart grid investment. This Act required utilities to develop AMI and energy efficiency/demand response plans and associated budgets. The commission issued its "Utility of the Future" report in 2016, directing the commission's "NextGrid" Grid Modernization Study. Following the 2016 Future Energy Jobs Act, the NextGrid project created pilot projects and working groups related to smart grid advancements. In March 2016, the commission issued an order in its data access proceeding which directed Ameren and Commonwealth Edison to provide customers with electronic access to smart meter electricity usage data.

Notable Resources:

Research: <https://e9radar.link/9bci>

EIMA News: <https://e9radar.link/lizb>

History: <https://e9radar.link/OfIm>

EIMA Summary: <https://e9radar.link/m87r>

NextGrid study: <https://e9radar.link/ufxe>

Utility / Holding Company

Analysis

Commonwealth Edison Exelon

Detailed

\$B	Class	Year	ben/cost/net	app/deny/set/pend	AMI Meters
\$5.0	Integrated	2012	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	3,854,111

Summary Commonwealth Edison (ComEd) first proposed its AMI plan in April 2012. The petition was approved with modifications in June 2012. In response to a commission ruling in a concurrent rate case, ComEd filed a petition in July 2012 for approval to accelerate the deployment timeline. In response, the commission reopened and consolidated two ComEd dockets. In June 2014, the commission approved the proposed AMI acceleration, maintaining the consumer education budget and modifying the level of resources for education and outreach that it had planned for its original scenario. ComEd's 4M meter rollout was completed in 2018 rather than 2021, and was part of the utility's \$2.6B grid modernization initiative.

Notable Resources:

B&V Evaluation Report (2011): <http://bit.ly/2MfQGYw>

Final Order: <https://e9radar.link/vblv>

Proceeding:	Year	Type	url
Third Party Process to Access Customer AMI Data 17-0123	2017	Reference	https://e9radar.link/xn7or

Description:

In March 2017, this docket was opened as a follow-up to docket no. 14-0507 to look deeper at third party access rules. The proceeding investigated the non-RES third-party warrant process for access to customer AMI interval meter data.

Document: Order	3/15/2017	https://e9radar.link/p6v4
Initiating Order		

This order outlines the scope of the proceeding, with the primary investigation focusing on non-RED third party warrant process for AMI data

Proceeding:	Year	Type	url
Complaint Regarding ComEd's AMI Plan 15-0284	2015	Reference	http://e9radar.link/cz30

Description:

In April 2015, this case was opened to draw scrutiny to ComEd's overspending, as reflected in their 2015 AMI Report, addition of new pilot programs, and other issues. The 2015 report noted an increase of \$42.5M, higher-than-expected installation rates (over 1% of installed meters were replaced), and further investigative needs to determine the source of technology failures. The commission denied the claims that ComEd did not comply with commission laws, and the investigation was dismissed.

Document: Complaint	4/10/2015	https://e9radar.link/x2p
Complaint		

Proceeding:	Year	Type	url
Access to Data Authorization 15-0073	2015	Reference	http://e9radar.link/l6j2

Description:

In January 2015, the Illinois Commerce Commission initiated an investigation into third-party access to AMI data. The commission determined that they should establish minimum requirements for a standard authorization form, create the form, and approve it. The commission also directed Ameren and Commonwealth Edison Company to provide customers with electronic access to their usage data utilizing the Green Button Connect My Data program.

Document: Final Order	3/23/2016	http://e9radar.link/ryj3
Final Order		

Summarizes case and changes

Document: Initiating Order	1/28/2015	http://e9radar.link/iw3s
Initiating Order		

Outlines data concern issues

Proceeding:	Year	Type	url
GHG Metric for Smart Grid AMI Deployment Plans 14-0555	2014	Rulemaking	http://e9radar.link/Onfz

Description:

In September 2014, the Citizens Utility Board (CUB) and Environmental Defense Fund (EDF) petitioned for the Illinois commission to initiate a proceeding to adopt metrics for measuring GHG emissions associated with AMI deployment plans. CUB and EDF intervened in several AMI deployment cases to petition for better quantification of the societal and environmental benefits of smart grid investments. The commission acknowledged that their thoughts were important but should not hold up smart meter deployment. This proceeding decided that a Bottom Up Approach should be used in utility calculations.

Document: Report 12/26/2017 <https://e9radar.link/xqh>
Report

Ameren's equation for GHG mitigation

Document: Final Order 9/27/2017 <https://e9radar.link/o91>
Final Order

Explains two options of methodology and summarizes the case

Document: Application 9/10/2014 <http://e9radar.link/yhs3>
Application

Proposal of two methodologies to calculate GHG emissions (Attachment A and B)

Proceeding:	Year	Type	url
Open Data Access Framework 14-0507	2014	Reference	http://e9radar.link/isa2

Description:

The framework addresses the following issues around what should be done with the customer usage data which will be gathered by the new AMI systems: data ownership, types of data, third-party access to data, data formats, methods of delivering data, timeliness of data delivery, quality of data, data security, the use of national standards, and whether or not charges should be assessed for accessing data.

Document: Final Order 7/26/2017 <https://www.icc.illinois.gov/docket/P2014>

Final Order

P. 4 created new requirements for an "AMI plan" to describe customer data access and protections

Proceeding:	Year	Type	url
ComEd Acceleration of AMI Deployment 14-0212	2014	Reference	http://e9radar.link/51zr

Description:

In March 2014, ComEd filed a petition to modify its AMI project timeline. ComEd's initial plan reflected deployment of AMI meters from 2013-2021, and the accelerated plan reduced the deployment period by three years, with conclusion in 2018. ComEd estimated direct capital costs at \$936.9M, while O&M costs were estimated at \$467.8M through 2021. In June 2014, the Illinois commission issued a final order which approved the accelerated deployment and modified previous decisions.

Document: Final Order 6/11/2014 <https://e9radar.link/vblv>
 Order Approving Petition
 P. 2-6 overviews ComEd's request; p. 21-22 shows commission findings

Proceeding:	Year	Type	url
Investigation Regarding Aggregated Data and Privacy 13-0506	2013	Reference	http://e9radar.link/uesy

Description:

In September 2013, the Illinois Commerce Commission initiated an investigation pertaining to the release of aggregated customer AMI meter data and AMI privacy issues. Issues concerned the release of aggregated, anonymous customer usage information; the release of specific information, including identification of peak time rebate and net metering customers; and electric supplier access to interval data.

Document: Final Order 1/28/2014 <https://e9radar.link/x5ql>
 Final Order
 Outlining best practices and requirements for data access, protection, encryption, etc.

Document: Initiating Order 9/4/2013 <https://e9radar.link/iq3>
 Initiating Order
 This order scopes several concerns with data privacy.

Proceeding:	Year	Type	url
Commonwealth Edison AMI 12-0298	2012	AMI Proposal	https://e9radar.link/roh512-0298

Description:

In April 2012, ComEd filed an AMI deployment plan. The plan contained a Smart Grid AMI vision statement, 10-year all-customer deployment strategy, annual milestones, workshop details, and more. The three categories of benefits quantified were Demand Response Benefits (net benefits ranging from \$13M to \$292M), benefits from Improved Information (described quantitatively), and Benefits from New Technology. After receiving commission approval in June 2012, ComEd filed a petition for rehearing in July to incorporate an accelerated schedule. In October 2012, ComEd filed a revised CBA and implementation schedule which moved the implementation schedule up 3 years. The new CBA revealed \$4.4B in net benefits over a 20-year model.

Document: BCA Updates 10/3/2012 <https://e9radar.link/pdo417.01>

Revised analysis report for ComEd AMI plan, representing new investments, changes to analysis model. CBA determined \$1B in capital and \$1B in operational costs; generate \$4.4B in benefits, NPV \$1B. P. 4-5 provides details for costs/benefits

Document: B&V Study 4/23/2012 [https://e9radar.link/ldgCBA Report \(B&V Study\)](https://e9radar.link/ldgCBA Report (B&V Study))

Original CBA; p. 9 contains CBA table, p. 23 of pdf overviews benefits, p. 41 discusses sensitivities, p. 45-49 of pdf contains comprehensive cost/benefit charts

Document: Exhibit 5.02 4/23/2012 <https://e9radar.link/ppkExhibit 5.02>

More detailed CBA

Document: Petition 4/23/2012 <https://e9radar.link/g85Verified Petition>

Exhibit 5.0 – Direct Testimony of Dr. Steven D. Braithwait. Exhibit 5.02 also gives details and numbers.

Document: Exhibit 5.0 4/23/2012 <https://e9radar.link/matExhibit 5.0>

Customer-related benefits overview

Utility / Holding Company

Analysis

Ameren Illinois Ameren

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Detailed AMI Meters
\$1.5	Restructured	2012	• •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	702,956

Summary Following implementation of Illinois' smart grid legislation, Ameren Illinois elected to become a participating utility in the state's electric infrastructure investment program. As a result, Ameren was ordered to invest \$625M into distribution over 10 years and file a Smart Grid AMI Deployment Plan with the commission. In August 2011, Ameren filed a mandatory evaluation report on its pilot program, and in March 2012, Ameren filed a 10-year Infrastructure Investment Program to the Smart Grid Advisory Council after review by the Smart Grid Advisory Council. Ameren's CBA estimated \$153M in net benefits over a 20-year analysis period (2021-2031). In May 2012, the commission ruled that the plan could not be determined as cost effective, and Ameren filed a revised plan and CBA in June. In December 2012, the commission approved the modifications, which included an accelerated schedule, less reliance on shared benefits from gas customers, modified cost accounting, and quantification of additional operational, customer, and societal benefits. In 2016, Ameren reopened its AMI docket to amend its deployment timeline to achieve 100% AMI deployment by the end of 2019 instead of the planned 62%.

Proceeding:	Year	Type	url
Third Party Process to Access Customer AMI Data 17-0123	2017	Reference	https://e9radar.link/xn7or

Description:

In March 2017, this docket was opened as a follow-up to docket no. 14-0507 to look deeper at third party access rules. The proceeding investigated the non-RES third-party warrant process for access to customer AMI interval meter data.

Document: Order 3/15/2017 <https://e9radar.link/p6v4>
Initiating Order

This order outlines the scope of the proceeding, with the primary investigation focusing on non-RED third party warrant process for AMI data

Proceeding:	Year	Type	url
Complaint Regarding Ameren's AMI Progress 16-0245	2016	Reference	http://e9radar.link/o3ym

Description:

Several stakeholders filed a complaint that Ameren's AMI Report lacked sufficient detail and costs, and their recent proposal to accelerate deployment lacks adequate background. The stakeholders contended that Ameren had already accelerated AMI deployment without approval. The commission dismissed these claims.

Document: Final Order 4/12/2016 <https://e9radar.link/r1g>
Final Order

Order denies the EDF/CUB note and summarizes things

Proceeding:	Year	Type	url
Access to Data Authorization 15-0073	2015	Reference	http://e9radar.link/l6j2

Description:

In January 2015, the Illinois Commerce Commission initiated an investigation into third-party access to AMI data. The commission determined that they should establish minimum requirements for a standard authorization form, create the form, and approve it. The commission also directed Ameren and Commonwealth Edison Company to provide customers with electronic access to their usage data utilizing the Green Button Connect My Data program.

Document: Final Order	3/23/2016	http://e9radar.link/ryj3
Final Order		
Summarizes case and changes		

Document: Initiating Order	1/28/2015	http://e9radar.link/iw3s
Initiating Order		
Outlines data concern issues		

Proceeding:	Year	Type	url
GHG Metric for Smart Grid AMI Deployment Plans 14-0555	2014	Rulemaking	http://e9radar.link/Onfz

Description:

In September 2014, the Citizens Utility Board (CUB) and Environmental Defense Fund (EDF) petitioned for the Illinois commission to initiate a proceeding to adopt metrics for measuring GHG emissions associated with AMI deployment plans. CUB and EDF intervened in several AMI deployment cases to petition for better quantification of the societal and environmental benefits of smart grid investments. The commission acknowledged that their thoughts were important but should not hold up smart meter deployment. This proceeding decided that a Bottom Up Approach should be used in utility calculations.

Document: Report	12/26/2017	https://e9radar.link/xqh
Report		
Ameren's equation for GHG mitigation		

Document: Final Order	9/27/2017	https://e9radar.link/o91
Final Order		
Explains two options of methodology and summarizes the case		

Document: Application	9/10/2014	http://e9radar.link/yhs3
Application		
Proposal of two methodologies to calculate GHG emissions (Attachment A and B)		

Proceeding:	Year	Type	url
Open Data Access Framework 14-0507	2014	Reference	http://e9radar.link/isa2

Description:

The framework addresses the following issues around what should be done with the customer usage data which will be gathered by the new AMI systems: data ownership, types of data, third-party access to data, data formats, methods of delivering data, timeliness of data delivery, quality of data, data security, the use of national standards, and whether or not charges should be assessed for accessing data.

Document: Final Order	7/26/2017	https://www.icc.illinois.gov/docket/P2014
Final Order		
P. 4 created new requirements for an "AMI plan" to describe customer data access and protections		

Proceeding:	Year	Type	url
Investigation Regarding Aggregated Data and Privacy 13-0506	2013	Reference	http://e9radar.link/uesy

Description:

In September 2013, the Illinois Commerce Commission initiated an investigation pertaining to the release of aggregated customer AMI meter data and AMI privacy issues. Issues concerned the release of aggregated, anonymous customer usage information; the release of specific information, including identification of peak time rebate and net metering customers; and electric supplier access to interval data.

Document: Final Order	1/28/2014	https://e9radar.link/x5ql
Final Order		
Outlining best practices and requirements for data access, protection, encryption, etc.		

Document: Initiating Order	9/4/2013	https://e9radar.link/iq3
Initiating Order		
This order scopes several concerns with data privacy.		

Proceeding:	Year	Type	url
Ameren AMI Deployment Plan 12-0244	2012	AMI Proposal	http://e9radar.link/ywxo

Description:

As part of the Illinois Energy Infrastructure and Modernization Act, Ameren was ordered to invest \$265M in distribution infrastructure and \$260M in smart grid upgrades over a 10-year period. In 2012, the Commission approved Ameren's AMI plan. Projected costs included \$314M in new capital and \$236M of incremental operating expense to deploy and implement AMI over 20 years. Cumulative, quantifiable benefits are calculated to be \$859M with a NPV of \$153M. In May 2012, the commission ruled generally in favor of the AMI plan, but could not approve that it was cost effective. In June 2012, Ameren filed a revised AMI plan and CBA. The revised plan was approved in December 2012. In May 2016, Ameren requested that the Commission reopen this docket to consider an accelerated deployment schedule. The new schedule proposed to deploy AMI to 62% of its customers by 2018 as opposed to 2019; and to deploy AMI to 100% of its customers by the end of 2019.

Document: Exhibit 2.1 3/30/2012 <https://e9radar.link/3pt>

Exhibit 2.1, AMI Cost/Benefit Analysis

Business case; p. 11 begins cost section; p. 16 begins direct benefits, p. 18 compares costs/benefits, p. 33 lists indirect benefits

Document: Petition 3/30/2012 <https://e9radar.link/e8p>

Petition

Provides overall summary of the long-term plan, context, etc.

Document: Exhibit 2.0 3/30/2012 <https://e9radar.link/xzg>

Exhibit 2.0, Testimony of Michael S. Abba

Provides overview of the case, summarizes CBA, p. 8 notes benefits calculation

State Summary

IN

In 2013, Indiana legislators passed SEA 560 to encourage utilities to improve aging transmission and distribution infrastructure through a multiyear cost recovery framework: Transmission, Distribution, and Storage System Improvements Charges (TDSIC). Indiana utilities began to file informational TDSIC plans as a form of resource and investment planning. In 2019, HEA 1470 updated the TDSIC rules to require the inclusion of new technology investments that support grid modernization, including smart meters.

Notable Resources:

Smart Grid Paper: <https://e9radar.link/bbq3>

State Investments/AMI Site: <https://e9radar.link/dy3n>

Utility / Holding Company

Analysis

Duke Energy Indiana Duke

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$2.7	Integrated	2015	• •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	271,688

Summary The IURC initially denied Duke Energy Indiana's proposal for AMI deployment within its 2014 transmission, distribution and storage system plan (T&D plan), proposed in August 2014. The commission stated that the plan did not provide sufficient detail. Duke filed a second version of its T&D plan in December 2015. Duke reached a settlement agreement for its plan in March 2016, which included its commitment to deploy smart meters. The commission approved the settlement in June 2016. In July 2017, Duke filed an application for an opt-out program, which the commission approved.

Proceeding:

	Year	Type	url
Duke Indiana 2019 Rate Increase	2019	Cost Recovery	https://e9radar.link/sd945253

Description:

In July 2019, Duke Energy Indiana applied for its first rate increase in 15 years. Duke asked for a 13% increase by mid-2020 and an additional 2% in 2021, generating an additional \$395M in annual revenue. Within application testimony, Duke stated that AMI technology deployment costs were projected to be \$146M, which was less than the estimated cost of \$190.58M presented in the TDSIC proceeding.

Document: Testimony (Bailey)

7/2/2019

<https://e9radar.link/7sm>

Verified Direct Testimony of Jeffrey R. Bailey, on Behalf of Petitioner, Duke Energy Indiana, LLC, Petitioner's Exhibit 8

The Bailey testimony explains the pilot rates for critical price peaking, variable price peaking, and variable peak pricing with demand, p. 15-19. These pilots are exclusively for customers with AMI.

Document: Testimony (Schneider)

7/2/2019

<http://e9radar.link/d6f26>

Verified Direct Testimony of Donald L. Schneider, Jr., on Behalf of Petitioner, Duke Energy Indiana, LLC, Petitioner's Exhibit 28

P. 11 of pdf, AMI currently projected to be tech deployment costs: \$146 million, less than the company's estimated cost: \$190.58 million. Also presented in TDSIC proceeding

Proceeding:	Year	Type	url
Duke Indiana AMI Opt-Out 44963	2017	Opt-Out	https://e9radar.link/3dql44963

Description:

In July 2017, Duke Energy Indiana filed an application which requested the implementation of an opt-out tariff. The tariff initially requested a \$105 one-time fee and a \$28.59 monthly fee to cover meter reading and other costs associated with the opt-out choice.

Document: Testimony 7/6/2017 <https://e9radar.link/b4vl>

Direct Testimony of Jefferey R. Bailey

Bailey testimony explains the opt-out tariff.

Proceeding:	Year	Type	url
Duke Indiana Updated 7-Year TDSIC Plan 44720-NONE	2015	AMI Proposal	http://e9radar.link/1rp144720-NONE

Description:

In December 2015, Duke Energy Indiana filed a revised 7-year T&D Infrastructure Improvement Plan (T&D plan) to modernize its electric grid through the Transmission and Distribution Infrastructure Improvement Charge (TDSIC) mechanism. The revision followed the commission's rejection of Duke's 2014 TDSIC plan (docket no. 44526) in May 2015. The revised plan included relief for the company's AMI project, which proposed to replace 830,000 meters and install NAN/WAN over 4.5 years. Potential AMI benefits were estimated at \$193M. In March 2016, Duke filed a settlement to reduce the project cost cap to \$1.4B. The settlement removed AMI capital costs from the 7-year plan, though it permitted Duke to defer up to \$60M in depreciation costs over a 10-year period to a future rate case. The commission approved the settlement in July 2016, authorizing Duke to recover 80% of \$1.4B through the proposed TDSIC mechanism.

Document: Exhibit 5 (CBA) 5/2/2015 <https://e9radar.link/9u5>

Direct Testimony of Donald Schneider, Jr.
Exhibit 5

CBA on p. 74-83 (pdf)

Document: Final Order 6/29/2016 <https://e9radar.link/nua>

Final Order

Describes case history, including summary of application testimony. P. 8-9 summarizes the Schneider testimony.

Document: Schneider AMI Workplan 12/7/2015 <https://e9radar.link/kfe>

Direct Testimony of Donald Schneider, Jr.

Workplan on Petitioners Exhibit 5-A (DLS) pp.26 - 32 (pdf).

Proceeding:	Year	Type	url
Duke Indiana 2014 7-Year TDSIC Plan 44526	2014	AMI Proposal	https://e9radar.link/5a5d6

Description:

In August 2014, Duke Indiana applied for a \$1.9B, 7-year "T&D plan" for eligible transmission, distribution and storage improvements using the Transmission and Distribution Infrastructure Improvement Charge (TDSIC). The plan included the deployment of 817,000 AMI meters and associated IT/communications structure, estimated to cost \$181M over the first 4 years of the 7-year plan. The CBA described quantifiable benefits, excluding potential benefits for new offerings or services. In June 2015, the commission rejected this application due to lack of sufficient detail.

Document: AMI Application 8/29/2014 <https://e9radar.link/rjr>

Direct Testimony of Donald L. Schneider, Jr.

Testimony describes AMI plans; p. 3-5 describes technology and methodology, p. 15-18 summarizes the business case

Document: Order 5/8/2015 <https://e9radar.link/151>

Final Order rejecting T&D proposal

P. 8-9 summarizes Schneider testimony and AMI plans; p. 11 describes rebuttal testimony. P. 17 states lack of detail and rejection.

Utility / Holding Company

Analysis

Indiana Michigan Power		American Electric Power					Detailed AMI Meters
\$B	Class	Year	ben/cost/net	app./deny/set/pend			
\$1.4	Integrated	2019	•	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>			11,176

Summary In 2009, Indiana Michigan Power Co. (I&M) launched a 10,000 meter pilot project. In May 2019, I&M included a provision for AMI deployment in its 2020 rate case. I&M noted that 35% of its AMR meters would reach the end of their design life by the proposed start of AMI deployment, and that AMI will provide visibility into its distribution grid and reliability.

Notable Resources:

Proceeding:	Year	Type	url
I&M 2020 Rate Case 45235	2019	AMI Proposal	https://e9radar.link/adge45235

Description:

In May 2019, I&M filed for a rate increase of \$172M. The rate case included a plan to deploy AMI technology in its Indiana service territory. AMI deployment was forecasted to begin in the 2020 Test Year and continue through 2022, with the majority of I&M's expenditures taking place in 2021-22. I&M also requests approval of a new AMI Rider to track AMI deployment costs. The estimated capital cost of the total AMI Project over the 3-year period was \$93.6M.

Document: Testimony (Isaacson) 5/14/2019 <https://e9radar.link/m3y>

Pre-filed Verified Direct Testimony of Davis S. Isaacson

General CBA shown on p. 28-34. Costs thru 2022 are shown on pdf p. 35.
Soft benefits are shown on pdf p.31-34, p. 59 shows meter costs

Document: Testimony (Thomas) 5/14/2019 <https://e9radar.link/evlk>

Pre-filed Verified Direct Testimony of Toby L. Thomas

P. 19 shows total cost of 93.6M, paid by AMI rider. P. 24 describes enhanced grid capabilities, other benefits listed p. 27-28

Document: Testimony (Lucas) 5/14/2019 <https://e9radar.link/012g>

Pre-Filed Verified Direct Testimony - David A. Lucas

Describes customer integration and enabling technology. P. 38 describes AMI and the customer experience and engagement plans

Document: Testimony (Cooper) 5/14/2019 <https://e9radar.link/kynp>

Pre-Filed Verified Direct Testimony - Kurt C. Cooper

Addresses the opt-out provision

Document: Testimony (Williamson) 5/14/2019 <https://e9radar.link/sksf>

Pre-Filed Verified Direct Testimony - Andrew J. Williamson

P. 36 shows AMI Rider costs

Utility / Holding Company

Analysis

Southern Indiana Gas & Elec Co		Centerpoint Energy					Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend	Meters		AMI
\$0.5	Integrated	2017	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>			

Summary Southern Indiana Gas & Electric Co. (Vectren) proposed AMI deployment in its 2017 Transmission, Distribution, and Storage System Improvements Charges (TDSIC) plan. In September 2017, the Indiana commission approved a settlement agreement for the TDSIC which removed AMI recovery from the TDSIC plan and deferred a maximum recovery of \$39M to its next rate case. The commission and stakeholders did not oppose AMI deployment; cost recovery was the primary issue. Vectren's 2017 rate case was in process at the same time as the TDSIC, and did not include AMI recovery.

Proceeding:	Year	Type	url
Vectren South TDSIC and 7-year Electric Plan 44910-NONE	2017	AMI Proposal	http://e9radar.link/wreg

Description:

Vectren filed its seven-year Transmission, Distribution, and Storage System Improvement Charge plan (TDSIC) under Senate Bill 560, which was designed to modernize the state's distribution and transmission. Vectren included 26 programs at a cost of \$514M. Programs included system-wide AMI deployment, installation of MDMS and SCADA, and other infrastructure upgrades. In September 2017, the Indiana commission approved a settlement agreement for the TDSIC, which capped costs at \$446.5M and removed AMI, ADMS and other communications technologies from the TDSIC. Vectren removed AMI costs from the TDSIC to include in the next rate case, with a cap of \$39M; "the deferral accounting authority will allow Vectren South to go forward with its AMI plan without material earnings erosion."

Document: Testimony (Trump)	2/23/2017	https://e9radar.link/awwu
Direct Testimony of Andrew L. Trump Director, Utility Practice Black & Veatch Management Consulting, LLC on AMI Cost Benefit Evaluation		
P. 15 shows cost summary table, p. 21 explains net benefits of 16.8M NPV 2017, full CBA is Petitioner's Exhibit No. 5, Attachment ALT-2, cost/benefit summary tables included on p. 110-113. P. 35 of pdf cites AMI as foundational for REV in NY		

Document: Final Order	9/20/2017	http://e9radar.link/i49k
Final Order		
P. 5-6 summarizes petition summary, quote on p. 13, p. 31-32 discusses commission omission of AMI		

Document: Testimony (Bugher)	2/23/2017	https://e9radar.link/ggz
Direct Testimony of Daniel C. Bugher, Sr. Vice-president, Customer Experience on Advanced Metering Infrastructure		
Discusses qualitative benefits, customer interaction, decision to not include opt-out		

State Summary

KS

In August 2006, the Kansas commission opened a proceeding to investigate advanced metering in response to federal policies. One year later, the commission determined that it would not mandate smart meter installation. The 2009 legislative session implemented HR 6005-0, which established a goal to make 25% of electric meters smart grid compliant with two-way communication capabilities. This goal was reached in the cooperative utility sector in 2011. In July 2018, the commission opened a general investigation into AMI opt-out programs. The investigation was closed in March 2019 when the commission determined that utilities are not required to offer opt-out programs.

Utility / Holding Company

Analysis

Westar Energy Evergy

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.1	Integrated	2014		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	318,830

Summary In 2009, Westar and Kansas Gas & Electric company (together, Westar) received a \$19M grant from the SGIG to support a pilot project. In its 2015 rate case, Westar proposed two more phases of smart meter installments and requested recovery of undepreciated costs of the legacy analog meters. Recovery of the legacy meters was approved in September 2015.

Notable Resources:

Contract: <https://e9radar.link/bdri>

Completion Article: <https://e9radar.link/1g84>

Proceeding:

	Year	Type	url
Westar AMI Privacy Policies	2018	Reference	https://e9radar.link/q4qa419-WSEE-011-CPL

Description:

This docket houses the compliance reports filed by Westar and Kansas City Power & Light, as mandated in Case No. 15-WSEE-211-COM. In particular, this case currently houses a report on any AMI-associated fires in their service territory.

Document: Report

3/1/2019

<https://e9radar.link/todb>

Kansas City Power & Light Company and Westar Energy, Inc. Annual Report of Damage Claims for Structure Fires

Report on fires

Document: Opening Order

7/24/2018

<https://e9radar.link/xvxex>

Notice of Filing of Staff's Report and Recommendation

Staff summary of issues against Westar/KCP&L

Proceeding:	Year	Type	url
Investigation of Digital Electric Meters <i>19-GIME-012-GIE</i>	2018	Opt-Out	https://e9radar.link/c9iu3

Description:

This case was opened in response to several formal complaints against Kansas City Power & Light Company, Westar Energy, Inc. and Kansas Gas and Electric Company. Complaints primarily concerned AMI opt-out policies and procedures. Additionally, this proceeding reviewed installation costs associated with meter types and billing strategies, operating costs, and the economies of scale on the costs of an opt-out program. This case determined that a mandatory opt-out program was not necessary for the state of Kansas.

Document: KCP&L Comments 1/18/2019 <https://e9radar.link/gpq>
 Kansas City Power & Light Company And Westar Energy, Inc. Initial Comments
 KCP&L/Westar AMI summary on p. 4. Lists AMI benefits on p. 5; p. 5 also has a summary chart of deployment (all utilities around 90% in 2019)

Document: Order 3/14/2019 <https://e9radar.link/p0zv>
 Order Closing General Investigation
 P. 6 summarizes major utility's recommendation for installation and operating costs. P. 3 lists initial response comments from utilities.

Document: Order 7/24/2018 <https://e9radar.link/odc2>
 Order Opening General Investigation
 Investigation topics listed on p. 3

Proceeding:	Year	Type	url
Westar and KSE 2015 Rate Case <i>15-WSEE-115-RTS</i>	2015	Cost Recovery	https://e9radar.link/4lz9

Description:

In its 2015 Rate Case, Westar and Kansas Gas & Electric Company requested a rate increase of \$152M, which is largely driven by environmental compliance costs. Westar also proposes a grid resiliency project, the Electric Distribution Grid Resiliency Program, which does not mention AMI but provides the only cost estimates related to capital improvements. Testimony shows that 120,000 meters were already scheduled for upgrade in 2015, and progress of AMI deployment depends on the decision made in this docket.

Document: Exhibit JC-1 3/2/2015 <https://e9radar.link/nye>
 Direct Testimony of Jeffrey W. Cummings, Westar Energy
 EDGR Summary; from Exhibit JC-1; p. 11 of pdf lists Capex plan and benefit profile, does not separate AMI out

Document: Order 9/24/2015 <https://e9radar.link/dv5u>
 Order Approving Stipulation and Agreement
 P. 15 allows establishment of regulatory asset of meters

Document: Testimony 3/2/2015 <https://e9radar.link/10g>
Direct Testimony of Hal Jensen, Westar Energy
Discusses AMI and Community Solar projects; AMI benefits on p. 4

Document: Application 3/2/2015 <https://e9radar.link/dc4>
Joint Application
General application; discusses grid resiliency but does not elaborate on AMI

Proceeding:	Year	Type	url
Westar AMI Pilot Program <i>11-WSEE-610-ACT</i>	2011	Reference	https://e9radar.link/nedo

Description:

This docket explains Westar's initial AMI Pilot Program, SmartStar Lawrence. This project utilizes the \$19M DOE grant given to Westar, and includes grid investments beyond AMI. The docket notes that Westar had not yet made plans for system-wide deployment, and that this project would serve as a way to do research. This case was partially initiated by a settlement agreement in docket no. 07-WSEE-616-PRE.

Document: Application 3/2/2011 <https://e9radar.link/8yg>
Application
Explanation of program on p. 2, smart grid benefits p. 2-3, costs are on p. 4. P. 6 explains that full deployment is not in progress.

Proceeding:	Year	Type	url
Westar Application for Generation Facility <i>07-WSEE-616-PRE</i>	2007	Reference	https://e9radar.link/dgj2

Description:

In 2006, Westar filed for approval of an investment in a new generation facility. In May 2007, Westar and parties filed a settlement agreement which included requiring Westar to implement a Real Time Pricing pilot. This case does not mention any complementary AMI infrastructure.

Document: Order 6/11/2007 <https://e9radar.link/2ca>
Order Approving Stipulation and Agreement

Document: Settlement 5/1/2007 <https://e9radar.link/jo0>
Joint Motion for an Order Approving Stipulation and Agreement

P. 3 lists real-time pricing pilot

Proceeding:	Year	Type	url
Investigation into Smart Meters <i>07-GIME-116-GIV</i>	2006	Reference	https://e9radar.link/npgr

Description:

In 2006, the commission opened this investigation to explore general issues of advanced metering infrastructure, as mandated by federal policies. In 2007, the commission determined that it was not wise to mandate fully scale deployment, and that pilot programs should be implemented by utilities instead.

Document: Order 8/8/2007 <https://e9radar.link/1tn>

Order Adopting Report and Recommendation and Closing Docket

P. 8 cites that all parties (utilities) agree that smart meters should not be mandatory, p. 11 rejects any new standards or policies.

Utility / Holding Company						Analysis
Kansas Gas & Electric Co Energy						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$1.0	Integrated	2014		<input checked="" type="checkbox"/>	<input type="checkbox"/>	288,656

Summary See Westar Energy for details.

Proceeding:	Year	Type	url
Investigation of Digital Electric Meters <i>19-GIME-012-GIE</i>	2018	Opt-Out	https://e9radar.link/c9iu3

Description:

This case was opened in response to several formal complaints against Kansas City Power & Light Company, Westar Energy, Inc. and Kansas Gas and Electric Company. Complaints primarily concerned AMI opt-out policies and procedures. Additionally, this proceeding reviewed installation costs associated with meter types and billing strategies, operating costs, and the economies of scale on the costs of an opt-out program. This case determined that a mandatory opt-out program was not necessary for the state of Kansas.

Document: KCP&L Comments 1/18/2019 <https://e9radar.link/gpq>

Kansas City Power & Light Company And Westar Energy, Inc. Initial Comments

KCP&L/Westar AMI summary on p. 4. Lists AMI benefits on p. 5; p. 5 also has a summary chart of deployment (all utilities around 90% in 2019)

Document: Order 3/14/2019 <https://e9radar.link/p0zv>

Order Closing General Investigation

P. 6 summarizes major utility's recommendation for installation and operating costs. P. 3 lists initial response comments from utilities.

Document: Order 7/24/2018 <https://e9radar.link/odc2>

Order Opening General Investigation

Investigation topics listed on p. 3

Utility / Holding Company

Analysis

Kansas City Power & Light Co Evergy

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$0.8	Integrated	2015	• •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	236,744

Summary KCP&L first deployed 14,000 meters as part of its SGIG demonstration project in June 2011. In 2014, KCP&L included AMI in its 2015 rate case, which proposed the inclusion of AMI costs in its base rates. No other AMI deployment dockets were cited. The company described AMI as a necessary infrastructure upgrade that enables demand-management programs. In KCP&L's Missouri-filed 2015 IRP, the parent company confirmed 100% deployment in KCP&L by 2016 as part of its demand-side resource plan.

Notable Resources:

Expansion Article: <https://e9radar.link/1g84>

SGIG: <https://e9radar.link/a57v>

Proceeding:	Year	Type	url
Investigation of Digital Electric Meters 19-GIME-012-GIE	2018	Opt-Out	https://e9radar.link/c9iu3

Description:

This case was opened in response to several formal complaints against Kansas City Power & Light Company, Westar Energy, Inc. and Kansas Gas and Electric Company. Complaints primarily concerned AMI opt-out policies and procedures. Additionally, this proceeding reviewed installation costs associated with meter types and billing strategies, operating costs, and the economies of scale on the costs of an opt-out program. This case determined that a mandatory opt-out program was not necessary for the state of Kansas.

Document: KCP&L Comments 1/18/2019 <https://e9radar.link/gpq>

Kansas City Power & Light Company And Westar Energy, Inc. Initial Comments

KCP&L/Westar AMI summary on p. 4. Lists AMI benefits on p. 5; p. 5 also has a summary chart of deployment (all utilities around 90% in 2019)

Document: Order 3/14/2019 <https://e9radar.link/p0zv>

Order Closing General Investigation

P. 6 summarizes major utility's recommendation for installation and operating costs. P. 3 lists initial response comments from utilities.

Document: Order 7/24/2018 <https://e9radar.link/odc2>

Order Opening General Investigation

Investigation topics listed on p. 3

Proceeding:	Year	Type	url
KCP&L Smart Meter Complaints <i>15-WSEE-211-COM</i>	2014	Reference	https://e9radar.link/mmws

Description:

This docket houses several AML-related complaints against Kansas utilities. Complaints primarily concern fire and health hazards. The Commission ordered annual reports of KCP&L and Westar fires, and development of an opt-out program.

Document: **Order** 4/5/2018 <https://e9radar.link/ych2>

Order on Smart Meter Complaints

P. 17 summarizes Commission order

Proceeding:	Year	Type	url
Investigation into Smart Meters <i>07-GIME-116-GIV</i>	2006	Reference	https://e9radar.link/npgr

Description:

In 2006, the commission opened this investigation to explore general issues of advanced metering infrastructure, as mandated by federal policies. In 2007, the commission determined that it was not wise to mandate fully scale deployment, and that pilot programs should be implemented by utilities instead.

Document: **Order** 8/8/2007 <https://e9radar.link/1tn>

Order Adopting Report and Recommendation and Closing Docket

P. 8 cites that all parties (utilities) agree that smart meters should not be mandatory, p. 11 rejects any new standards or policies.

State Summary

KY

In 2006, the Kentucky PSC first considered whether to adopt federal standards set forth in the Energy Policy Act of 2005. The act addressed a number of issues, including whether utilities should be required to offer optional rates that varied with the time of day, as well as the necessary advanced meters. The commission again addressed AMI as part of its October 2012 proceeding to consider the implementation of smart grid technologies and dynamic pricing. Per the April 2016 final order, the commission determined it was best to allow the utilities flexibility in deciding how to deploy smart grid technologies, deciding against adopting uniform standards for smart grid investments and the types of information to be provided. Additionally, the order required the utilities to develop and maintain internal privacy and cybersecurity procedures; decided against mandating dynamic pricing for residential customers; encouraged the utilities to provide customers with detailed usage information; required utilities to develop future smart grid investment plans; and permitted the utilities to set opt-out policies for AMI. The Kentucky Public Service commission requires utilities to file for a Certificate of Public Convenience and Necessity (CPCN) before making significant investments that impact customer rates. Seventy percent of the states customers served by cooperative and municipal utilities in Kentucky are served by AMI. Duke Energy Kentucky received full AMI deployment approval in January 2019.

Notable Resources:

Utility Dive: <http://bit.ly/2KlsKlr>

SB121: <https://e9radar.link/175cd>

Utility / Holding Company

Analysis

Kentucky Utilities PPL						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$1.5	Integrated	2018		<input type="checkbox"/>	<input checked="" type="checkbox"/>	2,509

Summary As part of Kentucky Utilities (KU) and Louisville Gas & Electric (LG&E)'s joint 2014 DSM-EE program, each company deployed 5,000 AMS meters as a voluntary pilot program. Following the pilot, LG&E independently proposed AMS deployment as part of its November 2016 rate case. In April 2017, LG&E and KU signed a stipulation in the rate case which withdrew the AMS CPCN; established an AMS collaborative; and approved the joint DA project. Criticism of the AMS program questioned the benefit calculations, analysis periods and customer engagement projections. The stipulation was formally accepted in June 2017. In 2018, KU and LG&E jointly proposed full AMS deployment to replace 531,000 electric meters at a cost of \$146M. In August 2018, the commission denied the application, citing concerns about the existing meters obsolescence and the net benefits that might result in "wasteful duplication."

Notable Resources:

Order: <https://e9radar.link/86a04>

Application: <https://e9radar.link/a192f>

Proceeding:	Year	Type	url
KU and LGE AMI 2018-00005	2018	AMI Proposal	https://e9radar.link/zspg

Description:

In January 2018, LG&E and KU filed a request for full AMS deployment, requesting to replace 944,000 electric meters at a cost of \$383M (NPV). The companies projected that over the estimated 20-year life of the fully deployed AMS system, the companies and their customers would receive net benefits of \$483M nominal dollars (\$28.5 million NPV to 2018), with a completed deployment by January 2021. In August 2018, the commission denied the application stating that the companies did not demonstrate that the current meters were obsolete and that the benefits of the proposal did not outweigh the costs. Per the order, the commission reports that the companies failed to present sufficient evidence to demonstrate that the AMS proposal would not result in "wasteful duplication," as the remaining service lives of LG&E's and KU's electric meters were 17.4 years and 15.4 years, respectively. Accounting for \$16.7M and \$36.2M in undepreciated book value.

Document: Application 1/10/2018 <https://e9radar.link/a192f>

LG&E and KU Testimony and Exhibits

P. 2 begins description of AMS benefits and other details; p.15 shows CBA summary. P. 37 of pdf, Exhibit JPM-1, includes detailed business case and communications plans

Document: Order 8/30/2018 <https://e9radar.link/86a04>

PSC Final Order

Order

Utility / Holding Company							Analysis
Louisville Gas & Electric PPL							Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend			AMI Meters
\$1.1	Integrated	2018	• • •	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>			4,493

Summary See Kentucky Utilities for details.

Notable Resources:

Application: <https://e9radar.link/a192f>

Order: <https://e9radar.link/86a04>

Proceeding:	Year	Type	url
KU and LGE AMI 2018-00005	2018	AMI Proposal	https://e9radar.link/zspg

Description:

In January 2018, LG&E and KU filed a request for full AMS deployment, requesting to replace 944,000 electric meters at a cost of \$383M (NPV). The companies projected that over the estimated 20-year life of the fully deployed AMS system, the companies and their customers would receive net benefits of \$483M nominal dollars (\$28.5 million NPV to 2018), with a completed deployment by January 2021. In August 2018, the commission denied the application stating that the companies did not demonstrate that the current meters were obsolete and that the benefits of the proposal did not outweigh the costs. Per the order, the commission reports that the companies failed to present sufficient evidence to demonstrate that the AMS proposal would not result in "wasteful duplication," as the remaining service lives of LG&E's and KU's electric meters were 17.4 years and 15.4 years, respectively. Accounting for \$16.7M and \$36.2M in undepreciated book value.

Document: Application 1/10/2018 <https://e9radar.link/a192f>

LG&E and KU Testimony and Exhibits

P. 2 begins description of AMS benefits and other details; p.15 shows CBA summary. P. 37 of pdf, Exhibit JPM-1, includes detailed business case and communications plans

Document: Order 8/30/2018 <https://e9radar.link/86a04>

PSC Final Order

Order

Proceeding:	Year	Type	url
LG&E 2016 Rate Case 2016-00371	2016	AMI Proposal	http://e9radar.link/9b6l

Description:

Louisville Gas & Electric filed an application for full deployment of advanced metering systems as part of its 2016 rate case. LG&E proposed to replace 418,000 electric meters at the estimated capital cost of \$119.0M, also requesting that its customers pay for the unrecovered costs of existing meters. In June 2017, the commission issued an order denying the originally proposed rates and approving the stipulations as LG&E removed AMS cost recovery. In April 2017, LG&E and other stakeholders reached the first stipulation agreement, which agreed to remove the AMS CPCN from the request. This stipulation, along with the second stipulation that addressed the pole and structure tariffs, were approved in the June 2017 order.

Document: Application 11/23/2016 <https://e9radar.link/twnd>

Louisville Gas And Electric Company's Application For Authority To Adjust Electric And Gas Rates And For Certificates Of Public Convenience And Necessity

P. 9 describes AMS deployment

Document: Testimony

11/23/2016

<https://e9radar.link/8oz0>

LG&E Testimony and Exhibits for: Malloy, Bellar, Conroy, Seelye, Garrett, and Spanos

P. 31 includes AMS Business Case, P. 236 of pdf starts relevant Conroy testimony, p. 273 of pdf details CPCN requests

Utility / Holding Company**Analysis****Duke Energy Kentucky** Duke

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$0.3	Integrated	2016	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	59,059

Summary In April 2016, Duke Energy Kentucky proposed AMI through a metering upgrade program for its electric and combination customers, proposing to install electric AMI meters at an estimated cost of \$49M. Per a December 2016 stipulation, Duke committed to allowing its customers to have access to their own usage information through its web portal as part of the AMI project, as well as offering opt-out tariffs. The commission approved the stipulation and proposal in May 2017.

Notable Resources:

Order: <https://e9radar.link/c54ad>

CBA Testimony: <https://e9radar.link/33b19>

Proceeding:

	Year	Type	url
Duke Kentucky AMI Modernization	2016	AMI Proposal	http://e9radar.link/3hxo2016-00152

Description:

In April 2016, Duke Energy Kentucky petitioned for extended AMI deployment, following lessons learned from a 2006 pilot project. Duke requested to install approximately 143,000 electric AMI meters. Duke described issues with its current electromechanical meters. Duke and the Attorney General reached a stipulation agreement in December 2016 which established an amortization period of 15 years, required Duke to track benefits and make adjustments, required the filing of a peak time rebate pilot, and create an opt-out program (for customers who request removal after installation, \$100 setup and \$25 monthly charge). Duke also agreed to deliver annual reports and develop CBAs for future grid investments.

Document: Testimony

4/25/2016

<https://e9radar.link/yopy>

Exhibit 8

P. 90 of pdf contains business case summary (some details redacted, see p. 89). P. 5-6 describes AMI history and benefits, p. 12-13 lists more benefits, also has DOE and EIE 2014 smart meter reports

Document: Order

5/25/2017

<https://e9radar.link/8v3m>

PSC Order

Order approving stipulation

Document: Application

4/25/2016

<https://e9radar.link/jd0k>

The Application of Duke Energy Kentucky, Inc., for (1) a Certificate of Public Convenience and Necessity Authorizing the Construction of an Advanced Metering Case No. 2016-00152 Infrastructure; (2) Request for Accounting Treatment; and (3) All Other Necessary Waivers, Approvals, and Relief.

P. 9-10 list number of meters and timeline, estimated costs

Document: Exhibit

4/25/2016

<https://e9radar.link/pemn>

Exhibit 1

P. 11 and 19 show Itron smart meter models

State Summary

LA

The commission expressed support for AMI in an April 2007 rulemaking, but determined that deployment of advanced meters and demand response programs should be executed on a voluntary basis unless ordered by the commission. The ruling determined minimum technology requirements, application needs, and biannual reporting requirements.

Utility / Holding Company

Analysis

Entergy Louisiana Entergy						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$3.7	Integrated	2016	• • •	<input checked="" type="checkbox"/>	<input type="checkbox"/>	11,684

Summary Entergy Louisiana filed a petition for a full, three-year deployment of an AMS system and accompanying technology in November 2016. The application was approved in August 2017.

Proceeding:	Year	Type	url
Entergy AMI Program U-34320	2016	AMI Proposal	https://e9radar.link/58fc2

Description:

Entergy Louisiana proposes an AMS system with advanced electric and gas meters, a communications network, and related supporting systems, including MDMS and a new DMS. Using a 15-year useful life, Entergy estimated \$190M in net benefits to its customers through the implementation of an AMS system. In August 2017, the Louisiana commission accepted the stipulation agreement and approved the AMS deployment.

Document: Testimony (BCA) 11/22/2016 <https://e9radar.link/kh9g>

Direct Testimony of Jay A. Lewis on behalf of Entergy Louisiana, LLC

Lewis testimony contains BCA summary on p. 9, explains other ways of quantifying AMS

Document: Order Approving 8/25/2017 <https://e9radar.link/mm0y>

Utility Order for Entergy Louisiana, LLC, ex parte

Confirms acceptance of an uncontested stipulation

Document: Stipulation 7/14/2017 <https://e9radar.link/2h5t>

Report of Proceedings and Submission of Stipulation for Consideration by Commissioners issued by ALJ Steve Kabel.

Stipulation begins p. 7, tech qualifications on p. 8-10

Document: Testimony 11/22/2016 <https://e9radar.link/iuei>

Direct Testimony of Dennis P. Dawsey on behalf of Entergy Louisiana, LLC

Dawsey testimony describes AMS benefits, especially for customer service. p. 21 lists qualitative benefits

Document: Testimony 11/22/2016 <https://e9radar.link/p2r9>

Direct Testimony of Rodney W. Griffith on behalf of Entergy Louisiana, LLC

Griffith testimony gives more details into AMS deployment

Document: Application 11/22/2016 <http://e9radar.link/yse4>

Application of Entergy Louisiana, LLC for Approval to Implement a Permanent Advanced Metering System, Request for Cost Recovery and Related Relief

P. 7 explains technology included in proposal, p. 10 describes benefit categories, CBA summary p. 12

Utility / Holding Company						Analysis
Entergy New Orleans Inc Entergy						Summary
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$0.6	Integrated	2017		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		3,986

Summary In 2009, Entergy New Orleans (ENO) was awarded a \$4.8M SGIG to support an AMI pilot which included 4,700 smart meters, smart devices, and a web portal. In May 2017, ENO filed an application with the New Orleans City Council to deploy gas and electric AMI, defer costs, establish regulatory treatment, approve an opt-out program, and develop other project aspects. The project was estimated to cost \$76.6M, executed in three phases from 2018-2020. In January 2018, ENO and council advisors filed a stipulated settlement and term sheet, which was approved in February 2018.

Notable Resources:

Testimony:

Testimony:

Docket Summary:

SGIG Report:

Proceeding:	Year	Type	url
Entergy AMI Program U-34320	2016	AMI Proposal	https://e9radar.link/58fc2

Description:

Entergy Louisiana proposes an AMS system with advanced electric and gas meters, a communications network, and related supporting systems, including MDMS and a new DMS. Using a 15-year useful life, Entergy estimated \$190M in net benefits to its customers through the implementation of an AMS system. In August 2017, the Louisiana commission accepted the stipulation agreement and approved the AMS deployment.

Document: Testimony (BCA) 11/22/2016 <https://e9radar.link/kh9g>

Direct Testimony of Jay A. Lewis on behalf of Entergy Louisiana, LLC

Lewis testimony contains BCA summary on p. 9, explains other ways of quantifying AMS

Document: Order Approving 8/25/2017 <https://e9radar.link/mm0y>

Utility Order for Entergy Louisiana, LLC, ex parte

Confirms acceptance of an uncontested stipulation

- Document: Stipulation** 7/14/2017 <https://e9radar.link/2h5t>
Report of Proceedings and Submission of Stipulation for Consideration by Commissioners issued by ALJ Steve Kabel.
Stipulation begins p. 7, tech qualifications on p. 8-10
- Document: Testimony** 11/22/2016 <https://e9radar.link/iuei>
Direct Testimony of Dennis P. Dawsey on behalf of Entergy Louisiana, LLC
Dawsey testimony describes AMS benefits, especially for customer service. p. 21 lists qualitative benefits
- Document: Testimony** 11/22/2016 <https://e9radar.link/p2r9>
Direct Testimony of Rodney W. Griffith on behalf of Entergy Louisiana, LLC
Griffith testimony gives more details into AMS deployment
- Document: Application** 11/22/2016 <http://e9radar.link/yse4>
Application of Entergy Louisiana, LLC for Approval to Implement a Permanent Advanced Metering System, Request for Cost Recovery and Related Relief
P. 7 explains technology included in proposal, p. 10 describes benefit categories, CBA summary p. 12

State Summary

MA

The Massachusetts Department of Public Utilities (DPU) opened an investigative case on smart grid development in 2012. Through this case, the DPU ordered Massachusetts' IOUs to file grid modernization plans and budgets no later than August 2015. Analysis of the plans and stakeholder meetings continued for more than two years. In May 2018, DPU rejected the AMI portion of three mandated-grid modernization proposals, citing "weaknesses in the business case for advanced metering functionality, issues with customer data, billing limitations, and uncertainty of customer participation." The DPU refined its statewide grid modernization objectives to place additional focus on distributed energy resources and a three-year evaluation of AMI projects. DPU noted that it does not want to abandon AMI initiatives, and that current AMR technology provides adequate benefits. DPU encouraged the utilities to re-submit proposals when the business case was stronger.

Notable Resources:

Utility Dive: <http://bit.ly/2Kkc9lj>

Utility Dive: <http://bit.ly/2KikH8R>

Utility / Holding Company

Analysis

NSTAR Electric Company Eversource

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$2.9	Restructured	2015		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Summary In August 2015 Western Massachusetts Electric and NSTAR Electric Co. (Eversource) proposed an opt-in AMI program bundled with major technology upgrades and activation of TVR pricing. The model assumed a 5% opt-in participation rate. Grid-facing investments were approved in the May 2018 order, but the opt-in AMI program was rejected. The Eversource grid modernization plan was criticized by stakeholders and the DPU for rolling \$400M of its grid improvements into its rate case. Additionally, the commission cited concerns citing concerns with the legacy AMR system, billing system capabilities, data-sharing plans, and ability to realize dynamic rate benefits.

Proceeding:	Year	Type	url
Eversource Grid Modernization Plan 15-122	2015	AMI Proposal	https://e9radar.link/caf03

Description:

In August 2015, Eversource proposed its Grid Modernization Plan. The plan included an opt-in AMI program for customers who want time-varying rates, which it estimated might include 5% of the customers. This opt-in program was denied in May 2018 along with the denial of Unitil and National Grid's AMI plans. Grid-facing portions of the plan were approved.

Document: Proposal

8/19/2015

<https://e9radar.link/v7e>

Petition for Approval of a Grid Modernization Plan

P. 117-123 of app describes business case; p. 122 summarizes CBA. P. 85 details opt-in costs, p. 87 explains costs of full rollout and why it is not feasible. P. 95 elaborates on rejection of full deployment. P. 19 details project costs and is followed by specific technology project descriptions. P. 98 explains communications specs. P. 114 explains stakeholder engagement. Full Navigant CBA report in Appendix 7, analysis results on p. 229 of pdf.

Document: Order

5/10/2018

<https://e9radar.link/vhq>

Order. By Chairman O'Connor, Commissioners Hayden and Fraser

DPU rejected the customer-facing (AMI) portions of the companies' investments but approved the grid-facing portions (voltage reduction, distribution automation).

Utility / Holding Company

Analysis

Massachusetts Electric National Grid

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$2.3	Restructured	2015	• • •	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	15,467

Summary In compliance with Section 85 of the Green Communities Act, Massachusetts Electric (dba National Grid) filed for a smart grid pilot program in December 2011 which contained smart meters. In August 2015, National Grid filed their Grid Modernization Plan (GMP), which included investments in AMI, SCADA, advanced distribution automation, and voltage management. In May 2018, the DPU issued an order denying the AMI portion of National Grid, Unitil, and Eversource's plans, though grid-facing improvements were approved. DPU cited concerns with unrealistic benefit predictions, but expressed openness to AMI with further study. Other stakeholders noted that Massachusetts EDCs already have automated meter reading devices, which eliminated meter-reading benefits (typically a large portion of AMI benefits), in addition to concerns about TVR benefits and billing capabilities.

Proceeding:

	Year	Type	url
National Grid Grid Modernization Plan 15-120	2015	AMI Proposal	https://e9radar.link/9f3af

Description:

In August 2015, National Grid (NG) filed their Grid Modernization Plan, which includes investments in AMI (1.3M customers), communications, distribution control systems and SCADA, advanced distribution automation, voltage management, feeder monitors, and other associated infrastructure (e.g. load control switches, smart thermostats, etc.). NG proposed four scenarios for their grid modernization, with costs ranging from \$74M to \$369M. The NG application and methodology was very detailed. In May 2018, the DPU issued an order denying the AMI portion of NG, Unitil, and Eversource's plans, though grid-facing improvements were approved.

Document: Order

5/10/2018

<https://e9radar.link/h73>

Order. By Chairman O'Connor, Commissioners Hayden and Fraser

Denies AMI deployment but approves grid-facing investments for 3 MA utilities; refines MA grid law; NG case summarized p. 14; discussion of NG's case as a foundational case p. 50, arguing AMR already provides benefits

Document: Application

8/19/2015

<https://e9radar.link/vkm>

Grid Modernization Plan

Initial application with business case; p. 11 and 12 cost and benefits, p. 114 summary, AMI benefits p. 40-43, short term benefits p.99-113, CBA methodology p. 107

Document:	Report	5/1/2019	https://e9radar.link/jss
	Grid Modernization Plan Annual Report 2018		
	2018 Report on Grid Modernization implementation		
Document:	Business Case (2 of 4)	8/19/2015	https://e9radar.link/3kh
	Business Case Summary Template (for AMI-focused plan)		
	Cost/benefit calculations in Business Case Template, in Excel format, for the AMI-focused deployment plan		
Document:	Business Case (1 of 4)	8/19/2015	https://e9radar.link/j3k
	Business Case Summary Template (for Balanced plan)		
	Cost/benefit calculations in Business Case Template, in Excel format, for the Balanced deployment plan		

Utility / Holding Company						Analysis
Western Massachusetts Electric Eversource						Detailed AMI Meters
\$B	Class	Year	ben/cost/net	app./deny/set/pend		
	Restructured	2015		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		

Summary See NSTAR Electric company for details.

Proceeding:	Year	Type	url
Eversource Grid Modernization Plan 15-122	2015	AMI Proposal	https://e9radar.link/caf03

Description:

In August 2015, Eversource proposed its Grid Modernization Plan. The plan included an opt-in AMI program for customers who want time-varying rates, which it estimated might include 5% of the customers. This opt-in program was denied in May 2018 along with the denial of Unitil and National Grid's AMI plans. Grid-facing portions of the plan were approved.

Document:	Proposal	8/19/2015	https://e9radar.link/v7e
	Petition for Approval of a Grid Modernization Plan		
	P. 117-123 of app describes business case; p. 122 summarizes CBA. P. 85 details opt-in costs, p. 87 explains costs of full rollout and why it is not feasible. P. 95 elaborates on rejection of full deployment. P. 19 details project costs and is followed by specific technology project descriptions. P. 98 explains communications specs. P. 114 explains stakeholder engagement. Full Navigant CBA report in Appendix 7, analysis results on p. 229 of pdf.		

Document:	Order	5/10/2018	https://e9radar.link/vhq
	Order. By Chairman O'Connor, Commissioners Hayden and Fraser		
	DPU rejected the customer-facing (AMI) portions of the companies' investments but approved the grid-facing portions (voltage reduction, distribution automation).		

State Summary

MD

In 2008, Maryland passed the EmPOWER Maryland Energy Efficiency Act, which set a target reduction of 15% in per capita energy consumption and demand by 2015 and provided \$290M to efficiency and conservation projects over the 2009-2015 period. In 2015, this initiative was renewed to 25% reduction by 2020. This policy provided incentive to utilities to manage demand through AMI. Though there are no other AMI-specific requirements, a September 2007 order in an investigative case established minimum requirements for any proposal to implement an AMI system, including the utilization of four cost-effective methodologies. The Maryland PSC requested customer engagement and communications plans, incorporation of in-home devices into costs, further analysis of rate cases in all AMI proposals. The PSC also approved mandatory opt-out policies in 2013, setting a standard of a \$77 one-time fee and \$11-17 monthly fee, depending on the utility. In September 2016, the PSC initiated a public conference to review distribution system planning, including AMI, rate design, renewable energy, DER, and other topics.

Notable Resources:

State AMI Website: <https://e9radar.link/qx3v>

EmPOWER Initiative: <https://e9radar.link/pjkz>

Utility / Holding Company

Analysis

Baltimore Gas & Electric Exelon

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$2.1	Restructured	2009	• •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1,272,169

Summary In January 2007, Baltimore Gas & Electric (BG&E) filed their Smart Energy Savers Program (SESP), which included AMI and smart energy pricing pilots. In July 2009, BG&E filed an application to deploy AMI and other smart grid initiatives as a follow-up to the SESP. As the case was in process, BG&E received a \$200M grant from the DOE for the Smart Grid Initiative. In June 2010, the commission rejected BGE's proposal and outlined four conditions for a revised proposal, noting concerns with smart grid technology, calculated benefits and missing costs. BG&E's application for rehearing the following month modified cost recovery, additional costs, projected benefits, meter lifetime, and more. The case was approved in August 2010.

Proceeding:

	Year	Type	url
BG&E Smart Grid Initiative and Cost Recovery 9208	2009	AMI Proposal	http://e9radar.link/2rw6

Description:

This case follows up on BGE's initial Smart Energy Savers Program, started in January 2007, which included two AMI pilots. In July 2009, BGE filed a proposal in this docket for AMI deployment and Smart Energy Pricing (SEP). BGE also received a \$200M SGIG in 2009. In August 2010, BGE filed a revised application in response to commission requests, which included a customer communication plan. After getting the project approved, BGE filed a metrics reporting plan, which required quarterly updates to be filed in this proceeding. Opt-out procedures were also filed in this case following project approval.

- Document: Testimony** 7/19/2010 <https://e9radar.link/eund>
Baltimore Gas and Electric Company - Testimony of Mark D. Case in Support of Application for Rehearing. Case No. 9208. (ML 124245)
Testimony of Mark Case summarizes application and business case changes, including adjustment of benefits, TOU rates, etc. P. 28 shows update BCA summary table, p. 22-23 explains customer benefits, p. 15 begins to discuss technology
- Document: Application (Initial)** 7/13/2009 <https://e9radar.link/3a5s>
Baltimore Gas and Electric Company - an Application for Authorization to Deploy a Smart Grid Initiative and to Establish a Surcharge Mechanism for the Recovery of Costs as well as the testimonies of Company Witnesses Mark D. Case, Michael B. Butts, David M. Vahos, Jason M.B. Manuel and the testimony of Dr. Ahmad Faruqui of the Brattle Group.
Testimony of David Vahos, p. 103 of pdf, describes the business case and benefits; p. 109 shows a summary table of benefits/costs. P. 134 of pdf (Exhibit DMV-1) contains "The Smart Grid Initiative Business Case" and associated costs, benefits, deployment time, etc. Benefits described on p. 141 of pdf.
- Document: Dynamic Pricing** 3/15/2012 <https://e9radar.link/xbdc>
Dynamic Pricing Working Group Report
Working Group report files on dynamic pricing; useful for cost recovery analyses
- Document: Order** 8/13/2010 <https://e9radar.link/art>
The Commission- Order No. 83531 (ML 124808)
Approving BGE AMI. P. 8 details cost recovery mechanism
- Document: Application (Revised)** 7/12/2010 <https://e9radar.link/rjo5>
Baltimore Gas and Electric Company - its Application for Rehearing. Case No. 9208. (ML 124140)
P. 2 discusses criticism of the business case
- Document: Order** 6/22/2010 <https://e9radar.link/sq2q>
The Commission- Order No. 83410 (ML 123835)
Initially denying BGE proposal

Utility / Holding Company

Analysis

Potomac Electric Power Exelon

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AM Meters
\$1.3	Restructured	2007	• •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	555,443

Summary Potomac Electric Power Co. (Pepco) filed its AMI plan jointly with Delmarva in Maryland, together as Pepco Holdings Inc. (PHI) companies. Pepco's 2007 Blueprint for the Future plan proposed a demand response, advanced metering and energy efficiency plan, though this case did not include an AMI timeline or business case. Pepco requested an expedited ruling to aid its application for the DOE Smart Grid Investment Grant program. DOE later awarded Pepco \$104.8M, \$68.3M of which was allocated to AMI. A subsequent case was opened to consider establishment of a regulatory asset, which was initially rejected. The commission approved the AMI deployment and future cost recovery, pending a re-filing of the business case with a ten-year post-deployment life.

Proceeding:	Year	Type	url
Pepco 2017 Rate Case 9443	2017	Cost Recovery	https://goo.gl/jzZ1MK

Description:

In Pepco's 2017 rate case, Pepco requests an increase of \$68.6M in its distribution rates. Pepco cites major distribution infrastructure upgrades as the primary driver of this rate case. Within this rate increase, it allocates \$3.3M to deferred AMI costs not recovered in the last base rate case.

Document: Application 3/24/2017 <https://e9radar.link/77hk>

Potomac Electric Power Company - an Application for Adjustments to its Retail Rates for the Distribution of Electric Energy and supporting testimony and schedules. Case No. 9443. (ML 214171)

P. 30 of Vol. I discusses the AMI program

Proceeding:	Year	Type	url
Pepco 2016 Rate Case 9418	2016	Cost Recovery	http://e9radar.link/2a2b

Description:

In April 2016, Potomac Electric Power Company (Pepco) filed for a \$126M general rate increase (\$15.80 per month for the average residential customer) and a 10.6% return on equity (ROE). A key part of the rate request was the recovery of their AMI deployment, which was deferred until they could demonstrate that AMI was cost-effective.

Document: Decision 11/15/2016 <https://e9radar.link/4c18f>

Order No. 87884 Case No. 9418.

P. 11 describes AMI proposal and other involved cases, business case listed on p. 16

Document: Application 4/19/2016 <https://e9radar.link/c7au>

2016 Pepco MD Rate Case Application Direct Testimony and Exhibits Vol I of II

Witness McGowen provides insight into AMI plan/costs, esp. on p. 16 of pdf, Witness Lefkowitz provides cost effectiveness starting on p. 76 of pdf

Proceeding:	Year	Type	url
Pepco & Delmarva AMI Deployment 9207	2009	AMI Proposal	http://e9radar.link/fzsb

Description:

This case was opened to request a regulatory asset for Pepco and Delmarva (together filing as Pepco Holdings Inc. or PHI)'s Blueprints for the Future. PHI requested regulatory assets as a prerequisite to their application for the DOE Smart Grid Investment Grant program. The Commission asked PHI to file a more comprehensive, detailed description of its AMI system in June 2009, and companies filed more-detailed plans. In August 2009, the Commission denied PHI's request. In September 2010, the Commission approved the companies' joint proposal to deploy AMI, establish regulatory assets, and develop dynamic pricing tariffs in principle. Delmarva's deployment, which had a lower cost-benefit ratio, was deferred while Pepco's was approved. This order also required the submission of an updated business case with fifteen-year and Commission-ordered ten year post-deployment project lives. Delmarva's case was conditionally approved in May 2012.

Document: Order (Delmarva) 5/8/2012 <https://e9radar.link/gigw>

The Commission- Order No. 84890 (ML 139145)

Approves Delmarva AMI, regulatory asset, development of critical peak rebate pricing. P. 18-20 summarizes Order, p. 7-10 describe the amended business case

Document: Order (Delmarva) 5/8/2012 <https://e9radar.link/gigw>

The Commission- Order No. 84890 (ML 139145)

Approves Delmarva AMI, regulatory asset, development of critical peak rebate pricing. P. 18-20 summarizes Order, p. 7-10 describe the amended business case

Document: Business Case (Del) 12/14/2010 <https://e9radar.link/6xnk>

Delmarva Power & Light Company - Advanced Metering Infrastructure Business Case and Associated Benefits to Costs Analysis for Maryland in Compliance with Order No. 83571. Case No. 9207 (ML 127365)

Updated business case as required by Commission Order No. 83571. P. 1-2 describes updates as ordered by the Commission, p. 3 provides updated business case

Document: Business Case (Del) 12/14/2010 <https://e9radar.link/6xnk>

Delmarva Power & Light Company - Advanced Metering Infrastructure Business Case and Associated Benefits to Costs Analysis for Maryland in Compliance with Order No. 83571. Case No. 9207 (ML 127365)

Updated business case as required by Commission Order No. 83571. P. 1-2 describes updates as ordered by the Commission, p. 3 provides updated business case

Document: Business Case (Pepco) 12/13/2010 <https://e9radar.link/to1g>

Potomac Electric Power Company - its Advanced Metering Infrastructure Business Case and Associated Benefits to Costs Analysis for Maryland in compliance with Commission Order No. 83571. Case No. 9207. (ML 127336)

Updated business case in response to Commission order 83571. P. 3 shows updated costs and benefits, including post-project costs and Smart Grid Investment Grant.

Document: Business Case (Pepco) 12/13/2010 <https://e9radar.link/to1g>

Potomac Electric Power Company - its Advanced Metering Infrastructure Business Case and Associated Benefits to Costs Analysis for Maryland in compliance with Commission Order No. 83571. Case No. 9207. (ML 127336)

Updated business case in response to Commission order 83571. P. 3 shows updated costs and benefits, including post-project costs and Smart Grid Investment Grant.

Document: Presentation 6/30/2009 <https://e9radar.link/yuvh>

Potomac Electric Power Company and Delmarva Power & Light Company - its Proprietary and Non-Proprietary versions of its supplemental information on the Deployment of AMI. Case No. 9207. (ML 117523)

Updated summary presentation of AMI benefits and costs, p. 14 (Delmarva) and 15 (Pepco), p. 30 describes technology

Document: Presentation 6/30/2009 <https://e9radar.link/yuvh>

Potomac Electric Power Company and Delmarva Power & Light Company - its Proprietary and Non-Proprietary versions of its supplemental information on the Deployment of AMI. Case No. 9207. (ML 117523)

Updated summary presentation of AMI benefits and costs, p. 14 (Delmarva) and 15 (Pepco), p. 30 describes technology

Document: Application Part II 3/26/2009 <https://e9radar.link/b87q>

Part II Pepco Business Case in Support of Blueprint

Pepco's initial AMI Business case lists energy delivery benefits on p. 11, customer savings from reduction benefits on p. 11, additional benefits on p. 22, costs to deploy on p. 25, and business case summaries from other utilities on p. 32. NPV tables shown on p. 64-69, though they are difficult to read.

Document: Application Part III 3/26/2009 <https://e9radar.link/c8ya>

Part III Delmarva Business Case in Support of Blueprint for the Future Application

Delmarva's initial AMI business case features the original business case on p. 10, p. 6 lists initial benefit categories, p. 12-17 details benefits, p. 24 describes 'additional' [qualitative] benefits, p. 27 explains costs

Document: Application Part II 3/26/2009 <https://e9radar.link/b87q>
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Document: Application Part III 3/26/2009 <https://e9radar.link/c8ya>
Part III Delmarva Business Case in Support of Blueprint for the Future Application

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Document: AMI Order 9/2/2010 <https://e9radar.link/qkh0>
The Commission - Order No. 83571 (ML 125236)

This order approves, in principle, AMI deployment but defers approval of Delmarva case. Shows the best summary of the line-item BCAs, p. 25 and 31, and the Commission Staff's own calculation of BCA ratio. P. 56 summarizes Order.

Document: AMI Order 9/2/2010 <https://e9radar.link/qkh0>
The Commission - Order No. 83571 (ML 125236)

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Document: Order (denial) 8/5/2009 <https://e9radar.link/lz69>
The Commission- Order No. 82824 (ML 118190)
Order denying the establishment of a regulatory asset

Document: Order (denial) 8/5/2009 <https://e9radar.link/lz69>
The Commission- Order No. 82824 (ML 118190)
Order denying the establishment of a regulatory asset

Document: Application Part I 3/26/2009 <https://e9radar.link/quyq>
Part I Pepco Business Case in Support of Blueprint

This section of the application explains the procedural history of the AMI proposal so far, esp. with regards to Case No. 9111

Document: Application Part I 3/26/2009 <https://e9radar.link/quyq>
Part I Pepco Business Case in Support of Blueprint

This section of the application explains the procedural history of the AMI proposal so far, esp. with regards to Case No. 9111

Utility / Holding Company

Analysis

Potomac Edison Company FirstEnergy

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
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\$0.5 Restructured

☐ ☐ ☐ ☐

Summary In the Potomac Edison Co. (PE)'s 2018 rate case, PE included a proposal for a Meter Ownership Rider opt-in program for customers which have a demand greater than 300 kW. The rate case was approved in March 2019.

Proceeding:

	Year	Type	url
Potomac 2018 Rate Case	2018	Cost Recovery	https://e9radar.link/uroi9490

Description:

In August 2018, the Potomac Edison Company (PE) filed its first base rate increase since 1994. The rate case requested \$19.2M for various programs, including a Meter Ownership Rider which allows customers to purchase Advanced Metering from the company or the meter vendor. The opt-in program was approved.

Document: Application Part I

8/24/2019

<https://e9radar.link/3yz>

Direct Testimony and Exhibits, Volume I

Generally explains rate case, p. 269 details opt-in advanced meter rates

Document: Application Part II

8/24/2018

<https://e9radar.link/fxs>

Direct Testimony and Exhibits, Volume I

Contains a second set of testimony, additional details

Utility / Holding Company

Analysis

Delmarva Power Exelon

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
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\$0.4 Restructured

2009

• •

☒ ☐ ☐ ☐

Summary Delmarva Power filed its AMI requests alongside Pepco, another Pepco Holdings Inc. (PHI) company. Delmarva's 2007 Blueprint for the Future plan proposed a demand response, advanced metering and energy efficiency plan, though this case did not include an AMI timeline or business case. In 2009, the PHI companies filed separate AMI proposals and business plans in a joint case. The commission's initial review of the Delmarva BCA determined that, without the federal grant Pepco received, operational savings did not offset the costs of deploying AMI. The commission also criticizes the lack of a customer education and communications program, and required an updated business case with a ten-year project life. In order to balance Delmarva's proposal and concerns of the low cost-benefit ratio, Delmarva was permitted to recover start-up costs, but that all other recovery must be presented in a rate case after demonstration of AMI cost-effectiveness.

Proceeding:	Year	Type	url
Pepco & Delmarva AMI Deployment 9207	2009	AMI Proposal	http://e9radar.link/fzsb

Description:

This case was opened to request a regulatory asset for Pepco and Delmarva (together filing as Pepco Holdings Inc. or PHI)'s Blueprints for the Future. PHI requested regulatory assets as a prerequisite to their application for the DOE Smart Grid Investment Grant program. The Commission asked PHI to file a more comprehensive, detailed description of its AMI system in June 2009, and companies filed more-detailed plans. In August 2009, the Commission denied PHI's request. In September 2010, the Commission approved the companies' joint proposal to deploy AMI, establish regulatory assets, and develop dynamic pricing tariffs in principle. Delmarva's deployment, which had a lower cost-benefit ratio, was deferred while Pepco's was approved. This order also required the submission of an updated business case with fifteen-year and Commission-ordered ten year post-deployment project lives. Delmarva's case was conditionally approved in May 2012.

Document: Order (Delmarva) 5/8/2012 <https://e9radar.link/gigw>

The Commission- Order No. 84890 (ML 139145)

Approves Delmarva AMI, regulatory asset, development of critical peak rebate pricing. P. 18-20 summarizes Order, p. 7-10 describe the amended business case

Document: Business Case (Del) 12/14/2010 <https://e9radar.link/6xnk>

Delmarva Power & Light Company - Advanced Metering Infrastructure Business Case and Associated Benefits to Costs Analysis for Maryland in Compliance with Order No. 83571. Case No. 9207 (ML 127365)

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Document: Business Case (Pepco) 12/13/2010 <https://e9radar.link/to1g>

Potomac Electric Power Company - its Advanced Metering Infrastructure Business Case and Associated Benefits to Costs Analysis for Maryland in compliance with Commission Order No. 83571. Case No. 9207. (ML 127336)

Updated business case in response to Commission order 83571. P. 3 shows updated costs and benefits, including post-project costs and Smart Grid Investment Grant.

Document: Presentation 6/30/2009 <https://e9radar.link/yuvh>

Potomac Electric Power Company and Delmarva Power & Light Company - its Proprietary and Non-Proprietary versions of its supplemental information on the Deployment of AMI. Case No. 9207. (ML 117523)

Updated summary presentation of AMI benefits and costs, p. 14 (Delmarva) and 15 (Pepco), p. 30 describes technology

Document: Application Part II 3/26/2009 <https://e9radar.link/b87q>
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Document: Application Part III 3/26/2009 <https://e9radar.link/c8ya>
Part III Delmarva Business Case in Support of Blueprint for the Future Application

Delmarva's initial AMI business case features the original business case on p. 10, p. 6 lists initial benefit categories, p. 12-17 details benefits, p. 24 describes 'additional' [qualitative] benefits, p. 27 explains costs

Document: AMI Order 9/2/2010 <https://e9radar.link/qkh0>
The Commission - Order No. 83571 (ML 125236)

This order approves, in principle, AMI deployment but defers approval of Delmarva case. Shows the best summary of the line-item BCAs, p. 25 and 31, and the Commission Staff's own calculation of BCA ratio. P. 56 summarizes Order.

Document: Order (denial) 8/5/2009 <https://e9radar.link/lz69>
The Commission- Order No. 82824 (ML 118190)
Order denying the establishment of a regulatory asset

Document: Application Part I 3/26/2009 <https://e9radar.link/quyq>
Part I Pepco Business Case in Support of Blueprint

This section of the application explains the procedural history of the AMI proposal so far, esp. with regards to Case No. 9111

State Summary

ME

Maine's 2010 Smart Grid Policy Act declared that the state government is responsible for the development, implementation, availability and use of smart grid functions, including electronic metering. The act also directed the Maine PUC to open a proceeding to determine if Maine should have more smart grid coordinators. This case examined eligibility, functions, exemptions, data access/collection, and the relationship of a smart grid coordinator to transmission and distribution utilities. Maine legislators addressed cybersecurity concerns through Legislative Decision 756 in 2011, which required the commission to address regulatory gaps between federal and state smart meter laws. In January 2012, the commission issued a report which recommended clearer utility proposals for the management of customer information through dynamic pricing programs. The independent organization Efficiency Maine was given statutory authority to use meter data for energy efficiency program analysis. Additionally, the commission mandated through a Central Maine Power Co. case that utilities provide opt-out options for customers.

Notable Resources:

Cybersecurity: <https://e9radar.link/k7ix>

State Brief: <https://e9radar.link/spv9>

Commission Report: <https://e9radar.link/c73y>

ME Energy Assurance Plan: <https://e9radar.link/d6ko>

Utility / Holding Company

Analysis

Central Maine Power Co Iberdrola

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$0.9	Restructured	2007		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	627,734

Summary In April 2007, Central Maine Power proposed a \$190M smart meter deployment project within its alternative rate plan revision case. The PUC issued a conditional order in July 2009 which approved AMI installation, contingent on recipient of a DOE grant. After the grant was finalized, CMP's business case was reconsidered, and in February 2010 the PUC approved deployment. Two cases were opened to house and address several smart meter complaints against CMP. In December 2014, the commission determined that smart meters are safe and consistent with federal and state policies. After several appeals, the Maine Supreme Court affirmed this decision. CMP completed its installment of 632,000 meters in 2012.

Notable Resources:

Audit Article: <https://e9radar.link/swlx>

AMI Report: <https://e9radar.link/6qxxw>

Proceeding:

	Year	Type	url
CMP AMI Opt-Out Update 2019-00044	2019	Opt-out	https://e9radar.link/32ffb

Description:

This docket was opened for CMP to negotiate AMI opt-out options for interested customers. The revision will allow CMP to install a solid state meter rather than an electro-mechanical meter, ranging from \$20-\$40 for the initial meter charge.

Document: Revision

2/28/2019

<https://e9radar.link/bz41>

CMP T&C Section 12 Filing

Proceeding:	Year	Type	url
CMP Alternative Rate Plan Revision 2007-00215	2007	AMI Proposal	

Description:

In this case, Central Maine Power petitioned to update its alternative rate plan, which was set to expire in December 2007. Its modifications included transmission and distribution upgrades and adjustments, which included a proposal for AMI deployment.

Document: Order (2nd Approval) 2/25/2010 <https://e9radar.link/qd3e>

Order Approving Installation of AMI Technology

Contains a summary of overall case, costs, and general benefits

Document: Presentation on AMI 5/23/2007 <https://e9radar.link/ztd4>

Powerpoint Presentation on AMI; Business Name: Central Maine Power

Powerpoint presentation to the MPUC to explain AMI. High-level benefits on p. 3 and 28

State Summary

MI

The Michigan Public Service commission formed a Smart Grid Collaborative in 2007 to consider standards for smart grid development, including AMI, dynamic pricing, and distribution automation pilot projects. In 2012, the MPSC opened up a docket to consider public and local government concerns about smart meters. The filing required the utilities to submit AMI plans with accompanying business cases, and a September 2012 order required opt-out policies and deferment of cybersecurity/data plans to general rate cases. In 2018, the MPSC required the state's two largest utilities, Consumers Energy and DTE Electric company, to file five-year distribution plans which address grid modernization, including solar, storage, and EV integration. The MPSC followed review of these plans with a report which outlines distribution grid issues and six objectives, including utilization of Green Button Connect standards for AMI.

Notable Resources:

2018 Report and Recommendations: <https://e9radar.link/wxga>

State Brief: <https://e9radar.link/t0ja>

Utility / Holding Company

Analysis

DTE Electric Company DTE							Detailed	
\$B	Class	Year	ben/cost/net		app./deny/set/pend		AMI Meters	
\$5.1	Integrated	2012	•	•	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	?

Summary Following a 2008 AMI pilot project, in 2010, Detroit Edison Electric Co (DTE) was awarded \$84M in SGIG funds (\$168M total project value) to deploy a network of 660,000 smart meters. DTE continued to expand its pilot program in its 2010 rate case, which approved AMI spending and requested a business case in future proceedings. In April 2012, the Court of Appeals ruled in favor of parties that filed appeals against the final order, ruling that inadequate AMI benefit evidence was presented. The commission reopened the case in September 2012, and after presentation of additional evidence, cost recovery for the pilot program was awarded in October 2013. DTE thereafter pursued AMI gradually; by late 2015, DTE had installed over 2.2M electric meters (approximately 50% of its territory), and in its 2016 rate case requested the final replacement of 938,000 meters over two years. The rate case was approved in December 2015. DTE filed an additional request in February 2016 to upgrade technology prior to AMI deployment, and in its 2019 rate case requested a provision to upgrade AMI communications from 3G to 4G.

Notable Resources:

EEL: <https://e9radar.link/j6z>

\$83.8M grant: <https://e9radar.link/5hv>

Proceeding:	Year	Type	url
DTE 2019 Rate Case <i>U-20561</i>	2019	Tech Upgrades	https://e9radar.link/zz06

Description:

In June 2019, DTE filed for a rate increase of \$351M for a variety of programs, including ADMS deployment. Included in the rate case is a brief background on AMI deployment and benefits, which was mostly complete in early 2019. The rate case also includes a provision to upgrade AMI communications from 3G to 4G (for a cost of \$30M), an AMI Industrial 4G communication upgrade, and AMI leveraged tools (PI, Analytics). As of April 2019, the company had installed over 2.6M electric meters, noting they were nearly 100% complete with AMI installation.

Document: Testimony 7/8/2019 <https://e9radar.link/347>

Testimony

Robinson testimony, p. 707 of pdf, details AMI plans, costs, and benefits, p. 774 of pdf provides details on current deployment

Document: Exhibits 7/8/2019 <https://e9radar.link/usy>

Exhibits

Exhibit A-19, p. 568 of pdf, shows a chart of AMI benefits

Proceeding:	Year	Type	url
DTE 2016 Rate Case <i>18014</i>	2016	Tech Upgrades	https://e9radar.link/e3wld

Description:

In February 2016, DTE filed for a rate increase that included upgrades to parts of its system which were necessary prior to deployment of AMI. In its application, DTE cites commission orders in other dockets that approved the company's AMI programs, and noted the provision of a full CBA for AMI deployment in this docket according to commission directive. DTE requested a total of \$344M to recover costs associated with generation and electric distribution system, O&M of electric distribution system and generation plants, inflation, and compliance.

Document: Testimony 2/1/2016 <https://e9radar.link/x41>

Testimony

Sitkauskas testimony focuses on AMI and begins on p.240 of pdf, discusses benefits on p. 244-247 of pdf, summarizes CBA on p. 252-257 of pdf

Document: Exhibit A-18 2/1/2016 <https://e9radar.link/yza>

Exhibit A-18

AMI cost/benefit financials

Document: Order 10/11/2017 <https://e9radar.link/1ge>

Order

Overviews the development of DTE's distribution plan

Document: Application 2/1/2016 <https://e9radar.link/zph>

Application

Document: Exhibit A-10

2/1/2016

<https://e9radar.link/p10>

Exhibit A-10

Projected O&M Expenses

Proceeding:	Year	Type	url
DTE Rate Increase 2009 U-15768	2015	Reference	https://e9radar.link/pvz7

Description:

In December 2008, in case no. U-14244, the commission approved capital expenditures related to the installation of a combined total of approximately 10,000 gas and electric meters on Grosse Ile as a pilot program. In January 2009, DTE filed its 2009 rate case, which expanded upon that program and discussed necessary costs. Upon approving the rate case and expanded pilot program in January 2011, the commission required the submission of an updated business case in the next rate case. The decision of the commission was later appealed by several groups, and the Court of Appeals declared that DTE submitted insufficient AMI benefit information in April 2012. After reopening the case and several rounds of evidence and testimony, the commission formally re-approved AMI pilot program cost recovery in October 2013.

Document: Testimony

1/9/2009

<https://e9radar.link/o5m>

Testimony

Dow testimony, p. 398 of pdf, discusses review of AMI from other companies and other costs

Utility / Holding Company

Analysis

Consumers Energy CMS

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$4.4	Integrated	2011	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1,823,628

Summary In 2007, Consumers Energy began creating the Balanced Energy Initiative as a 20-year energy planning vision. AMI was cited as a foundational technology for other smart grid applications and technologies. The company conducted its design phase from 2007-2008, followed by two early deployment programs in 2008-2009. The company's Smart Grid/AMI program was first proposed in a January 2010 rate case. In November 2010, the Michigan commission denied full AMI deployment, adopted eleven policy recommendations by staff, and encouraged Consumers to reapply in their next rate case. The policy recommendations included issues with cost recovery, pilot programs, and cost/benefit analyses. In June 2011, Consumers filed a new rate case which included implementation of Phase 2 of the Smart Grid/AMI project: full replacement of the company's 1.8M gas and electric meters and communication modules between from 2012-2019. The business case estimated \$38M in net benefits. The commission approved the request in June 2012. In June 2013, the Michigan PSC approved a separate Consumer Energy rate case which contained an opt-out program.

Notable Resources:

Article: <https://e9radar.link/ofyc>

Proceeding:	Year	Type	url
Consumers Energy 2014 Rate Case U-17087	2012	Opt-Out	https://e9radar.link/ea46d

Description:

In February 2012, Consumers Energy requested a rate increase of \$82.6M to cover a revenue deficiency. The rate case included recovery of AMI deployments and the provision of an opt-out option. In June 2012, the rate case and opt-out program were approved.

Document: Testimony 9/12/2012 <https://e9radar.link/9w95>

Testimony of Consumers Energy Company's Witnesses

Youngdahl testimony describes AMI program and benefits, starting on p. 483 of pdf

Proceeding:	Year	Type	url
Consumers Energy 2011 Rate Case U-16794	2011	AMI Proposal	https://e9radar.link/5f2e2

Description:

In June 2011, Consumers Energy filed a rate case to increase its revenue by \$195M. Many elements of this rate case mirror case no. U-16191 from 2010, which first proposed the Smart Grid/AMI program. The company noted that the deployment plan was updated, and that the new business case followed commission policy guidelines. The company described plans to invest over \$6B in Michigan in the next five year to maintain and improve grid infrastructure, which included a request for approval of its Smart Grid/AMI investment. The installment of AMI and communications infrastructure was described as Phase 2 of the Smart Grid/AMI program, and included the installment of 1.8M meters from 2012-2019. AMI was described as an enabling technology for modernization of the grid and addition of distribution system controls and devices. Consumers provided details on the AMI pilots and future plans. Net benefits over 15 years was estimated at \$38M NPV 2011 for electric and gas meter replacement. In June 2012, the commission acknowledged several adjustments to cost calculations and approved the program.

Document: Testimony 6/10/2011 <https://e9radar.link/knnk>

Testimony of Consumers Energy Company Witnesses

Trumble testimony addresses various parts of AMI. P. 333 describes business case, which is also contained in exhibit A-45 (MKT-3). P. 322 overviews the AMI program, p. 325-328 describes plan modifications. P. 87-88 of pdf describe cost recovery considerations

Document: Exhibits 6/10/2011 <https://e9radar.link/qhia>

Exhibits of Consumers Energy Company Witnesses

Contains AMI program descriptions and business cases in MKT exhibits. P. 415 of pdf (MKT-3) summarizes the business case. P. 408 of pdf describes Phase 1 and pilots.

Document: Final Order 6/7/2012 <https://e9radar.link/2b2h>

Approves rate increase

Order approving increase and AMI. P. 26 begins section on AMI debate.

Proceeding:	Year	Type	url
Consumers Energy 2010 Rate Case U-16191	2010	AMI Proposal	https://e9radar.link/cdac8

Description:

In January 2010, Consumers Energy applied for a \$178M rate increase. Consumers cited plans to spend \$6B within five years to maintain and improve utility infrastructure, which included its Smart Grid/AMI project. This case provided an overview of plans to deploy 1.8M meters in a phased approach, including an overview of benefits. In November 2010, the Michigan PSC approved the request for up to \$145M and noted that while Consumers should continue Smart Grid and AMI pilot activities, the commission would not approve full deployment in this case. In this order, the commission also adopted eleven policy recommendations made by staff which address cost recovery, pilot programs, and cost/benefit analyses. The commission allowed some cost recovery and suggested reevaluation of the plan in the next rate case. In June 2012, Consumers filed case no. U-16794 with updated, further-detailed analyses of the Smart Grid/AMI project and costs/benefits.

Document: Testimony 1/22/2010 <https://e9radar.link/l7gv>

Testimony of Consumers Energy Company's Witnesses

Trumble testimony addresses AMI. P. 396 overviews smart grid program, benefit overview on p. 300-303 of pdf, p. 310 of pdf begins to discuss cost calculation

Document: Order denying 11/4/2010 <https://e9radar.link/sx8w>

Authorizes rate increase

Order denies full implementation of AMI. P. 16-17 contains eleven policy recommendations adopted by the commission for AMI, p. 19 issues decision of denying AMI

Document: Exhibits 1/22/2010 <https://e9radar.link/btv8>

Exhibits of Consumers Energy Company's Witnesses

Contains in-depth AMI program descriptions and business cases in MKT exhibits, starting on p. 327 of pdf.

Utility / Holding Company

Analysis

Indiana Michigan Power Co		American Electric Power					Detailed AMI Meters
\$B	Class	Year	ben/cost/net	app./deny/set/pend			
\$0.3	Integrated	2019	•	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>			

Summary In Indiana Michigan Power Co. (I&M)'s 2020 rate case, I&M applied to deploy AMI across its Michigan service territory over a two-year period from 2019 through 2020. I&M cited AMI as a foundational technology to enable the incorporation of DERS at scale, and noted that the application was filed at a time of declining cost and enhanced functionality of AMI technology.

Notable Resources:

Proceeding:	Year	Type	url
I&M 2020 Rate Case <i>U-20359</i>	2019	AMI Proposal	https://e9radar.link/hlbw

Description:

In May 2019, I&M filed a rate case to cover an increase in its Open Access Distribution Service, AMI deployment, and several other company programs. I&M requested \$58.5M in additional revenue with an ROE of 10.5% and ROR of 6.34%. I&M planned to invest \$24.9M in AMI, using lessons learned from a 10,000 meter pilot program from 2009 as a basis for planning. AMI installation was cited throughout the rate case as part of I&M's attempt to respond to changing customer expectations and the need for capital improvements.

Document: Testimony 6/24/2019 <https://rebrand.ly/dcc13>
I&M's Testimony of Toby Thomas

See Isaacson testimony p. 209 of pdf, for discussion of AMI benefits. p. 211-213 discusses benefits. P. 215 of pdf shows cost table for AMI for two yrs. P. 28 of pdf, Toby testimony, also lists benefits. P. 116 of pdf explains customer engagement plan.

Document: Exhibits 6/24/2019 <https://rebrand.ly/16491>
Exhibit 1: A-12 B5.3 p1

P. 49 of pdf shows capital spending on AMI in IN and MI

Document: Case Summary 6/20/2019 <https://e9radar.link/dc184>
I&M Michigan Rate Case Summary

Compliance with Michigan order to provide summary; high-level overview of rate case.

Proceeding:	Year	Type	url
I&M AMI Opt-Out <i>U-20137</i>	2018	Opt-out	https://e9radar.link/z9125

Description:

In March 2018, I&M filed an opt-out program, which included a one-time charge of \$44.07 per meter, when the request is received before the AMI is installed or \$81.30 one-time charge per meter, when the customer request is received after the AMI meter is installed. Additionally, a monthly charge of \$16.77 per month per premise was proposed.

Document: Application 3/23/2018 <https://e9radar.link/78f>
Application

AMI details found on p. 10

State Summary

MO

In June 2018, Missouri passed Senate Bill 564 to modernize Missouri energy policies. The legislation enabled utilities to defer certain investment costs, mandated five-year capital investment plan filings for IOUs, required that no more than 6% of plan budget be allocated to smart meter deployment, and required at least 25% allocation to smart grid modernization projects. Ameren's Smart Energy Plan, proposed in August 2018, was designed to implement the new policies.

Notable Resources:

PSC Report: <http://e9radar.link/ck7f>

Missouri Data : <https://e9radar.link/Oei7>

Fulton Grid Rights: <https://e9radar.link/t18i>

Utility / Holding Company

Analysis

Union Electric Company Ameren

Detailed

\$B	Class	Year	ben/cost/net	app/deny/set/pend	AMI Meters
\$3.2	Integrated	2019	•	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	0

Summary In its February 2019 rate case, Union Electric company (Ameren) filed its five-year capital investment plan; the Smart Energy Plan, the largest infrastructure plan in the history of the company. The plan included a system-wide 1.3M smart meter deployment through 2020 -2025. In August 2019, Ameren requested an exemption from meter testing requirements in order to conserve resources for anticipated early 2020 AMI deployment.

Notable Resources:

Smart Energy Plan: <https://e9radar.link/tbx>

Proceeding:	Year	Type	url
Ameren Missouri 2019 Rate Case ER-2019-0335	2019	AMI Proposal	https://e9radar.link/qsu4

Description:

In July 2019, Union Electric Co. (Ameren) proposed a 6% rate decrease in its 2019 rate case. The decrease was primarily attributed to investment in their Smart Energy Plan, which included a deployment of AMI to replace legacy AMR meters. IT infrastructure development was scheduled from 2019-2020, with the first meter deployed in July 2020. 1.3M electric meters were petitioned to be deployed from 2020-2025.

Document: Testimony

7/9/2019

<https://e9radar.link/e2e9b>

Direct Testimony of Steven M. Wills.

The Willis testimony primarily describes the rate mechanism, but it also elaborates the timeline/plan for AMI. P. 23 explains AMR tech, p. 11 AMI functionality/benefits , p. 12 explains timeline. P. 48 shows how TOU rates save dist/transmission

Document: Testimony 7/9/2019 <https://e9radar.link/e2e9b>

Direct Testimony of Steven M. Wills.

The Willis testimony primarily describes the rate mechanism, but it also elaborates the timeline/plan for AMI. P. 23 explains AMR tech, p. 11 AMI functionality/benefits, p. 12 explains timeline. P. 48 shows how TOU rates save dist/transmission

Document: Testimony 7/2/2019 <https://e9radar.link/5ke>

Direct Testimony of Warren Wood

Smart Energy Plan

Document: Testimony 7/2/2019 <https://e9radar.link/vil>

Direct Testimony of Ahmad Faruqui, Ph.D.

Faruqui testimony discusses rate designs which may interact with AMI

Document: Testimony 7/2/2019 <https://e9radar.link/5ke>

Direct Testimony of Warren Wood

Smart Energy Plan

Document: Testimony 7/2/2019 <https://e9radar.link/vil>

Direct Testimony of Ahmad Faruqui, Ph.D.

Faruqui testimony discusses rate designs which may interact with AMI

Proceeding:	Year	Type	url
Ameren Smart Energy Plan EO-2019-0044	2018	Tech Upgrades	https://e9radar.link/5kdo

Description:

This docket was opened up to house Ameren's five-year capital investment plan, as required by the Commission. In addition to this filing, Ameren filed their Smart Energy Plan, which cited \$5.3B in upcoming investments in the electric system. The Smart Energy Plan lays out a long-term plan for investments into an integrated smart grid. Notably, this docket does not describe any outright timelines or business case for AMI deployment, though it explains that AMI is an important technology to enable other initiatives.

Document: Capital Investment Plan 2/14/2019 <https://rebrand.ly/e429c>

19 02 14 exhibit 1

Shows expected capital expenditures. P. 1 and 10 show some meter investments.

Document: Capital Investment Plan 2/14/2019 <https://rebrand.ly/e429c>

19 02 14 exhibit 1

Shows expected capital expenditures. P. 1 and 10 show some meter investments.

Document: Smart Energy Plan 2/14/2019 <https://e9radar.link/kv5x>

19 02 14 exhibit 2

P. 7-8 explain how the functionality of AMI interacts with other goals

Document: Smart Energy Plan

2/14/2019

<https://e9radar.link/kv5x>

19 02 14 exhibit 2

P. 7-8 explain how the functionality of AMI interacts with other goals

Utility / Holding Company

Analysis

Empire District Electric Co Liberty Utilities

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$0.5	Integrated	2019		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	

Summary In 2019, Liberty-Empire wrote in its triennial IRP that after years of evaluating AMI, it would begin to deploy smart meters in 2020. The AMI initiative is part of Liberty-Empire's five-year capital plan and is coordinated with the Liberty Utilities corporate-wide rollout of AMI.

Notable Resources:

Report: <https://e9radar.link/f05>

Proceeding:

	Year	Type	url
Empire 2019 Triennial IRP EO-2019-0049	2019	AMI Proposal	https://e9radar.link/jl2r

Description:

In August 2018, Empire Electric District (Liberty-Empire) announced the first of three stakeholder meetings to precede its Triennial IRP. In June 2019, the IRP was released. In addition to a variety of new resource acquisitions, Liberty-Empire announced its full-scale deployment of AMI in its system, which closely supports its Customer First initiative. AMI deployment was estimated to cost between \$40-50M.

Document: Application (Special Sections)

6/28/2019

<https://e9radar.link/7xm6>

Vol. 6, Integrated Resource Plan and Risk Analysis, The Empire District Electric Company - A Liberty Utilities Company (Liberty-Empire)

Vol. 6, p. 158 describes economic analysis of AMI implementation (no dollars given), p. 162 describes activities/milestones, p. 165 estimates costs

Document: Application (T&D)

6/28/2019

<https://e9radar.link/4znq>

7 Volumes of The Empire District Electric Company - Integrated Resource Plan

Vol. 1, p. 41, summarizes IRP. Vol. 4.5 describes AMI as an enabling technology upgrade that enables other programs. P. 36 of vol. 4.5 notes that market conditions are good for AMI, p. 39 describes AMI timeline/rationale/combination with Customer First Initiative

State Summary

MS

In 2016, Entergy Mississippi proposed AMI in their territory, which was approved through a stipulation in 2019. Also in 2016, a dormant 2009 Mississippi Power application for AMI was resubmitted, which was approved via a stipulation in 2018. Prior to these developments, in 2009, the Mississippi Development Authority Energy Division (MDA-ED) received an allocation of DOE grant funds to address resiliency and energy assurance planning - one of the approved projects was the replacement of 1,500 meters across its government buildings.

Notable Resources:

Smart Grid RFP: <https://e9radar.link/7f81>

Government meters: <https://e9radar.link/uixa>

Utility / Holding Company

Analysis

Entergy Mississippi Entergy						Detailed
\$B	Class	Year	ben/cost/net	app/deny/set/pend		AMI Meters
\$1.3	Integrated	2016	• • •	<input checked="" type="checkbox"/>	<input type="checkbox"/>	68

Summary In November 2016, Entergy Mississippi proposed system-wide AMI deployment. In May 2017, the commission approved Entergy's application. The commission's order accepted and adopted a May 2017 Joint stipulation between the company and commission Staff, holding the company responsible for updating its Formula Rate Plan through September 2019.

Proceeding:	Year	Type	url
Entergy Mississippi AMI Program 2016-UA-261	2016	AMI Proposal	http://e9radar.link/3byq

Description:

In November 2016, Entergy Mississippi requested to deploy AMI, a communications network, MDMS, an OMS, and a distribution management system. Entergy proposed a 15-year deployment period. Benefits were divided into operational benefits and other benefits, and then other benefits to customers (i.e. increased billing accuracy) were not included in the CBA.

Document: Testimony 11/30/2016 <https://e9radar.link/8pcu>

Direct Testimony of J. Robbin Jeter, Vice President, Customer Service, Entergy Mississippi, Inc.

The Jeter testimony explains operational and customer benefits of AMI. P. 9 lists pre-deployment efforts, p. 14 explains customer benefits, p. 20 explains operational improvements, p. 31 explains non-quantified benefits. P. 40 of pdf has Customer Engagement Plan.

Document: Testimony 11/30/2016 <https://e9radar.link/8pcu>

Direct Testimony of Rodney W. Griffith, Director, AMI Implementation, on behalf of Entergy Mississippi, Inc.

The Griffith testimony explains the implementation plan in detail. P. 5 explains AMI, p. 10 explains the deployment schedule, p. 23 explains the communications infrastructure, p. 37 explains cybersecurity and data concerns. Griffith exhibits are confidential.

Document:	Order	5/4/2017	https://e9radar.link/oiy6
	Order Approving Application		
Document:	Application	11/30/2016	https://e9radar.link/8pcu
	Application for Approval of Advanced Metering Infrastructure and Related Modernization Improvements		
	P. 3 notes \$496M in benefits		
Document:	Testimony	11/30/2016	https://e9radar.link/8pcu
	Direct Testimony of Jay A. Lewis, Vice President, Regulatory Policy, Entergy Services, Inc. on behalf of Entergy Mississippi, Inc.		
	The Lewis testimony describes the BCA in detail. Summary table on p. 6. Some key, detailed testimony is marked confidential.		
Document:	Testimony	11/30/2016	https://e9radar.link/b1j1
	Direct Testimony of Dorman J. Davis, Manager, Regulatory Affairs, on behalf of Entergy Mississippi, Inc.		
	The Davis testimony explains how costs for AMI were derived and incorporated into the rate case, starting on p. 3. Less		

Utility / Holding Company

Analysis

Mississippi Power Co Southern Company						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$0.9	Integrated	2016	• •	<input checked="" type="checkbox"/>	<input type="checkbox"/>	20

Summary In 2009, Mississippi Power submitted its initial request to deploy AMI across its territory - approximately 189,000 meters. No commission action was taken in this case for several years. In April 2016, Mississippi Power filed a supplemental petition to replace its AMR with AMI. The updated analysis revealed \$3.6B in net savings over a seventeen-year period. In May 2018, the commission issued an order approving the supplemental petition as modified by a stipulation.

Proceeding:	Year	Type	url
Mississippi Power Company AMI Application 2009-UA-398	2016	AMI Proposal	http://e9radar.link/dmpr

Description:

In September 2009, Mississippi Power Co. (MPC) filed an application to deploy AMI in its territory. Capital costs were estimated at \$19.7M over a 2-year implementation period. The application cited a small 2007 project which installed 2,000 meters in a multi-family premise. The 2009 application was neither approved nor denied by the commission, and MPC continued to evaluate AMI. In November 2016, MPC filed a supplemental petition to replace its AMR technology with AMI. MPC included a seventeen-year revenue requirement analysis using a 15-year useful meter life. Savings were estimated at \$3.6B over the 17-year phase. In April 2018, MPC and commission staff entered into a stipulation, which was approved the same month.

Document: Testimony 9/24/2009 <https://e9radar.link/mnpo>

Direct Testimony of David E. Buckner on behalf of Mississippi Power Company

Provides a narrative form of CBA; P. 8 provides narrative of AMI benefits and p. 27 summarized AMI benefits, p. 29 shows meter models, p. 31 shows costs over implementation period, p. 14 lists technology specs, p. 16 explains evaluation/methodology

Document: Stipulation and Approval 4/10/2010 <https://e9radar.link/gqqx>

Supplemental CPCN/Stipulation

Stipulation created and approval of the project.

Document: Petition 9/24/2009 <https://e9radar.link/zu09>

Petition for a Facilities Certificate

P. 3 explains AMI benefits, p. 3-4 explains general costs and implementation schedule

State Summary

NC

In 2013, the North Carolina Utilities commission mandated that utilities file Smart Grid Technology Plans as part of their biennial IRPs. These plans contain descriptions of smart grid and pilot projects, accompanying business cases, and privacy policies, but are not considered as official proposals. The commission initiated a rulemaking regarding AMI cybersecurity in 2017.

Notable Resources:

SGTP Article: <https://e9radar.link/7bj6>

Utility / Holding Company						Analysis
Duke Energy Carolinas Duke						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$4.9	Integrated	2016	•	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1,028,611

Summary In its 2014 Smart Grid Technology Plan (SGTP), DEC proposed a \$102M AMI deployment to build off of its 2013 SGIG AMI project. In its 2016 SGTP, DEC claimed that 252,000 AMI meters were installed and that the company was evaluating full deployment over a five-year period or annual deployment of 150,000 meters. The commission approved the proposal with conditions for information on full deployment, a 20-year cost-benefit analysis, and subsequent filing of rate design pilots. The commission later noted that deployment began prior to the submission of a CBA. Subsequently, in a 2017 rate case filing, DEC requested a regulatory asset for AMI. In April 2017, Duke Energy, DEC's holding company, released its ten-year Power / Forward Carolinas grid modernization initiative, which includes full smart meter deployment. DEC's 2020-2022 Grid Improvement Plan, included in its 2020 rate case, cites AMI as "a foundational investment that enables further programs, such as rate design and peak-shaving."

Proceeding:	Year	Type	url
Rulemaking for Electric Meters (AMI) <i>E-100 Sub 153</i>	2017	Rulemaking	https://e9radar.link/m9t2x

Description:

In August 2017, the commission opened this docket to seek comments on protecting modern grid technology from cyber attacks. The commission also requested input on the use of a third-party to audit utility AMI communications.

Document: **Order initiating proceeding** 8/21/2017 <https://e9radar.link/ksf4o>

Order initiating proceeding

Order establishing the rulemaking, scope, and discussing state history with AMI and data.

Proceeding:	Year	Type	url
Duke Energy Carolinas 2017 General Rate Case <i>E-7 Sub 1146</i>	2017	Cost Recovery	https://e9radar.link/edcac

Description:

In August 2017, Duke Energy Carolinas applied for a \$611M (12.8%) increase in its annual revenues in addition to establishment of a regulatory asset for its AMI deployment program. This case was lengthy and driven by conversation around nuclear recovery. This rate case also resulted in a revenue decrease for DEC, but recovery of AMI was approved, pending a submission of alternative rate designs within six months. In January 2019, the commission rejected the proposed rate structures, and determined that full deployment was not necessary to achieve benefits from rate designs. The commission ordered DEC to file two rate design pilots by July 2019. The effectiveness of these rate designs would inform the commission on authorized cost recovery. By November 2017, Duke Energy had already replaced over 1M conventional meters with AMI.

Document: Order 1/30/2019 <https://e9radar.link/oor9>

Order Declining to Accept Rate Design Plan, Requiring Compliance Filing, Scheduling Hearing, and Requiring Coordination with Public Staff

Explains the rejection of full deployment and orders DEC to create new rate designs

Document: Order 1/16/2018 <https://e9radar.link/4isb>

Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction

Order that denies request for rate increase. Provides a lot of contextual details on the AMI portion of the case

Document: Testimony 8/25/2017 <https://e9radar.link/a17i>

Direct Testimony of Donald L. Schneider, Jr for Duke Energy Carolinas, LLC

The Schneider testimony explains current implementations on p. 6, customer benefits on p. 7, and briefly costs on p. 10

Document: Work plan 4/1/2019 <https://e9radar.link/op0m>

DEC's Revised AMI Rate Design Work Plan and Proposed Dynamic Pricing Pilots

DEC's work plan to investigate and implement new rate designs for AMI

Document: Order 6/22/2018 <https://e9radar.link/6laf>

Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction

Notes Commission view of AMI

Document: Application 8/25/2017 <https://e9radar.link/5w23>

Duke Energy Carolinas, LLC's Application to Adjust Retail Rates and Charges, Request for an Accounting Order and to Consolidate Docket No. E-7, Sub 1146

Generally notes rate case design, smart grid investments, and the inclusion of AMI upgrades

Document: **Testimony** 8/25/2017 <https://e9radar.link/38g3>

Direct Testimony of Robert B. Hervert for Duke Energy Carolinas, LLC

P. 4-8 lists the topics of the other testimonies; not listed anywhere else

Proceeding:	Year	Type	url
2016 IRP and RES Plan <i>E-100 Sub 147</i>	2016	AMI Proposal	http://e9radar.link/xc1z

Description:

This docket contains 2016 IRP and Smart Grid Technology Plans (SGTP) for various North Carolina IOUs. The SGTPs in this docket are meant to be informational, but show the planning, calculation, and timeline for various smart grid plans. The commission required SGTPs from major North Carolina utilities, and the plans follow a strict outline of program and technology descriptions.

Document: **DEP CBA** 6/4/2018 <https://e9radar.link/710u>

DEP SGTP AMI Cost-Benefit Analysis

DEP responds to Commission information request and filed CBA for full deployment. CBA does not include end-of-life replacement as requested

Document: **DEC CBA (updated)** 12/15/2017 <https://e9radar.link/zu4v>

DEC's Verified Response to Order Requiring Additional Information (public version)

Contains the updated business case (with Commission-ordered inclusion of end-of-life meter replacement) p. 11

Document: **DEC CBA (original) DEP note** 5/5/2017 <https://e9radar.link/n7ay>

Supplemental Information - 2016 Smart Grid Technology Plans of

Duke Energy Carolinas, LLC and Duke Energy Progress, LLC

Docket No. E-100, Sub 147

Exhibit A, p. 6 of pdf, shows the original CBA proposed by DEC after the Commission accepted its SGTP. P. 10 lists DEP's initial costs/benefits of AMI.

Document: **Order** 3/29/2017 <https://e9radar.link/9lfr>

Order Accepting Smart Grid Technology Plans

Provides great overview of utilities' smart grid plans and accepts the plans

Document: **DEC SGTP 2016** 10/3/2016 <https://e9radar.link/z46g>

Duke Energy Carolinas 2016 Smart Grid Technology Plan

P. 35 explains the AMI project, p. 3 explains that AMI replacement is a top priority

Document: **DEP SGTP 2016** 10/3/2016 <https://e9radar.link/loqt>

Duke Energy Progress 2016 Smart Grid Technology Plan

P. 29 summarizes AMI deployment so far (less info than the DEC version), p. 3 explains that AMI replacement is a top priority

Utility / Holding Company

Analysis

Duke Energy Progress - (NC) Duke

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$3.6	Integrated	2017	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Summary In October 2016, DEP cited an internal investigation of AMI technology in its Smart Grid Technology Plan (SGTP). DEP subsequently requested cost recovery in its 2017 rate case. In this proceeding, DEP contested that it did not file rate design programs alongside its AMI proposal due to the premature nature of the new technology. In February 2018, the commission approved portions of a stipulation agreement, which included cost recovery for the replacement of AMR meters with AMI. DEP filed an updated CBA in the SGTP case in June 2018.

Proceeding:	Year	Type	url
Rulemaking for Electric Meters (AMI) <i>E-100 Sub 153</i>	2017	Rulemaking	https://e9radar.link/m9t2x

Description:

In August 2017, the commission opened this docket to seek comments on protecting modern grid technology from cyber attacks. The commission also requested input on the use of a third-party to audit utility AMI communications.

Document: Order initiating proceeding 8/21/2017 <https://e9radar.link/ksf4o>
Order initiating proceeding
Order establishing the rulemaking, scope, and discussing state history with AMI and data.

Proceeding:	Year	Type	url
2016 IRP and RES Plan <i>E-100 Sub 147</i>	2016	AMI Proposal	http://e9radar.link/xclz

Description:

This docket contains 2016 IRP and Smart Grid Technology Plans (SGTP) for various North Carolina IOUs. The SGTPs in this docket are meant to be informational, but show the planning, calculation, and timeline for various smart grid plans. The commission required SGTPs from major North Carolina utilities, and the plans follow a strict outline of program and technology descriptions.

Document: DEP CBA 6/4/2018 <https://e9radar.link/710u>
DEP SGTP AMI Cost-Benefit Analysis
DEP responds to Commission information request and filed CBA for full deployment. CBA does not include end-of-life replacement as requested

Document: DEC CBA (updated) 12/15/2017 <https://e9radar.link/zu4v>
DEC's Verified Response to Order Requiring Additional Information (public version)
Contains the updated business case (with Commission-ordered inclusion of end-of-life meter replacement) p. 11

- Document: DEC CBA (original) DEP note** 5/5/2017 <https://e9radar.link/n7ay>
 Supplemental Information - 2016 Smart Grid Technology Plans of
 Duke Energy Carolinas, LLC and Duke Energy Progress, LLC
 Docket No. E-100, Sub 147
 Exhibit A, p. 6 of pdf, shows the original CBA proposed by DEC after the
 Commission accepted its SGTP. P. 10 lists DEP's initial costs/benefits of AMI.
- Document: Order** 3/29/2017 <https://e9radar.link/9lfr>
 Order Accepting Smart Grid Technology Plans
 Provides great overview of utilities' smart grid plans and accepts the plans
- Document: DEC SGTP 2016** 10/3/2016 <https://e9radar.link/z46g>
 Duke Energy Carolinas 2016 Smart Grid Technology Plan
 P. 35 explains the AMI project, p. 3 explains that AMI replacement is a top
 priority
- Document: DEP SGTP 2016** 10/3/2016 <https://e9radar.link/loqt>
 Duke Energy Progress 2016 Smart Grid Technology Plan
 P. 29 summarizes AMI deployment so far (less info than the DEC version), p.
 3 explains that AMI replacement is a top priority

Utility / Holding Company Analysis

Virginia Electric & Power Dominion						Summary
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$0.4	Integrated			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		4,951

Summary In October 2014, in compliance with commission rules, Dominion North Carolina Power filed its Smart Grid Technology Plan. Dominion noted that it installed 260,000 smart meters by 2009 and would install up to 2% of its North Carolina territory by 2019. Dominion did not make a formal business proposal to fully deploy AMI.

Notable Resources:

SGTP approval: <https://e9radar.link/pbrw>

Proceeding:	Year	Type	url
Rulemaking for Electric Meters (AMI) E-100 Sub 153	2017	Rulemaking	https://e9radar.link/m9t2x

Description:

In August 2017, the commission opened this docket to seek comments on protecting modern grid technology from cyber attacks. The commission also requested input on the use of a third-party to audit utility AMI communications.

- Document: Order initiating proceeding** 8/21/2017 <https://e9radar.link/ksf4o>
 Order initiating proceeding
 Order establishing the rulemaking, scope, and discussing state history with
 AMI and data.

State Summary

NH

In 2012, the New Hampshire legislature passed a smart meter opt-in rule, SB-266-FN, that mandates utilities obtain written consent of the person or person who owns the home/business before installing a smart meter. In July 2015, HB 614 was enacted to implement goals of New Hampshire's 10-year energy strategy. This bill required the commission to open a docket on grid modernization, which included AMI-specific analysis, before August 2015. In April 2016, the PUC directed a working group to consider advanced meter technology and functionalities. The 2019 staff recommendation concluded that utilities may offer opt-in interval metering services and conduct a cost/benefit analyses of AMI. This proceeding determined that AMR was sufficient to realize other smart grid capabilities. SB 284, signed into law in July 2019, mandated the creation of a multi-use, online data platform for New Hampshire opt-in customers to view their energy usage. The state's three IOUs were directed to develop the database: Eversource, Liberty, and Unitil.

Notable Resources:

SB 284: <https://e9radar.link/hyi>

Utility / Holding Company

Analysis

Public Service Company of New Hampshire Eversource

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.0	Restructured	2015		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	

Summary In response to legislation directing an investigation of grid modernization, Public Service Co. of New Hampshire (Eversource) filed plans which included a petition for AMI deployment. In September 2019, after several years of commission-run stakeholder processes, commission staff issued a recommendation for an AMI opt-in policy. Staff noted that they do not see the need for full AMI as a foundational technology for the state's grid modernization goals.

Proceeding:

	Year	Type	url
New Hampshire Grid Modernization <i>IR 15-296</i>	2015	Rulemaking	http://e9radar.link/2qvd

Description:

This docket was opened in response to HB 614 to house the staff-run investigation into grid modernization. In addition to hosting working groups and publishing a Report in 2018, Staff researched other grid modernization dockets. In April 2016, a working group was established to investigate advanced metering technology. In January 2019, staff issued a recommendation that each utility submit Integrated Distribution Plans with 10-year roadmaps and 5-year implementation plans. Staff noted that in the short-term, AMI does not appear to be cost effective, and opt-in interval metering and behind-the-meter technologies should meet current needs. Staff recommended that a cost/benefit analysis be conducted to determine the appropriate level of AMF before the deployment of any new meters.

Document: **January Staff Recommendation** 1/31/2019 <https://e9radar.link/n9o>

Staff Recommendation on Grid Modernization

P. 42 addresses AMF and the conclusion to support an opt-in approach, p. 45 describes the recommended Distribution Implementation Plan cost-effectiveness framework (including quantitative and qualitative analyses), p. 53-55 lists metering options and associated technology, objectives of grid mod listed on p. 10

Document: **Initial Report** 3/20/2017 <http://e9radar.link/r5xn>

Grid Modernization in New Hampshire Report to the New Hampshire Public Utilities Commission From the Grid Modernization Working Group

Initial findings from NH working groups. P. 13 discusses rate design recommendations.

Utility / Holding Company

Analysis

Unitil Energy Systems Unitil

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$0.2	Restructured			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Proceeding:	Year	Type	url
New Hampshire Grid Modernization <i>IR 15-296</i>	2015	Rulemaking	http://e9radar.link/2qvd

Description:

This docket was opened in response to HB 614 to house the staff-run investigation into grid modernization. In addition to hosting working groups and publishing a Report in 2018, Staff researched other grid modernization dockets. In April 2016, a working group was established to investigate advanced metering technology. In January 2019, staff issued a recommendation that each utility submit Integrated Distribution Plans with 10-year roadmaps and 5-year implementation plans. Staff noted that in the short-term, AMI does not appear to be cost effective, and opt-in interval metering and behind-the-meter technologies should meet current needs. Staff recommended that a cost/benefit analysis be conducted to determine the appropriate level of AMF before the deployment of any new meters.

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Document: Initial Report

3/20/2017

<http://e9radar.link/r5xn>

Grid Modernization in New Hampshire Report to the New Hampshire Public
Utilities Commission From the Grid Modernization Working Group

Initial findings from NH working groups. P. 13 discusses rate design
recommendations.

State Summary

NJ

The New Jersey Board of Public Utilities (BPU) created a Master Plan goal in 2011 to expand smart meters and time variant pricing, and in 2015 the board called for a re-evaluation of smart meter specifications, standards, security, and cost/benefit analyses. The BPU also recommended that distribution automation and smart grid technologies complement smart meter deployments. In 2017, the BPU called for a moratorium on AMI deployment until the results of the Rockland Electric pilot project were analyzed. In July 2018, BPU staff directed Jersey Central Power & Light, Public Service Electric & Gas and Atlantic City Electric to file AMI CBAs in order to address storm response issues. New Jersey's stakeholder-led draft 2019 Energy Master Plan, published in June 2019, reaffirmed state support for AMI deployment in order to achieve clean energy goals. In February 2020, the BPU lifted the moratorium on AMI and ordered the state's largest IOUs (PSE&G, ACE, and JCP&L) to file or update AMI plans by August 2020.

Notable Resources:

2015 Plan: <https://e9radar.link/sr9e>

Staff Report (winter storms): <https://e9radar.link/sccl>

GE Report for BPU: <https://e9radar.link/v4li>

Order lifting moratorium: <https://e9radar.link/8923f>

Order Lifting Moratorium: <https://e9radar.link/bebd5>

Utility / Holding Company

Analysis

Public Service Electric & Gas (PSEG) PSEG						Detailed
\$B	Class	Year	ben/cost/net	app/deny/set/pend		AMI Meters
\$3.7	Restructured	2018	• • •	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>		15,062

Summary In September 2018, PSE&G submitted its six-year, \$4B Clean Energy Future plan, which included an "Energy Cloud" program to install 2.2M smart meters. The Energy Cloud tranche estimated \$800M for the smart meter investment, and \$1.7B in benefits (net benefits of \$937M) over 20 years. PSE&G submitted its application despite the moratorium on AMI development set by the BPU in August 2017, and the company stated several reasons the moratorium should be lifted. The Energy Cloud program was described as a foundational component of the company's transition towards a smart utility.

Notable Resources:

News Release: <https://e9radar.link/k11u>

Proceeding:	Year	Type	url
PSE&G Clean Energy Future Cloud Program EO18101115	2018	AMI Proposal	https://e9radar.link/3wq6

Description:

In September 2018, Public Service Gas and Electric Company (PSE&G) filed its Clean Energy Future plan (CEF). The comprehensive proposal requested a total of \$2.8B for efficiency initiatives. At the request of the BPU, PSE&G separated the three primary programs of the CEF into different cases (EE, EV and storage, and the Energy Cloud). The Energy Cloud portion contained a 5-year, \$800B program designed to implement AMI. Primary benefits included visibility into the distribution system, outage management, and restoration improvements. \$1.73B total benefits were estimated from this tranche of the CEF.

Document: Verified Petition

10/11/2018

<https://e9radar.link/ugfi>

Verified Petition of Public Service Electric and Gas Company

Petition which explains CEF and the Energy Cloud. P.7-11 overviews the AMI portion of the plan, p. 56 of pdf overviews business case; full business case in schedule GD-CEF-EC-2, p.142-147 of pdf

Utility / Holding Company

Analysis

Rockland Electric Co

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$0.2	Restructured			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Proceeding:

	Year	Type	url
Rockland Electric AMI Program EO16060524	2016	AMI Proposal	http://e9radar.link/k4fs

Description:

In May 2016, Rockland Electric Co. filed a rate case (case no. ER16050428) which included a request to deploy AMI. Following a BPU order, Rockland Electric Co. opened up a docket to address its AMI portion. The request sought pre-approval to remove and replace 74,000 existing meters with AMI over a 3-year period (2017-2019). Rockland Electric did not request cost recovery or file an estimated cost cap, though costs were estimated at \$32.2M. The majority of cost savings were from meter reading elimination (\$22.3M), and cumulative benefits valued at \$82M. Net benefits were estimated at \$49.9M. The request included allowance of \$8.9M of stranded costs for retired meters in a future rate case.

Document: Brief

<https://e9radar.link/vkfz>

Initial Brief on Behalf of Division of Rate Counsel

Overviews the case; p. 4-6 provides case background and facts

State Summary

NM

In 2006, the Public Regulation commission required all New Mexico utilities to file AMI reports. In utility AMI proposals, the commission cited customer health concerns as a reason for smart meter rejection, as the technology, "does not promote the public interest."

Utility / Holding Company

Analysis

Public Service Company of New Mexico PNM Resources

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.0	Integrated	2016		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	0

Summary In February 2016, PNM proposed an AMI installation project. PNM described manual meter deficiencies and a series of failed tests. In March 2018, the application was recommended for denial, citing a lack of several components: energy efficiency considerations, public participation process, public benefit (esp. financial savings), evaluation of alternatives, options for health-concerned customers, proximity to other rate-increases, and other categories. In May 2017, PNM filed a request in the same docket for allowance to issue a new RFP to update its cost-benefit analysis, which updated the cost of the project to \$95.1M.

Proceeding:

	Year	Type	url
PNM AMI Program 15-00312-UT	2015	AMI Proposal	http://e9radar.link/tepc

Description:

PNM proposed a project to retire all of its existing electricity consumption and demand meters and replace with AMI meters and equipment. The case cited a mandated PNM White Paper from 2006 which investigated AMI rollout. The presented CBA was did not contain quantified benefits. PNM's application was denied 2 years later due to lack of several components: energy efficiency considerations, public participation process, public benefit (esp. financial savings), evaluation of alternatives, options for health-concerned customers, and other categories.

Document: Recommended Decision

3/19/2018

<https://e9radar.link/uid>

Recommended Decision

Recommends denial of application. Reasons for denial are organized by headers.

Document: Application

2/26/2016

<https://e9radar.link/2z1>

PNM Application for Approval of Advanced Metering Infrastructure Project, Advice Notice No. 521, Ninth Revised Rate No. 16 and Requests for Variance, with Supporting Testimony and Exhibits, to be filed in Docket No. 15-00312-UT

CBA on p. 206-210 of pdf (Exhibit HEM-2). P. 9-11 of pdf summarizes technology, rate recovery, operational benefits, etc. P. 111 of pdf, Teague Testimony, explains costs; P. 116 of pdf begins benefits. Testimony of Henry Monroy, p. 183 of pdf, describes the CBA. Ortiz Testimony, p. 42 of pdf, summarizes benefits and qualitative benefits

Utility / Holding Company

Analysis

Southwestern Public Service Xcel

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
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\$0.4 Integrated

☐ ☐ ☐ ☐

2

Summary SPS initiated a pilot project in 2012. In their 2015 rate case, SPS cited the commission's interest in creating pilot projects or initiating full deployments, but SPS determined they would continue evaluation of their previous project. In 2019, the parent company of Southwestern Public Service Co. (Xcel Energy) announced a goal of full AMI deployment across its subsidiaries.

Notable Resources:

Testimony: <https://e9radar.link/hao>

Proceeding:

	Year	Type	url
Southwestern Rate Case 15-00139-UT	2015	Reference	http://e9radar.link/xgfl

Description:

In May 2014, Southwestern filed a rate case which cited consideration of and deferral of full AMI deployment. The commission and testimony alike agree that SPS needed to conduct further testing, especially due to its selected meter variety. Larger pilot projects, studies, and more finite cost/benefits calculations were suggested.

Document: AMI Testimony

11/9/2015

<https://e9radar.link/hao>

Direct Testimony of Evan D. Evans

P. 75 cites need for testing of current AMI project; also cites costs at \$35 -55M. P. 77 notes Commission request for larger pilot project.

Document: Report

4/30/2018

<https://e9radar.link/cjg>

NMPC Rule 17.3.510.12 Compliance PNM's Annual Report

p. 203 discusses AMI proceeding

State Summary

NV

In 2006, the Nevada commission directed Nevada Energy to study the costs and benefits of smart meter deployment from the neighboring utility Southern California Edison. Three years later, the commission continued to request smart meter deployment from Nevada Energy sister companies in the review of their SGIG application.

Notable Resources:

PUC Website: <https://e9radar.link/ad5>

Utility / Holding Company

Analysis

Nevada Power MidAmerican								Detailed
\$B	Class	Year	ben/cost/net		app./deny/set/pend			AMI Meters
\$2.1	Integrated	2010	•	•	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	918,964

Summary In 2006, the Nevada commission directed Nevada Power to study costs and benefits of the Southern California Edison residential smart metering programs in order to implement smart meters into its service territory. The commission also expressed support for NVE's SGIG application in 2009, which included provisions for both Nevada Power company and Sierra Pacific Power company (sister companies of NVE). In March 2010, NVE filed its Triennial IRP for 2010-2029. Within the IRP, the Advanced Service Delivery initiative included AMI rollout, initially estimated to cost \$301M for both companies. Nevada Power's cost was offset to \$95.4M due to its \$110.3M share of the \$138M SGIG grant given to NVE.

Notable Resources:

PUC Website: <https://e9radar.link/0j3t>

Application Summary: <https://e9radar.link/68e>

Proceeding:	Year	Type	url
NV Energy AMI 14-09015	2014	Reference	http://e9radar.link/g8vn

Description:

This docket was opened up in response to concerns from the Reno and Sparks Fire Department following a reported fire that may have been caused by the advanced meter on-site. Nevada Energy was directed to file extensive reports on meter failures, fires, and other metrics to ensure the safety of AMI.

Document: Response 12/22/2014 <https://e9radar.link/jnfn>

NPC and SPPC filed replacement Volume 2 of the information filed in compliance with the Order issued.

NVE's response with meter-related failure and fire data

Document: Petition 9/22/2014 <https://e9radar.link/sf5c>

Petition Filed

Contains original incident and data request

Proceeding:	Year	Type	url
NV Energy Smart Meter Complaints 11-10007	2011	Reference	http://e9radar.link/b512

Description:

This docket was opened to investigate a number of complaints against Nevada Energy's Smart Meter program. Complaints and concerns surround safety, invasion of privacy and data privacy, billing, and other topics. Several customers filed complaints within this docket, and in response NV Energy re-stated the benefits and merits of AMI.

Document: NV Comments 12/2/2011 <https://e9radar.link/8xqa>

NPC and SPPC filed Reply Comments.

P. 5 describes NVE cyber security plan, p. 6 gives a factual and procedural background, p. 10 explains other security measures,

Document: Notice 11/2/2011 <https://e9radar.link/pxcn>

Notice of Investigation and Notice of Request for Comments and Notice of Workshop set for 12/6/11 issued

Notice of investigation describing general public/Commission concerns

Utility / Holding Company

Analysis

Sierra Pacific Power Co MidAmerican						Detailed AMI Meters
\$B	Class	Year	ben/cost/net	app./deny/set/pend		
\$0.7	Integrated	2010		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		343,053

Summary See Nevada Power for details.

Proceeding:	Year	Type	url
NV Energy AMI 14-09015	2014	Reference	http://e9radar.link/g8vn

Description:

This docket was opened up in response to concerns from the Reno and Sparks Fire Department following a reported fire that may have been caused by the advanced meter on-site. Nevada Energy was directed to file extensive reports on meter failures, fires, and other metrics to ensure the safety of AMI.

Document: Response 12/22/2014 <https://e9radar.link/jnfn>

NPC and SPPC filed replacement Volume 2 of the information filed in compliance with the Order issued.

NVE's response with meter-related failure and fire data

Document: Petition 9/22/2014 <https://e9radar.link/sf5c>

Petition Filed

Contains original incident and data request

State Summary

NY

New York utilities typically propose AMI in rate cases. The Reforming the Energy Vision (REV) strategy encourages clean energy innovation and challenges utilities with a variety of objectives, especially the goal to reduce carbon emissions by 80% in 2050. In the REV proceeding, the PSC determined that AMI "encourages" demand response, energy efficiency, DER, and also enables some of the Distributed System Platform functionalities. In July 2016, the PSC issued an order creating a Distributed System Implementation Plan (DSIP) framework which required utilities to disclose information about AMI deployment over the next five years. Subsequent utility DSIP filings contain summaries of AMI deployment status and other integrated technologies. All New York AMI proposals are required to follow a strict BCA template and procedure, which was finalized in the REV proceeding.

Notable Resources:

NY REV Website: <https://e9radar.link/ssoj>

REV Docket : <https://e9radar.link/465s>

DSIP Docket: <https://e9radar.link/amxk>

Utility / Holding Company

Analysis

Consolidated Edison ConEd

Detailed

\$B	Class	Year	ben/cost/net	app/deny/set/pend	AMI Meters
\$8.0	Restructured	2015	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	

Summary Consolidated Edison (ConEd) began an AMI pilot project in 2010. ConEd proposed a system-wide rollout of 3.6M advanced electric meters, in addition to 1.2M gas meters, in their 2015 rate case. In June 2015, the commission approved the rate case with the stipulation that ConEd form an AMI collaborative and write an AMI business case. Once the business case was produced in October 2015, the commission further requested a customer engagement plan in addition to an updated CBA which reflects a new statewide template. An updated BCA framework was filed in August 2016.

Notable Resources:

AMI Business Plan: <https://e9radar.link/70g>

Proceeding:

	Year	Type	url
ConEd 2017 Rate Case 16-E-0060	2016	Cost Recovery	http://e9radar.link/ix0j

Description:

In January 2016, Consolidated Edison petitioned the PSC for a 5.8% increase in electricity rates, citing the AMI rollout as a driver. This case was initiated as the AMI business plan and other elements of the 2015 rate case (docket no. 15-E-0050) were still being deliberated. Many of the cited benefits, charts, and plans were previously listed in the 2015 rate case.

Document: Testimony

1/29/2016

<https://e9radar.link/7hv>

10 - AMI Testimony

Program overview, CBA, etc. p. 13 describes the system-wide deployment of AMI, p. 27 lists customer benefits, p. 32 lists environmental benefits, p. 33 cites energy usage reduction

Document: Report

4/30/2019

<https://e9radar.link/0zm>

AMI Metrics Report

Summarizes the implementation of AMI deployment

Proceeding:	Year	Type	url
ConEd 2015 Rate Case 15-E-0050	2015	AMI Proposal	http://e9radar.link/eut7

Description:

In January 2015, ConEd filed amendments to its tariff schedules, requesting \$368M for the rate year ending in 2016. \$68M of projected capital expenditures in 2016 were be dedicated to its AMI program. The plan calls for deploying AMI in 3 phases: 1) Planning including RFPs and Vendor selection in 2015, 2) Communications and IT Work in 2016, 3) Implementation 2017-2022. The joint proposal recommended that the commission approve capital expenditures in addition to the development of an AMI Business Plan, informed by an AMI Collaborative. After this rate case was approved in 2015, the AMI Business Plan was presented and approved in March, 2016. In the March 2016 Order, the commission also approved the ConEd AMI deployment with a spending cap of \$1.28B.

Document: Updated BCA short

8/1/2016

<https://e9radar.link/raf>

BCA Framework Summary

More concise version of the Matrix. Filed by itself without explanation of categories. Reference AMI Business Plan for details.

Document: Order

3/17/2016

<https://e9radar.link/741>

Order Approving Advanced Metering Infrastructure Business Plan Subject To Conditions

P. 55 of pdf shows current BCA. P. 50 summaries approval of business plan with stipulations, esp. to update its CBA using a new Commission Framework, testimony related to follow-up metrics, to create a Customer Engagement Plan, file privacy assessment and data privacy policies, pilot projects, and further tariff amendments for opt-out customers

Document: AMI Business Plan

10/15/2015

<https://e9radar.link/70g>

Advanced Metering Infrastructure Business Plan

P. 40 features CBA summary, p. 43 describes methodology, p. 51 summarizes benefits, p. 52 summarizes costs. P. 4 lists customer benefits, p. 14 lists statewide REV benefits, p. 42 lists additional benefits, p. 38 explains research of six other utilities. P. 76 of pdf starts the TVP Analysis

Document: Updated BCA

8/1/2016

<https://e9radar.link/m3q>

BCA Framework Matrix

The Commission required that ConEd use the template they approved in Case No. 14-M-0101; this document shows societal cost test. Filed by itself without explanation of categories.

Document: Engagement Plan

7/29/2016

<https://e9radar.link/vzx>

AMI Customer Engagement Plan

Document: Comments 12/21/2015 <https://e9radar.link/drk>
City Of New York Comments On Consolidated Edison Company Of New York, Inc.'s Advanced Metering Infrastructure Business Plan

City of New York comments; provide a good summary of AMI proposal

Document: Order 6/19/2015 <https://e9radar.link/1t3>
Order Accepting Terms to Extend Electric Rate Plan
P. 38-40 discuss the creation of the AMI Collaborative

Document: Testimony 1/30/2015 <https://e9radar.link/lhz>
Electric Infrastructure and Operations Panel- Electric
P. 324 explains AMI initiative, including plans to develop more analyses, an implementation plan, and more

Proceeding:	Year	Type	url
Reforming the Energy Vision (REV) 14-M-0101	2014	Rulemaking	http://e9radar.link/e4kn

Description:

This proceeding contains over 1,700 filings for the formation of the NY Reforming the Energy Vision. AMI deployment supports several of the initiatives listed in REV, and all major NY utilities filed comments or reports in this proceeding. New York utilities also filed Distribution System Implementation Plans in this docket, some of which included AMI plans.

Document: Comments 9/22/2014 <https://e9radar.link/pc6>
New York State Electric & Gas Corporation and
Rochester Gas and Electric Corporation Track One Comments on AMI
NYSEG summarizes AMI benefits and their applicability to the Staff Track One Comments

Document: Proposal 7/29/2016 <https://e9radar.link/kph>
Consolidated Edison Company of New York, Inc. and Orange and Rockland
Utilities, Inc. submit their Advanced Metering Infrastructure Customer Engagement Plan
ConEd AMI Customer Engagement Plan

Document: BCA Order 1/21/2016 <https://e9radar.link/ndnp>
Order Establishing the Benefit Cost Framework
This order established a BCA framework subsequently required for major REV-related initiatives

Document: Staff Proposal 8/22/2014 <https://e9radar.link/o0d>
Developing The Rev Market In New York: DPS Staff Straw Proposal On Track One Issues
Appendix A, p. 2, discusses the system-wide benefits of AMI and alternatives

Utility / Holding Company

Analysis

Long Island Power Authority PSEG

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Detailed AMI Meters
\$3.6	Other	2016	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	63,546

Summary In 2010, Long Island Power Authority (LIPA) began installing a Smart Energy Corridor which was funded in part through a SGIG. The corridor project included smart meters, monitoring equipment, and DA. In 2014, LIPA proposed to deploy 25,000 AMI meters in its annual Utility 2.0 filing. In its 2017 Utility 2.0 Update, LIPA instituted a formal, long-term phased approach to AMI. CBAs were proposed in both the 2017 and 2018 cases. In its 2019 Update, LIPA proposed to replace 250,000 meters per year through 2022.

Notable Resources:

Pilot: <https://e9radar.link/y3r>

SGIG: <https://e9radar.link/1ojf>

Proceeding:	Year	Type	url
LIPA/PSE&G 2015 Rate Case 15-00262	2015	Reference	http://e9radar.link/y1ry

Description:

In January 2015, LIPA (and its service provider, PSE&G) filed for a three-year, \$221M rate increase. In its application, LIPA proposed to deploy 25,000 meters to large industrial customers in addition to a phased, full deployment of AMI to the rest of its service territory. The DPS recommended a subsequent AMI filing through LIPA's Utility 2.0 plans.

Document: Defer 9/3/2015 <https://e9radar.link/joz>
Brief on Exceptions on Behalf of The Long Island Power Authority
P. 10 cites LIPA's agreement to defer AMI plans until 2015 Utility 2.0 filing

Document: Testimony 6/4/2015 <https://e9radar.link/uh8>
Rebuttal Testimony of Customer Services Panel
P. 19 lists AMI benefits, P. 22 shows financial summary (savings, capital costs, etc.), p. 23 details the implementation plan. P. 26 lists quantitative benefits, p. 28 lists REV benefits, p. 32 has technology details

Proceeding:	Year	Type	url
LIPA/PSE&G Utility 2.0 14-01299	2014	AMI Proposal	http://e9radar.link/4mu1

Description:

This docket contains LIPA's annual "Long Range/Utility 2.0" filings, which include the evolution of their AMI plans. LIPA filed its first full deployment plan and CBA in September 2017. Cost recovery details are debated in LIPA rate cases, esp. Case No. 15-00262.

Document: 2018 Update 6/29/2018 <https://e9radar.link/e14>
Utility 2.0 Long Range Plan 2018 Annual Update
Starting on p. 18, LIPA provides a detailed AMI plan/summary. P. 66 breaks down CBA

Document:	AMI Deployment Plan	9/8/2017	https://e9radar.link/gh1
	2017 Annual Update Appendix 1 - Smart Meter Full Deployment Business Plan		
	P. 28 explains CBA, p. 19 explains Implementation Plan, p. 21 explains benefits		
Document:	2014 Proposal	7/1/2014	https://e9radar.link/xiv
	Utility 2.0 Long Range Proposal		
	P. 3-36 describes current and future AMI deployment, beginning with 25,000 meters		
Document:	2019 Update	6/28/2019	https://e9radar.link/qhc
	Utility 2.0 Long Range Plan 2019 Annual Update		
	p. 12 describes AMI deployment and goal of deploying 250,000 meters per yr 2019-2022, p. 17 notes that LIPA will not request funding for AMI in 2019		
Document:	2017 Update	9/8/2017	https://e9radar.link/vof
	Utility 2.0 Long Range Plan 2017 Annual Update		
	Includes the AMI Deployment Plan as a separate Attachment		
Document:	2016 Update	12/29/2016	http://e9radar.link/fazg
	Utility 2.0 Long Range Plan 2016 Annual Update		
	P. 18 lists a plan to deploy 50,000 more meters in 2017		
Document:	2015 Update	12/31/2015	https://e9radar.link/sn0
	Utility 2.0 Long Range Plan 2015 Annual Update		
	P. 5 provides updates on AMI implementation, including approval of \$3.9M		
Document:	Defer	9/3/2015	https://e9radar.link/i48
	Brief on Exceptions on Behalf of The Long Island Power Authority		
	P. 10 cites LIPA's agreement to defer AMI plans until 2015 Utility 2.0 filing		
Document:	2014 Proposal	7/1/2014	https://e9radar.link/z4x
	Proposal concerning Utility 2.0 Investments And Associated Amendments To The Operating Services Agreement		
	P. 6 describes deployment to 25,000 large industrial customers		
Document:	2014 Staff Comments	4/15/2014	https://e9radar.link/ho7
	DPS Recommendations of PSEG's First Annual Long Range Plan		
	P. 6 notes the Staff's recommendation to determine AMI deployment in the rate case in order to better analyze costs and benefits		

Utility / Holding Company

Analysis

Niagara Mohawk Power National Grid							Detailed AMI Meters
\$B	Class	Year	ben/cost/net	app./deny/set/pend			
\$2.2	Restructured	2019	• •	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>			3,337

Summary Niagara Mohawk (dba National Grid) first described plans to deploy AMI in its 2016 Distribution Implementation System Platform plan. In 2017, National Grid deployed limited AMI as part of a REV demonstration project, and in its 2017 rate case, National Grid filed an updated AMI business case with a proposal for full deployment of 1.7M meters. After a lengthy stipulation process, National Grid agreed with staff that its AMI plan was not ready for consideration and agreed to resubmit its business plan. The commission approved this notion in March 2018 and required more stakeholder engagement. In September 2019, National Grid filed a supplemental filing which updated its AMI cost and benefit projections, lowering cost and adding new benefit categories.

Proceeding:	Year	Type	url
National Grid 2017 Rate Case 17-E-0238	2017	AMI Proposal	http://e9radar.link/6drs

Description:

In April 2017, National Grid requested a rate increase of \$326M in the 12 months ending March, 2019. This case includes significant distribution system upgrades, including a major AMI project. National Grid proposed to install 1.7M electric AMI meters and 0.6M gas ERTs over a 4-year period. In March 2018, the commission approved a joint proposal which excluded AMI in order to create a new business case and stakeholder engagement. In a September 2019 supplemental filing, National Grid noted that AMI costs are projected to decrease by \$16M over 20-year NPV basis, and recognized that two benefit categories should be added to the CBA: societal outage notification and reduced investments for Distributed System Platform provider responsibilities. Adjustments resulted in \$641M decrease in costs and \$873.6M in benefits for the opt-out scenario (a BCA ratio of 1.36). The Supplement also included an evaluation of how deployment in the National Grid Rhode Island and Massachusetts jurisdictions would change the BCA ratio.

Document: Testimony 4/28/2017 <https://e9radar.link/m9t>

Testimony and Exhibits of:
Advanced Metering Infrastructure Panel (Redacted)
Outdoor Lighting Panel
Book 9

P. 105 of pdf begins 2017 updated CBA, p. 155 of pdf shows BCA summary chart, p. 16, 113 and 138 of pdf describe customer benefits, p. 122 of pdf AMI costs, p. 142 of pdf societal benefits

Document: Supplement 9/4/2019 <https://e9radar.link/1y2p>

NMPC Supplemental AMI Implementation Report

P. 4 discusses cost reduction, p. 5-6 discusses newly-identified benefits

Document: Report 11/15/2018 <https://e9radar.link/xgp>

Report of Niagara Mohawk Power Corporation d/b/a National Grid on the Proposed Implementation of Advanced Metering Infrastructure

P. 8 provides a good case summary and methodology, p. 10 explains stakeholder involvement

Document: Order (denying) 3/15/2018 <https://e9radar.link/7xw>

Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans

P. 60-62 explains rejection of AMI

Document: Joint Proposal 1/19/2018 <https://e9radar.link/3kqw>

Joint Proposal

P. 112-115 discuss AMI agreements

Proceeding:	Year	Type	url
Reforming the Energy Vision (REV) 14-M-0101	2014	Rulemaking	http://e9radar.link/e4kn

Description:

This proceeding contains over 1,700 filings for the formation of the NY Reforming the Energy Vision. AMI deployment supports several of the initiatives listed in REV, and all major NY utilities filed comments or reports in this proceeding. New York utilities also filed Distribution System Implementation Plans in this docket, some of which included AMI plans.

Document: Comments 9/22/2014 <https://e9radar.link/pc6>

New York State Electric & Gas Corporation and

Rochester Gas and Electric Corporation Track One Comments on AMI

NYSEG summarizes AMI benefits and their applicability to the Staff Track One Comments

Document: Proposal 7/29/2016 <https://e9radar.link/kph>

Consolidated Edison Company of New York, Inc. and Orange and Rockland

Utilities, Inc. submit their Advanced Metering Infrastructure Customer Engagement Plan

ConEd AMI Customer Engagement Plan

Document: BCA Order 1/21/2016 <https://e9radar.link/ndnp>

Order Establishing the Benefit Cost Framework

This order established a BCA framework subsequently required for major REV-related initiatives

Document: Staff Proposal 8/22/2014 <https://e9radar.link/o0d>

Developing The Rev Market In New York: DPS Staff Straw Proposal On Track One Issues

Appendix A, p. 2, discusses the system-wide benefits of AMI and alternatives

Utility / Holding Company

Analysis

New York State Electric & Gas Iberdrola

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.2	Restructured	2019	• • •	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	

Summary In December 2016, New York State Electric & Gas Corporation (NYSEG) and Rochester Gas and Electric Corporation (RG&E) jointly proposed an AMI deployment plan, petitioning for 1.8M meters deployed over four years (2018-2021), including meter deployment in a REV demonstration project. In March 2017, the commission put a temporary hold on case action in order to address severe weather impacts in the state. In May 2019, the companies opened a joint 2020 rate case that included recovery of its electric and gas AMI investment in addition to an updated business case. The commission determined that the 2016 AMI docket was duplicative, and closed the case in order to consider the updated rate case proposal. For all four businesses (gas and electric for NYSEG and RG&E), the companies estimated a cost of \$549.2M and benefits of \$829.9M.

Proceeding:

	Year	Type	url
NYSEG 2020 Rate Case 19-E-0380	2019	AMI Proposal	https://e9radar.link/lk7b

Description:

This rate case, among other initiatives, seeks approval to deploy and recover AMI to all of NYSEG and R&E electric and gas customers. The proposal seeks to replace 1.3M electric meters, retrofit/replace 600,000 gas meters, update the customer information system, and other updates. Testimony notes that "fairness benefits," quantified at \$156.8M, were not included in the societal BCA calculation because they represent income transfers through better alignment of costs of service and customer bills.

Document: Exhibits

5/20/2019

<https://e9radar.link/4wu>

Advanced Metering Infrastructure Panel Exhibits

Exhibit 2, p. 13 of pdf, explains 2019 BCA, p. 21 of pdf shows comparison of costs and benefits, p. 35 of pdf explains savings, p. 44 of pdf includes qualitative benefits

Document: Conference

6/25/2019

<https://e9radar.link/004>

2019 NYSEG and RG&E Rate Case Filings

Technical Conference slideshow; contains AMI summary on p. 52

Document: Testimony

5/20/2019

<https://e9radar.link/ily>

Direct Testimony of Advanced Metering Infrastructure Panel

Testimony on motivations, background, CBA and other benefits of AMI, starting around p. 9

Proceeding:	Year	Type	url
NYSEG AMI Program 17-E-0058	2017	AMI Proposal	http://e9radar.link/h7q6

Description:

In December 2016, NYSEG and RG&E requested authorization for full-scale deployment of AMI (1.8M meters) and establishment of a surcharge to recover associated costs. The Companies note that full deployment is necessary to realize REV goals, especially the implementation of DER. The AMI roll-out was proposed to begin in 2018 and end in 2021, which will include the installation of 12,000 smart meters in the Ithaca Energy Smart Community REV Demonstration project. In March 2017, Department of Public Service (DPS) staff postponed the AMI case indefinitely as a result of the 2017 windstorm, outages, and restoration efforts. In February 2018, the case resumed, and NYSEG and RG&E filed updates to the financial portion of their petition. Following the initiation of NYSEG and RG&E's 2020 rate case, which included a provision for AMI deployment, the DPS closed this case due to its duplicative nature.

Document: Testimony 12/20/2016 <https://e9radar.link/flp>

NYSEG and RG&E Direct Testimony of AMI Business Plan Panel

P. 6 and 34 list benefits, p. 9 describes the ESC project, p. 18 describes capital investments, p. 28 capital cost benefits, p. 35 details quantified AMI benefits

Document: AMI Exhibits 12/20/2016 <https://e9radar.link/an7>

Combined AMI Business Panel Exhibits

Links: P. 142 of pdf starts AMI Business Plan, p. 159 of pdf has deployment costs/benefits, p. 147 of pdf includes cost chart (over 5 yrs, 20 yr costs included in bigger chart), p. 158 of pdf has benefit chart. P. 195 of pdf (Appendix G) includes in-depth AMI CBA, p. 161 of pdf explains qualitative benefits, p. 168 of pdf (Appendix A) is Stakeholder Engagement

Document: Petition 12/20/2016 <https://e9radar.link/22w>

NYSEG and RGE AMI Petition

(Revised Petition) Summary of the AMI Program/Implementation Plan. Benefits listed on p. 2 and 3; the business plan is summarized on p. 4 and included in Section VII of the DSIP.

Proceeding:	Year	Type	url
Reforming the Energy Vision (REV) 14-M-0101	2014	Rulemaking	http://e9radar.link/e4kn

Description:

This proceeding contains over 1,700 filings for the formation of the NY Reforming the Energy Vision. AMI deployment supports several of the initiatives listed in REV, and all major NY utilities filed comments or reports in this proceeding. New York utilities also filed Distribution System Implementation Plans in this docket, some of which included AMI plans.

Document:	Comments	9/22/2014	https://e9radar.link/pc6
	New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation Track One Comments on AMI NYSEG summarizes AMI benefits and their applicability to the Staff Track One Comments		
Document:	Proposal	7/29/2016	https://e9radar.link/kph
	Consolidated Edison Company of New York, Inc. and Orange and Rockland Utilities, Inc. submit their Advanced Metering Infrastructure Customer Engagement Plan ConEd AMI Customer Engagement Plan		
Document:	BCA Order	1/21/2016	https://e9radar.link/ndnp
	Order Establishing the Benefit Cost Framework This order established a BCA framework subsequently required for major REV-related initiatives		
Document:	Staff Proposal	8/22/2014	https://e9radar.link/o0d
	Developing The Rev Market In New York: DPS Staff Straw Proposal On Track One Issues Appendix A, p. 2, discusses the system-wide benefits of AMI and alternatives		

Utility / Holding Company

Analysis

Rochester Gas & Electric Corp Iberdrola						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$0.6	Restructured	2016		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>		

Summary See NYSEG for details.

Notable Resources:

AMI Workpapers: <https://e9radar.link/nya>

Proceeding:	Year	Type	url
Reforming the Energy Vision (REV) 14-M-0101	2014	Rulemaking	http://e9radar.link/e4kn

Description:

This proceeding contains over 1,700 filings for the formation of the NY Reforming the Energy Vision. AMI deployment supports several of the initiatives listed in REV, and all major NY utilities filed comments or reports in this proceeding. New York utilities also filed Distribution System Implementation Plans in this docket, some of which included AMI plans.

Document:	Comments	9/22/2014	https://e9radar.link/pc6
	New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation Track One Comments on AMI NYSEG summarizes AMI benefits and their applicability to the Staff Track One Comments		
Document:	Proposal	7/29/2016	https://e9radar.link/kph
	Consolidated Edison Company of New York, Inc. and Orange and Rockland Utilities, Inc. submit their Advanced Metering Infrastructure Customer Engagement Plan ConEd AMI Customer Engagement Plan		
Document:	BCA Order	1/21/2016	https://e9radar.link/ndnp
	Order Establishing the Benefit Cost Framework This order established a BCA framework subsequently required for major REV-related initiatives		
Document:	Staff Proposal	8/22/2014	https://e9radar.link/o0d
	Developing The Rev Market In New York: DPS Staff Straw Proposal On Track One Issues Appendix A, p. 2, discusses the system-wide benefits of AMI and alternatives		

Utility / Holding Company						Analysis
Central Hudson Gas & Elec Corp Fortis						Summary
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$0.6	Restructured			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		140
Summary Central Hudson began installing AMR technology in the 1990. Central Hudson analyzed AMI benefits and costs in their 2016 Distribution System Implementation Platform, but asserted that deployment costs outweighed benefits. A 2017 REV CONNECT Utility Profile on Central Hudson noted that AMF is available in an opt-in basis. In October 2017, the New York DPS ruled that Central Hudson could no longer offer an AMR opt-out fee to its customers. In response, Central Hudson filed information in its 2018 DSIP on its Insights+ program, a subscription based service for the installation of advanced meters. This opt-in program collects measurement and verification information for NWA programs, supports value stack compensation, and enables TOU rates.						
<i>Notable Resources:</i> <i>Utility Profile:</i> https://e9radar.link/znc <i>Company Meter Page:</i> https://e9radar.link/lqwg <i>Article on opt-out:</i> https://e9radar.link/pief						

Proceeding:	Year	Type	url
Distributed System Implementation Plans 16-M-0411	2016	Rulemaking	http://e9radar.link/amxk

Description:

In October 2015, staff submitted the Staff Proposal Distributed System Implementation Plan (DSIP) Guidance in the REV docket, which outlined a two-phase approach to DSIP filings. The Guidance Proposal noted that some level of advanced metering functionality is likely required in order to achieve REV objectives. After collecting stakeholder comment on coverage areas and DSIP structure, the commission issued an order in July 2016 creating the DSIP framework and DSIP docket. The order stated, "In their Initial DSIP filings, utilities should include a summary of the most up-to-date AMI rollout plans over the next five years. Any AMI proposals made within DSIP filings, rate cases, or separate petitions, should be accompanied by a detailed business plan that, at a minimum, addresses the following elements: 1) plans and schedules for deployment; 2) new or upgraded data management, communications, billing or other backend systems to support AMI along with associated budgets; 3) proposed innovative rate structures; 4) a benefit-cost analysis consistent with the BCA Order; and, 5) customer rate impact analyses." In May 2018, the DPS released a white paper on potential DSIP updates. The white paper suggested that the DSIP update include additional details on AMI deployment, including how the utility's AMI integrates DERs, VVO, and EV adoption; details on AMI device communication; and how data access is addressed.

Document: CenHud 2016 DSIP	6/30/2016	https://e9radar.link/uqd
Central Hudson Distributed System Implementation Plan 2016		

P. 143 lists calculated benefits/costs, which results in a net cost. Chose not to deploy.

Document: CenHud 2018 DSIP	7/31/2018	https://e9radar.link/4lw
Central Hudson Distributed System Implementation Plan 2018		

Implementation Plan 2018

P. 211 lists AMI analysis; p. 221 observes that AMI is not yet cost effective

Proceeding:	Year	Type	url
Reforming the Energy Vision (REV) 14-M-0101	2014	Rulemaking	http://e9radar.link/e4kn

Description:

This proceeding contains over 1,700 filings for the formation of the NY Reforming the Energy Vision. AMI deployment supports several of the initiatives listed in REV, and all major NY utilities filed comments or reports in this proceeding. New York utilities also filed Distribution System Implementation Plans in this docket, some of which included AMI plans.

Document:	Comments	9/22/2014	https://e9radar.link/pc6
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	Consolidated Edison Company of New York, Inc. and Orange and Rockland Utilities, Inc. submit their Advanced Metering Infrastructure Customer Engagement Plan ConEd AMI Customer Engagement Plan		
Document:	BCA Order	1/21/2016	https://e9radar.link/ndnp
	Order Establishing the Benefit Cost Framework This order established a BCA framework subsequently required for major REV-related initiatives		
Document:	Staff Proposal	8/22/2014	https://e9radar.link/o0d
	Developing The Rev Market In New York: DPS Staff Straw Proposal On Track One Issues Appendix A, p. 2, discusses the system-wide benefits of AMI and alternatives		

Utility / Holding Company

Analysis

Orange & Rockland Utilities ConEd							Detailed
\$B	Class	Year	ben/cost/net			app./deny/set/pend	AMI Meters
\$0.5	Restructured	2016	•	•	•	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	44,202

Summary In November 2014, O&R filed a rate case which included Phase One of O&R's AMI program and associated recovery of \$23.7M. Phase One included a 5-year installation of 116,000 electric and 91,000 gas AMI meters. O&R noted that Phase Two would deploy AMI to the remainder of its territory. The approval of this case in October 2015 included the provision to create an AMI Business Plan and BCA, and noted that the outcome of O&R's Distributed System Implementation Plan (DSIP), which included the company's AMI plans, may impact commission approval for full deployment. The AMI Business Plan, filed in June 2016 in both the rate case and DSIP, added MDMSS and modified the implementation timeline from 5 to 4 years. In July 2017, O&R filed a revised BCA which reported net benefits of \$15.6M. In November 2017, the commission approved the updated AMI proposal.

Notable Resources:

Press release: <https://e9radar.link/0gjq>

Company website: <https://e9radar.link/lpfm>

Proceeding:	Year	Type	url
O&R 2017 AMI Program 17-M-0178	2017	AMI Proposal	https://e9radar.link/vi6kf

Description:

In February 2017, Orange & Rockland requested approval of incremental EE Programs, full deployment of AMI in O&R territory, an AMI Customer Engagement Plan and AMI Rate Pilot Program, and a framework for NWA projects. O&R submitted three separate AMI system-related proposals, which will expand the AMI program approved in Case No. 14-E-0493, O&R's previous rate case. O&R seeks approval to move forward with AMI implementation, authorization to deploy an expanded scope and functionality in Rockland County (an increase of \$17.7M from its original proposal totaling \$61M), and expansion of the Orange and Sullivan Counties deployment effort (adding a cost of \$37M). The cost of these projects results in an overall cost estimate of \$98M for AMI deployment. In November 2017, the commission approved the AMI project and customer engagement plan, with a capital expenditures cap of \$98.5M. The commission rejected O&R's rate pilot and also required regular reporting.

Document: Report 11/15/2018 <https://e9radar.link/8d3>
Advanced Metering Infrastructure Metrics
AMI Metrics Report

Document: Petition 2/13/2017 <http://e9radar.link/pcci>
Petition Of Orange And Rockland Utilities, Inc. For Authorization Of A Program Advancement Proposal
Initial petition to deploy and upgrade AMI. P 16-18 describe history of the AMI project, updated CBA, etc.

Proceeding:	Year	Type	url
Reforming the Energy Vision (REV) 14-M-0101	2014	Rulemaking	http://e9radar.link/e4kn

Description:

This proceeding contains over 1,700 filings for the formation of the NY Reforming the Energy Vision. AMI deployment supports several of the initiatives listed in REV, and all major NY utilities filed comments or reports in this proceeding. New York utilities also filed Distribution System Implementation Plans in this docket, some of which included AMI plans.

Document: Comments 9/22/2014 <https://e9radar.link/pc6>
New York State Electric & Gas Corporation and
Rochester Gas and Electric Corporation Track One Comments on AMI
NYSEG summarizes AMI benefits and their applicability to the Staff Track One Comments

Document: Proposal 7/29/2016 <https://e9radar.link/kph>
Consolidated Edison Company of New York, Inc. and Orange and Rockland
Utilities, Inc. submit their Advanced Metering Infrastructure Customer Engagement Plan
ConEd AMI Customer Engagement Plan

Document: BCA Order

1/21/2016

<https://e9radar.link/ndnp>

Order Establishing the Benefit Cost Framework

This order established a BCA framework subsequently required for major REV-related initiatives

Document: Staff Proposal

8/22/2014

<https://e9radar.link/o0d>

Developing The Rev Market In New York: DPS Staff Straw Proposal On Track One Issues

Appendix A, p. 2, discusses the system-wide benefits of AMI and alternatives

State Summary

OH

In 2007, Ohio enacted the Energy, Jobs and Progress plan to modernize Ohio's energy infrastructure. Following this plan, SB-221 restructured Ohio's competitive retail electric service market and established advanced energy resource standards. SB-221 encouraged the implementation of AMI. Duke Energy Ohio proposed a rider in 2008 to modernize its grid infrastructure. The Ohio PUC also considered AMI necessity and data concerns, which resulted in a memo that expressed support for statewide AMI deployment. Ohio's 2018 PowerForward initiative describes a vision to upgrade Ohio's grid infrastructure.

Notable Resources:

AMI Ruling: <https://e9radar.link/72kw>

PowerForward : <http://e9radar.link/sjch>

Utility / Holding Company

Analysis

Ohio Power American Electric Power

Summary

\$B	Class	Year	ben/cost/net	app/deny/set/pend	AMI Meters
\$2.8	Restructured	2008		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	146,965

Summary In AEP Ohio's July 2008 Electric Security Plan, the company announced implementation of gridSMART® Phase 1. The gridSMART® initiative included AMI, HAN, and DA. Phase 1 included a three-year installation of these technologies in certain residential communities (110,000 meters, cited as part of its SGIG demonstration project). The net cost of implementing this bundled program estimated at \$109M. In its ESP testimony, AEP Ohio notes that it did not quantify the societal benefits for its gridSMART® plan due to the implication of SB-221, which "suggests that the General Assembly has already recognized the potential customer and societal benefits." In September 2013, AEP Ohio's gridSMART® Phase 2 filing proposed an additional 894,000 meters, VVO, and DA circuit reconfiguration. Phase 2 provided a business case with a section dedicated to AMI. In July 2019, AEP Ohio filed its gridSMART® Phase 3 plan, which included final deployment of AMI to the rest of its 475,000 customers in addition to a variety of other technologies.

Notable Resources:

SGIG: <https://e9radar.link/0vw4>

Proceeding:

	Year	Type	url
Ohio Power gridSMART® Phase 2 Update 17-1156-EL-RDR	2017	Cost Recovery	http://e9radar.link/7qnq

Description:

In April 2017, this case was opened to adjust the AMI/gridSMART® rider mechanism. The application referenced case no. 13-1939-EL-RDR, which contains the initial deployment and recovery.

Document: Application

7/28/2017

<https://e9radar.link/ncb>

Application

Proceeding:	Year	Type	url
AEP OH 2008 ESP 08-0918-EL-SSO	2008	AMI Proposal	

Description:

In July 2008, Ohio Power (AEP Ohio) filed its 2008 Electric Security Plan (ESP). The ESP covered an initial 3-year period (2009-2011) and included energy efficiency, demand response, renewable energy, gridSMART® Phase 1 (which included phased-in AMI), distribution reliability enhancement, and several other issues/programs. In March 2009, the commission approved the application and noted its support of AMI technology. The order reduced the gridSMART® relief from \$109M to \$54.5M and suggested that the company submit updates/adjustments to the program annually.

Document: Testimony 7/31/2008 <https://e9radar.link/1li7>

Direct testimony of Karen L. Sloneker on behalf of Columbus Southern Power Company and Ohio power Company

Explains Phase I technology; p. 9-10 shows AMI plan, p. 15 cites project cost and meter numbers, p. 19 states why benefits were not calculated

Utility / Holding Company

Analysis

Ohio Edison First Energy							Detailed
\$B	Class	Year	ben/cost/net			app./deny/set/pend	AMI Meters
\$1.4	Restructured	2016	•	•	•	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	12

Summary In August 2014, Ohio Edison company, The Cleveland Electric Illuminating company and The Toledo Edison company (collectively, FirstEnergy) filed their fourth Electric Security Plan entitled "Powering Ohio's Progress," which contained a commitment to file a grid modernization plan in 2016. In February 2016, FirstEnergy proposed a full deployment of AMI for its Ohio entities as a foundational part of a grid modernization proposal. While the initial application only included net present value for the full grid modernization program, the stipulation, which also resolved concerns with a parallel distribution modernization plan, provided more detailed info on costs and benefits. The stipulation was approved in July 2019.

Proceeding:	Year	Type	url
FirstEnergy Distribution Modernization Plan 17-2436-EL-UNC	2017	Tech Upgrades	https://e9radar.link/disca78a7

Description:

In December 2019, the Cleveland Electric Illuminating Company and Toledo Edison Company filed an application for a Distribution Platform Management Plan to modernize their distribution system. The DPM builds off of the AMI system in the companies territories and utilizes the AMI recovery rider. SCADA, ADMS, and other projects were included.

Document: Opinion and Order 7/17/2019 <https://e9radar.link/kjl>

Opinion & Order that the Commission approves and adopts the Stipulation filed by various parties to these proceedings, as modified herein electronically filed by Docketing Staff.

P. 14-16 discusses grid modernization projects, including AMI and MDMS

Document: Application 12/1/2017 <https://e9radar.link/73912>

In the Matter of the Application for approval of a distribution platform modernization plan filed by J. Lang on behalf of Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company. (FAX)

P. 4-6 discusses SCADA and ADMS, p. 18 of pdf estimates costs

Proceeding:	Year	Type	url
FirstEnergy Grid Modernization Business Plan 16-0481-EL-UNC	2016	AMI Proposal	http://e9radar.link/1f33

Description:

In August 2014, in case no. 14-1297-EL-SSO the FirstEnergy companies filed their fourth Electric Security Plan entitled "Powering Ohio's Progress." In the third Supplemental Stipulation, the companies set forth a commitment to file a grid modernization business plan "that highlights future initiatives for Commission consideration and approval." As part of this commitment, the Companies were to include in the plan a timeline for the Companies to achieve full smart meter implementation with data and transfer capabilities and examples of grid modernization initiatives, such as AMI, DA, and Integrated Volt/VAR Control (IVVC). In February 2016, FirstEnergy formally applied for approval of its grid modernization plan. While this case was being considered, FirstEnergy filed an application for a distribution platform modernization plan (DPM, case no., 17-2436-EL-UNC) in December 2017, and the commission released its PowerForward roadmap in August 2018. In November 2018, a stipulation was filed to resolve the DPM and grid modernization plans. After an extended procedural schedule and consolidation of the issues, the commission approved the stipulation in July 2019.

Document: Stipulation 11/9/2018 <http://e9radar.link/fed3f>

Stipulation and Recommendation

Cost Benefit Analysis found in Attachment B.

Document: Application 2/29/2016 <https://e9radar.link/jbye>

In the matter of the Grid Modernization Business Plan electronically filed by Ms. Carrie M Dunn on behalf of The Toledo Edison Company and The Cleveland Electric Illuminating Company and Ohio Edison Company.

P. 22-23 of Exhibit A includes net present value of full grid modernization program, plus a discussion of costs and benefits.

Document: Order 7/17/2019 <https://e9radar.link/kjl>

Opinion & Order that the Commission approves and adopts the Stipulation filed by various parties to these proceedings, as modified herein electronically filed by Docketing Staff.

Contained useful summary of several parallel cases, overviewed stipulation, imposed modifications and approved the settlement

Utility / Holding Company

Analysis

Cleveland Electric Illum Co First Energy

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.0	Restructured	2016		<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	34,204

Summary See Ohio Edison for First Energy's joint application for full AMI deployment. In 2010, FirstEnergy deployed limited AMI, DA, VVO, and direct load control devices in the Cleveland Electric Illuminating Co. territory through a SGIG.

Notable Resources:

SGIG: <https://e9radar.link/pmw3>

Proceeding:

	Year	Type	url
FirstEnergy Grid Modernization Business Plan 16-0481-EL-UNC	2016	AMI Proposal	http://e9radar.link/1f33

Description:

In August 2014, in case no. 14-1297-EL-SSO the FirstEnergy companies filed their fourth Electric Security Plan entitled "Powering Ohio's Progress." In the third Supplemental Stipulation, the companies set forth a commitment to file a grid modernization business plan "that highlights future initiatives for Commission consideration and approval." As part of this commitment, the Companies were to include in the plan a timeline for the Companies to achieve full smart meter implementation with data and transfer capabilities and examples of grid modernization initiatives, such as AMI, DA, and Integrated Volt/VAR Control (IVVC). In February 2016, FirstEnergy formally applied for approval of its grid modernization plan. While this case was being considered, FirstEnergy filed an application for a distribution platform modernization plan (DPM, case no., 17-2436-EL-UNC) in December 2017, and the commission released its PowerForward roadmap in August 2018. In November 2018, a stipulation was filed to resolve the DPM and grid modernization plans. After an extended procedural schedule and consolidation of the issues, the commission approved the stipulation in July 2019.

Document: Stipulation 11/9/2018 <http://e9radar.link/fed3f>

Stipulation and Recommendation

Cost Benefit Analysis found in Attachment B.

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In the matter of the Grid Modernization Business Plan electronically filed by Ms. Carrie M Dunn on behalf of The Toledo Edison Company and The Cleveland Electric Illuminating Company and Ohio Edison Company.

P. 22-23 of Exhibit A includes net present value of full grid modernization program, plus a discussion of costs and benefits.

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Opinion & Order that the Commission approves and adopts the Stipulation filed by various parties to these proceedings, as modified herein electronically filed by Docketing Staff.

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Utility / Holding Company

Analysis

Duke Energy Ohio Duke

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Summary AMI Meters
\$1.0	Restructured	2008	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	716,590

Summary In Duke Energy Ohio's 2008 Electric Security Plan (ESP), Duke introduced a new Distribution Security rider to recover costs associated with the deployment of smart grid infrastructure. The technology included AMI, which primarily delivered the benefit of reduced meter reading. In Duke's 2018 ESP, the company requested meter upgrades from the node environment to the mesh environment.

Proceeding:	Year	Type	url
DEO Electric Security Plan 2018 -2024 17-1263-EL-SSO	2017	Tech Upgrades	https://e9radar.link/disca3ead

Description:

In Duke Energy Ohio's 2018 ESP, Duke explains that discontinued technologies (Echelon node meters and 3G/4G cellular networks) necessitated AMI meter upgrades for their residential customers. Upgrading the system to the mesh environment would avoid the upgrade of 140,000 meters. Cost to replace meters were estimated at \$143M, which is \$91M less than the upgrade/retrofit option. Opposition to the replacement argue that the life of the original AMI meters was for 20 years, and that many other costs were not included.

Document: Order approving stipulation 12/19/2018 <https://e9radar.link/wz3>

Opinion & Order approving and adopting the stipulation; that Duke is authorized to file in final form its tariffs consistent with this Opinion and Order; that Duke shall notify all affected customers of the tariffs via bill message or bill insert within 30 days of the effective date of the revised tariffs; that the pending motions for protective order are granted, as set forth herein. Concurring Opinion of Commissioner Lawrence K. Friedeman observations intended merely as comments, supporting the decision reached today.

This stipulation resolves ten Duke cases, including the rate case and ESP. P. 76 summarizes case, including \$91M excess to upgrade rather than replace. P. 77 reflects

Document: Testimony (Schneider testimony contains AMI business case and 6/1/2017 <https://e9radar.link/o3u>

Application Continued -Testimonies of James P. Henning, Robert J. Lee, William Don Watham, Jr., Scott B. Nicholson, Cicely M. Hart, Donald L. Schneider, Jr., and Retha Hunsicker. (Part 3 of 6)

P. 196 of pdf describes issues with meters, 197-198 of pdf discusses cellular network issues, costs and benefits on p. 199-201 of pdf, detailed costs on p. 202 of pdf, p. 204 of pdf has detailed cost chart

Document: Stipulation (summary and suggested plan) 4/13/2018 <https://e9radar.link/5qb>

Stipulation and Recommendation electronically filed by Ms. Elizabeth H. Watts on behalf of Duke Energy Ohio, Inc.

Utility / Holding Company

Analysis

Dayton Power & Light Co AES Corporation

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Meters
\$0.7	Restructured	2018	• • •	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	

Summary In DP&L's third Electric Security Plan, the commission directed the company to file a comprehensive Distribution Infrastructure Modernization Plan (DMP). In December 2018, DP&L filed its DMP, which was framed around enhancing customer benefits. The DMP included AMI deployment in addition to other grid modernization upgrades.

Proceeding:	Year	Type	url
DP&L Distribution Modernization Plan <i>18-1875-EL-GRD</i>	2018	AMI Proposal	https://e9radar.link/o17n

Description:

Dayton Power and Light's Distribution Modernization Plan (DMP) includes AMI deployment in addition to several other distribution-specific programs. This plan outlines costs and a variety of AMI-specific and distribution system benefits. The plan does not list specific number of AMI deployments.

Document: Application 12/21/2018 <https://e9radar.link/bk2>

The Dayton Power and Light Company's Application for Approval of its Plan to Modernize its Distribution Grid

Business case for the DMP on p. 5, does not break out meter costs

Document: Testimony 12/21/2018 <https://e9radar.link/v60>

Storm Testimony

AMI proposal, costs, benefits, esp. p. 27, p. 6 discusses technology and p. 8 discusses opt-out

Utility / Holding Company

Analysis

Toledo Edison Company First Energy

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Meters
\$0.4	Restructured	2016		<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	0

Summary See Ohio Edison for First Energy's joint application.

Proceeding:	Year	Type	url
FirstEnergy Grid Modernization Business Plan 16-0481-EL-UNC	2016	AMI Proposal	http://e9radar.link/1f33

Description:

In August 2014, in case no. 14-1297-EL-SSO the FirstEnergy companies filed their fourth Electric Security Plan entitled "Powering Ohio's Progress." In the third Supplemental Stipulation, the companies set forth a commitment to file a grid modernization business plan "that highlights future initiatives for Commission consideration and approval." As part of this commitment, the Companies were to include in the plan a timeline for the Companies to achieve full smart meter implementation with data and transfer capabilities and examples of grid modernization initiatives, such as AMI, DA, and Integrated Volt/VAR Control (IVVC). In February 2016, FirstEnergy formally applied for approval of its grid modernization plan. While this case was being considered, FirstEnergy filed an application for a distribution platform modernization plan (DPM, case no., 17-2436-EL-UNC) in December 2017, and the commission released its PowerForward roadmap in August 2018. In November 2018, a stipulation was filed to resolve the DPM and grid modernization plans. After an extended procedural schedule and consolidation of the issues, the commission approved the stipulation in July 2019.

Document: Stipulation 11/9/2018 <http://e9radar.link/fed3f>

Stipulation and Recommendation

Cost Benefit Analysis found in Attachment B.

Document: Application 2/29/2016 <https://e9radar.link/jbye>

In the matter of the Grid Modernization Business Plan electronically filed by Ms. Carrie M Dunn on behalf of The Toledo Edison Company and The Cleveland Electric Illuminating Company and Ohio Edison Company.

P. 22-23 of Exhibit A includes net present value of full grid modernization program, plus a discussion of costs and benefits.

Document: Order 7/17/2019 <https://e9radar.link/kjl>

Opinion & Order that the Commission approves and adopts the Stipulation filed by various parties to these proceedings, as modified herein electronically filed by Docketing Staff.

Contained useful summary of several parallel cases, overviewed stipulation, imposed modifications and approved the settlement

State Summary

OK

In 2011, Oklahoma passed HB 1079 to allow utilities to utilize customer-identifiable usage data without customer consent for certain business operations.

Utility / Holding Company

Analysis

Oklahoma Gas & Electric OGE

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.9	Integrated	2010	•	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	793,937

Summary Oklahoma Gas & Electric Co. (OG&E) began investigating smart grid technologies in 2007. Following a demonstration project, OG&E requested approval of an expanded smart grid program in Norman, OK in a 2008 rate case. In 2009, OG&E received a \$130M SGIG to develop an integrated smart grid in Oklahoma and Arkansas, which included the installation 800,000 smart meters. In 2010, "to fully take advantage of the DOE funding," OG&E requested commission approval for full deployment of smart grid technology, including AMI, and cost recovery over three years. AMI was cited as a foundational technology to implement DR and other smart grid technologies in later phases. Project costs were estimated at \$360M. OG&E requested additional cost recovery in 2013.

Notable Resources:

SGIG: <https://e9radar.link/7xz6>

Article: <https://e9radar.link/z9fn>

Proceeding:

	Year	Type	url
PSO Rate Case and AMI Tariff PUD 201300217	2013	AMI Proposal	http://e9radar.link/j37l

Description:

In November 2013, PSO applied for a rate increase requesting a \$45M (20%) increase, \$7.4M of which was allocated to its AMI project. Rate case testimony explained the PSO had deployed smart meters for several years as part of its grid modernization plan, and the new request would account for full deployment. Capital costs were estimated at \$132.9M and incremental O&M at \$15.4M over a three-year implementation period. In July 2014, stakeholders reached a settlement agreement, which reduced the total increase to \$24M.

Document: Stipulation

6/17/2014

<https://e9radar.link/hqqx>

Joint Stipulation and Settlement Agreement

P. 3 describes AMI details, p. 15-17 of pdf show AMI costs and revenue requirements. Attachment C, p. 15-17 of pdf, shows AMI revenue requirement calculations

Document: Testimony

1/17/2014

<https://e9radar.link/i032>

Direct Testimony of Derek S. Lewellen on Behalf of Public Service Company of Oklahoma

Provides overview of the AMI project. P. 5 describes full smart grid program, p. 17 provides methodology/technology info, cost chart on p. 19, detailed chart on p. 20, p. 21-22 qualitative benefits

Document: Stipulation

7/10/2014

<https://e9radar.link/gbko>

Oklahoma Industrial Energy Consumer Signature Page To Second Joint
Stipulation And Settlement Agreement

Proof of signing a stipulation agreement. AML agreements are excised.

State Summary

OR

In 2009, the Oregon Smart Grid Resiliency Initiative established a Workforce Development Plan and Oregon PUC docket to investigate smart grid applications. In 2012, the commission issued an order in its smart grid objectives docket establishing smart grid policy goals, objectives, and annual smart grid reporting requirements. Oregon experienced smart meter backlash in 2014 when PGE meters sparked several fires throughout the state, resulting in the replacement of 70,000 meters. Despite this event, PacifiCorp's 2016 rollout was approved.

Notable Resources:

Article- replacements: <https://e9radar.link/zrnp>

Utility / Holding Company

Analysis

Portland General Electric PGE

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.8	Integrated	2007		<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	869,863

Summary Portland General Electric (PGE) first installed 3,500 smart meters in 2001. The Oregon PUC approved PGE's expanded AMI program in May 2008 through a stipulation which covers ancillary programs, project management, and best practices for a variety of scenarios (remote disconnect, outage situations, etc.). PGE completed full deployment of 888,000 meters in 2010. In 2014, PGE received reports of meter-sparked fires, prompting the replacement of 70,000 meters.

Proceeding:

	Year	Type	url
PGE Advanced Metering Infrastructure Operational Savings <i>RE 85</i>	2012	Report	http://e9radar.link/g6eo

Description:

In July 2012, PGE filed its AMI Operational Savings Report. The report included a section on AMI benefits. PGE calculated that after six months (July 2011 to December 2011) of AMI being fully deployed, PGE gained \$8.7M in actual operational benefits. On an annualized basis, this number created \$17.4M in benefits, which is \$0.8M less than the estimate developed in 2007. PGE expected additional benefits relating to the elimination of eight full-time employees, which were estimated to be eliminated by June 2012.

Document: AMI Report

7/31/2012

<https://e9radar.link/is49>

Order Compliance (AMI Operational Benefits Report)

P. 2 of pdf summarizes the AMI project, p. 4 of pdf shows a chart of benefits. Various other benefits explained throughout.

Utility / Holding Company

Analysis

PacifiCorp Berkshire Hathaway

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.3	Integrated	2016		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	47

Summary Pacific Power (PacifiCorp) began developing an AMI business case in 2014. In the PUC's order approving PacifiCorp's 2015 annual smart grid report, the commission requested that the company continue to provide updates on AMI project development. In August 2016, PacifiCorp filed a confidential business case analysis for AMI deployment in its annual smart meter report. The report provided an AMI deployment strategy, cost saving categories, functionalities, and other details. In December 2016, the commission approved the smart grid report and required PacifiCorp to provide an "Oregon AMI Roadmap" with costs, cost savings, reconnection times, analysis of data, and other provisions. PacifiCorp included these items in the 2017 annual smart grid report, and this report was accepted in February 2018.

Proceeding:	Year	Type	url
PacifiCorp AMI Charges ADV 821	2018	Opt-Out	https://e9radar.link/rzyiy

Description:

In August 2018, Pacificorp filed a petition to remove a 'Removal Charge' for opting out of AMI as a result of feedback and safety concerns during AMI rollout. The petition noted plans to install 590,000 AMI meters in Oregon, and as of July 2018, 203,000 meters had been replaced and 1,500 customers opted-out of AMI (0.76%).

Document: Initial Filing 8/3/2018 <https://e9radar.link/kayf>
Initial Utility Filing (charges change)
Pacifcorp's application to adjust charges and modify its opt-out program.

Proceeding:	Year	Type	url
PacifiPower Rule 8 and Schedule 300 AMI Revisions UE 322	2017	Opt-Out	https://e9radar.link/n61t

Description:

In January 2017, PacifiCorp filed Advice No. 17-001 to replace its tariff sheets for Rule 8 and Schedule 300, which provided rules and rates for AMI opt-out. The commission noted that the implementation time was likely too soon for customers to realize their options, and PacifiCorp agreed to notify customers of metering options, in addition to the submission of a report which detailed AMI deployment information, monthly costs, and an analysis of cost effectiveness. The docket also noted the meter deployment start date in January 2018.

Document: Staff Recommendation 3/8/2017 <https://e9radar.link/6225>
Staff Recommendation and Decision
P. 3-4 describe the tariff revisions and stipulation

Proceeding:	Year	Type	url
PacifiCorp : Smart Grid Report(s) UM 1667	2011	Report	http://e9radar.link/w9l5

Description:

In May 2012, the Oregon PUC directed PacifiCorp to file annual Smart Grid Reports (order No. 12-158 in docket no. UM 1460). In PacifiCorp's 2013 Report, the company noted several internal stakeholder groups were evaluating AMI deployment. The company began formulating a business case in 2014. In the 2016 report, PacifiCorp cited an April 2016 letter to the commission which announced its intentions to install 590,000 smart meters. Reduction of O&M expenses was listed as a large source of benefits, in addition to customer benefits. The project also included FAN, WAN, MDMS, and a customer portal. IT and network design was proposed to start in 2016, with meter deployments beginning in 2018 and commencing at the end of 2019. In the commission's order accepting the 2016 report, PacifiCorp was directed to file additional information. PacifiCorp's 2017 Report provided the commission-required "AMI Roadmap." The 2019 Smart Grid Report included cost amounts and a follow-up to the 2016 plan.

Document: 2019 Report 8/1/2019 <https://e9radar.link/1h7>

PacifiCorp, d/b/a Pacific Power, 2019 Annual Smart Grid Report

P. 19 lists current status of AMI; Appendix C, p. 66, lists business case savings but no numbers

Document: 2016 Report 8/1/2016 <https://e9radar.link/rq9>

PacifiCorp, d/b/a Pacific Power, 2016 Annual Smart Grid Report

Project summary of AMI on p. 20

Document: 2013 Report 8/1/2013 <https://e9radar.link/jam>

PacifiCorp, d/b/a Pacific Power, 2013 Annual Smart Grid Report

Initial pilot/proposal of AMI p. 43 of pdf

State Summary

PA

In January 2008, HB 2200 proposed that utilities file initial smart meter technology procurement and installation plans for approval by August 2009. HB 2200 was signed into law as Act 129 in October 2008, and included provisions for the adoption of smart meter technology over a period no longer than fifteen years. This legislation also states that customers may not opt-out of smart meter deployments. In June 2009, the commission established standards for smart meter implementation and identified fifteen functionalities which smart meters should support. Subsequent AMI filings did not present full business cases or benefits calculations. The Pennsylvania Public Utilities commission requires that all customers receive smart meters and pay utility-specific smart meter surcharges until full deployment is completed in 2023, in accordance with Act 129.

Notable Resources:

House Bill 2200: <https://e9radar.link/71l>

PUC Page: <https://e9radar.link/df3g>

Act 129: <https://e9radar.link/dbpr>

Utility / Holding Company

Analysis

PECO Energy Exelon

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$2.2	Restructured	2013	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	1,669,061

Summary In August 2009, PECO Energy requested commission approval for its Smart Meter Plan to deploy 600,000 smart meters and its accompanying cost recovery surcharge mechanism. The original cost of AMI deployment was estimated at \$215-225M depending on certain costs. During the pendency of the application, PECO was awarded a \$200M SGIG. PECO divided its Smart Meter Plan into three requests, each with their own petition and settlement agreement: a technology procurement and testing phase, development of dynamic pricing, and universal deployment of AMI. PECO's initial request in August 2009 was for its technology procurement phase and deployment of 100,000 smart meters. PECO filed a request for its dynamic pricing plan in October 2010, and in January 2013, PECO filed a formal request to deploy 1.2M smart meters to the rest of its service territory. Net benefits of universal deployment were estimated at \$59.7M. In August 2013, the commission approved the universal meter deployment portion of the plan.

Proceeding:

	Year	Type	url
PECO 2017 Smart Meter Cost Recovery <i>M-2017-2610106</i>	2017	Cost Recovery	http://e9radar.link/zcd4

Description:

In June 2017, PECO filed for an extension and modification of the smart meter recovery mechanism. The case noted that ongoing smart meter costs were rolled into base rates, and over/under collection balances through January 2016 needed to be refunded through the smart meter recovery surcharge. Expands and modifies the smart meter cost recovery mechanism; does not present the business case.

Document: **Cost Adjustment**
Cost Adjustment

6/23/2017

<https://e9radar.link/bcm>

Proceeding:	Year	Type	url
PECO Smart Meter Cost Recovery Surcharge 2014 <i>M-2014-2442548</i>	2014	Cost Recovery	http://e9radar.link/xhk1

Description:

In September 2014, PECO filed for an update to its smart meter cost recovery surcharge. The commission noted that the final order in docket no. M-2009-2123944 stated that the rate will only be updated if the rate changes by more than 5%. PECO has recalculated the rate and determined that it would change rates by less than 5%. Due to this language, the commission did not allow an adjustment of the surcharge.

Document:	Rate Update	9/15/2014	https://e9radar.link/dv8
	Rate Update		

Proceeding:	Year	Type	url
PECO Smart Meter Charge <i>M-2014-2435982</i>	2014	Cost Recovery	http://e9radar.link/3h0h

Description:

This docket was opened in August 2014 to review PECO's annual reconciliation of the Smart Meter Recovery Surcharge.

Document:	Rate Update	8/1/2014	https://e9radar.link/qod
	Rate Update		

Proceeding:	Year	Type	url
PECO's Smart Meter Cost Recovery Surcharge <i>M-2014-2426362</i>	2014	Cost Recovery	http://e9radar.link/8pwb

Description:

In June 2014, PECO opened a docket to adjust its Smart Meter Cost Recovery Surcharge. Updates were permitted on a quarterly basis, and the adjustment PECO requested represented a change of less than 5%.

Document:	Rate Update	6/13/2014	https://e9radar.link/qe13
	Rate Update		

Utility / Holding Company

Analysis

PPL Electric Utilities PPL

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Detailed AMI Meters
\$1.9	Restructured	2014	•	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	?

Summary In response to the commission's order to develop a smart meter technology plan, in August 2009 PPL Electric Utilities filed a Smart Meter Technology Plan which included pilot programs and attested that its current system was compliant with commission standards. After several months of consideration, the commission denied the request for exemption and ordered PPL to file a full Smart Meter Plan by December 2012. PPL delayed the application of their updated Smart Meter Plan until June 2014, at which time it proposed to implement a new mesh network, AMI meters, MDMSS, and a variety of other technologies. In September 2015, the commission approved PPL's application with a few modifications, including the provision that PPL track and quantify system benefits.

Proceeding:	Year	Type	url
PPL 2016 Smart Meter Report <i>M-2017-2586741</i>	2017	Report	http://e9radar.link/1x6d

Description:

In January 2017, PPL filed their Smart Meter Reconciliation report. The report explains how costs were calculated and recovered and contains little narrative.

Document: Report 1/31/2017 <https://e9radar.link/0kw>
Report

Proceeding:	Year	Type	url
PPL Smart Meter Charge <i>M-2014-2435179</i>	2014	Cost Recovery	http://e9radar.link/au3m

Description:

In August 2014, PPL opened this case to calculate its Smart Meter Rider charge.

Document: Reconciliation Filing 7/31/2014 <https://e9radar.link/e4e3e>
1307(e) SMR Reconciliation Report for Period 7/1/2013 Thru 6/30/2014 - PPL
An example of cost recovery/reconciliation of smart meter costs in PA

Proceeding:	Year	Type	url
PPL Smart Meter Plan <i>M-2014-2430781</i>	2014	AMI Proposal	http://e9radar.link/kwef

Description:

This case was opened in compliance with the June 2010 order in PPL's first Smart Meter Plan case, case no. M-2009-2123945, which directed PPL to submit a new plan by June 2014. In its June 2014 filing, PPL determined that it would need to place 1.2M meters in order to meet the commission's standards (esp. to realize net metering, remote disconnect, etc.) for an estimated cost of \$450M. The total project was estimated to last from 2015 -2022, including a 3-year meter deployment and installation of MDMS and other technologies. In the commission's September 2015 order approving the Smart Meter Plan, the commission directed PPL to investigate and track all sources of potential cost savings related to the radio frequency mesh smart meter system, including meter reading, services, back-office, contact center, theft reduction, revenue enhancement, avoided capital costs, and distribution operations. These savings were to be reflected in the Smart Meter Rider mechanism.

Document: Final Order 9/3/2015 <https://e9radar.link/95l2>
Opinion and Order - 2430781-OSA (REV)- 9-3-15 PM - Exceptions to ID -
Petition of PPL for Approval of Smart Meter Plan

Summarizes the case history and approves the new plan. P. 13 includes a cost summary table, p. 9 describes technology, p. 12 discusses implementation timeline

Document: Application 1/8/2014 <https://e9radar.link/keu>
Application

Proceeding:	Year	Type	url
PPL Smart Meter Technology Plan <i>M-2009-2123945</i>	2009	AMI Proposal	http://e9radar.link/p08v

Description:

In August 2008, PPL filed its Smart Meter Plan, which proposed a variety of studies and pilots related to smart meters over 3 years for \$16.4M. PPL Electric noted that its current AMR system met the minimum requirements set forth by the commission, and its meters accomplished the minimum capabilities described. The company estimated \$380-\$450M for a complete replacement. PPL requested a 30 month grace period as a time to study, test, and pilot technologies that will extend the capabilities of its current system. In June 2010, the commission filed an order which stated that PPL's metering system did not meet Act 129 requirements, and that the company should evaluate a Smart Meter Plan. In May 2012, PPL filed for an extension of its grace period by two years to December 2014, though the commission awarded the extension through June 2014. PPL complied and opened docket no. M-2014-2430781 to house their updated plan.

Document: Order 6/24/2010 <https://e9radar.link/vqbg>
Rewrite Opinion and Order - M-2009-2123945 - OSA - 04-15-10 PM - PPL
Smart Meter Order

Order rejecting PPL's claim that the current AMI system meets requirements. P. 5 confirms that PPL uses AMR, p. 32 orders PPL to file another plan

Document:	Proposal	8/14/2009	https://e9radar.link/6j2
	Proposal		
	Procurement and Installation Plan		
Document:	Petition	8/14/2009	https://e9radar.link/fv0
	Petition		
	Requested that the commission recognize current AMI, p. 6 describes current capabilities, p. 11 describes deployment plans and costs		
Document:	Pilot Evaluation	8/14/2009	https://e9radar.link/jgta
	Evaluation		
	Attachment provided CBAs for each pilot program		

Utility / Holding Company

Analysis

West Penn Power Company First Energy						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$1.0	Restructured	2014		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		387,973

Summary West Penn filed its smart meter implementation plan (SMIP) in August 2009. During the pendency of the SMIP proceeding, FirstEnergy and West Penn's corporate parent, Allegheny Energy, announced their intent to merge. West Penn's smart meter deployment was included in the FirstEnergy smart meter planning dockets (see Metropolitan Edison Co. for full details) as a result of a joint settlement in its original docket in June 2011. West Penn agreed to conduct an independent CBA, decelerate its deployment plan, review/revise its EE/DR plans, and consider cost recovery aspects independently from the other companies. Most of West Penn's planning development costs were approved for recovery in the initial docket, but an additional \$5.1M was approved through the FirstEnergy case.

Proceeding:	Year	Type	url
West Penn Smart Meter Technology Plan M-2009-2123951	2009	AMI Proposal	http://e9radar.link/oeoz

Description:

In August 2009, West Penn filed its Smart Meter Technology Plan. West Penn projected the cost of \$29.5M over a 13-year deployment and 2-year assessment phase. Amidst this proceeding in May 2010, West Penn's parent company Allegheny Power merged with FirstEnergy Corp. Additionally, in September 2010, in docket no. M-2009-2093218, West Penn filed a petition to amend its current EE & conservation/DR plan, which included smart meter deployment utilization. In order to consolidate these issues, in March 2011 West Penn filed a joint stipulation which agreed to decelerate their smart meter deployments, generate a new business case, honor the new business arrangement with FirstEnergy, and to reconsider costs for its EE/DR plan. The stipulation was approved in June 2011.

Document:	Revised Plan	8/31/2011	https://e9radar.link/l83
	Revised Smart Meter Technology Procurement & Installation Plan Compliance Filing - West Penn Power		
	P. 2-4 lists settlement terms, p. 4-5 describes merger, p. 6-11 explains commitments		

- Document: Stipulation** 3/9/2011 <https://e9radar.link/x4d2>
Amended Joint Petition for Settlement - West Penn Power Company
P. 5 starts to summarize stipulation agreement, p. 11 shows a depreciation timeline, p. 19 of pdf shows the timeline of the amended SMIP
- Document: Order approving modifications** 6/30/2011 <https://e9radar.link/exqm>
Petition of West Penn Power dba Allegheny Power for Expedited Approval of its Smart Meter Technology Procurement and Installation Plan Commn Order 2123951-ALJ.docx
- Document: Testimony** 3/21/2011 <https://e9radar.link/t8i>
Testimony In Support Of Settlement - West Penn Power Co
Testimony with plans, benefits listed throughout; p. 40 has a table of operational benefits
- Document: Application** 8/10/2009 <https://e9radar.link/6on>
West Penn's Smart Meter Plan, Petition of
P. 13 lists some benefits, p. 100 lists costs and benefits

Utility / Holding Company

Analysis

Duquesne Light Co		Duquesne Light					Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend			AMI Meters
\$0.9	Restructured	2012	•	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	501,594

Summary Duquesne Light Co. proposed an initial smart meter procurement plan in 2009 which requested a grace period through 2012 to conduct smart meter research and utilize their AMR system. Duquesne filed several research updates, and in July 2010 filed their first CBA for AMI deployment. In August 2015, Duquesne filed an additional docket to request approval for major changes to its plan to add outage communication and voltage monitoring capabilities. Duquesne filed a modification to their plan in 2015 for implementation of an enhanced outage communication and voltage monitoring capabilities.

Proceeding:	Year	Type	url
Duquesne Smart Meter Adjustment M-2016-2580740	2016	Cost Recovery	http://e9radar.link/efdk

Description:

Duquesne adjusted its smart meter recovery charge from \$3.73 to \$5.44 for single-phase meters and \$3.05 to \$5.16 for poly-phase meters.

- Document: Rate Adjustment** 12/20/2016 <https://e9radar.link/c39>
SMC Rate Adj; Supp No 148 to PA PUC No 24; Eff: 1/1/17 - DLC
P. 6 details costs of the adjustments

Proceeding:	Year	Type	url
Duquesne 2016 Smart Meter Charge <i>M-2016-2568396</i>	2016	Cost Recovery	http://e9radar.link/a5bf

Description:

Duquesne adjusted its smart meter charge according to provisions of its approved rider. The monthly charge per meter increased from \$3.50 to \$3.73 for single-phase meter, and from \$2.59 to \$3.05 for poly-phase meters.

Document: Rate Adjustment 9/20/2016 <https://e9radar.link/9qb4>
SMC Rate Adj; Supp No 142 to PA PUC No 24; Eff: 10/1/16 - DLC

Proceeding:	Year	Type	url
Duquesne Smart Meter Charge Supplement <i>M-2014-2459259</i>	2014	Cost Recovery	http://e9radar.link/uydp

Description:

Duquesne adjusted its smart meter charge from \$1.64 to \$4.71 on single-phase meters per month from \$1.64 to \$4.68 for poly-phase meters.

Document: Rate Adjustment 12/22/2014 <https://e9radar.link/sy3>
Duquesne Smart Meter Supp #108

Proceeding:	Year	Type	url
Duquesne Smart Meter Adjustment <i>R-2014-2452820</i>	2014	Cost Recovery	http://e9radar.link/5ymu

Description:

Duquesne filed an adjustment to the language of its smart meter charge. In particular, this adjustment changes how interest is collected.

Document: Rate Adjustment 11/24/2014 <https://e9radar.link/bt3>
Supplement No. 105 to Duquesne Light Company's Tariff Electric

Proceeding:	Year	Type	url
Duquesne Light's Smart Meter Charge Adjustment <i>M-2014-2443808</i>	2014	Cost Recovery	http://e9radar.link/htl2

Description:

Duquesne adjusted its smart meter charge (SMC) from \$0.10 to \$1.64 for both single-phase meters and poly-phase meters. The SMC recovers all eligible costs incurred by Duquesne to implement smart meter technology and the supporting infrastructure, testing, upgrades, maintenance and personnel training.

Document: Rate Adjustment 9/19/2014 <https://e9radar.link/plr>
SMC Adj.; Supp No 101 to PA PUC No 24; Eff: 10/1/14 - Duquesne Light

Utility / Holding Company

Analysis

Pennsylvania Electric Co First Energy

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$0.9	Restructured	2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	513,043

Summary See Metropolitan Edison Co. for details.

Proceeding:	Year	Type	url
Penelec Smart Meter Charge M-2014-2435167	2014	Reference	http://e9radar.link/97mm

Description:

In August 2014, Penelec filed this report to summarize its financial recovery of its smart meter recovery charge up to June 30, 2014.

Document: Report 7/31/2014 <https://e9radar.link/ron>
 Pennsylvania Electric Company's Smart Meter Technologies Charge
 Reconciliation Statement of Revenue and Expenses for the SMT-C
 Reconciliation Year ended June 30, 2014.

Proceeding:	Year	Type	url
FirstEnergy Smart Meter Technology Plan Filings M-2009-2123950	2009	AMI Proposal	http://e9radar.link/tvt7

Description:

In August 2009, Metropolitan Edison Company (Met-Ed), Pennsylvania Electric Company (Penelec) and Pennsylvania Power Company (Penn Power) (collectively, FirstEnergy companies) filed a smart meter implementation plan, anticipating a cost of \$325M for service to over 1.3M customers. The companies proposed a two-year assessment period to inform a 15-year full-scale deployment of smart metering across service territories, to be filed after the assessment period. The trial period was proposed to deliver 5,000-10,000 smart meters and will progress to build out an additional 60,000 meters in order to 'debug' the system prior to full deployment. The Assessment Period was estimated to cost \$29.5M. In June 2010, the commission issued an order requesting a rewrite of the companies smart meter plans due to issues with cost recovery. Later that month, the commission approved the tariff revisions, noting that the proposal for a reconcilable automatic adjustment clause was favored over inclusion of costs in base rates. In May 2011, the FirstEnergy companies filed for an extension of time for their deployment plan to December 2012 due to technological and process-related issues. Docket no. M-2013-2341990 was opened in January 2013 to house the FirstEnergy companies' updated smart meter deployment plan.

Document: Application 8/14/2009 <https://e9radar.link/m94>
 First Energy's Smart Meter Technology Plan
 P. 6 has long-term plan, p. 24 of pdf provides full smart meter plan and detailed costs; does not quantify benefits

- Document: Request for extension** 5/25/2011 <https://e9radar.link/q37z>
 Petition for Extension to file Smart Meter - Met Ed, Penelec, Penn Power
 Notes technical and procedural issues that led to plan delay
- Document: Order approving revisions** 8/3/2010 <https://e9radar.link/b0kc>
 Opinion and Order - 2123950-OSA-0051 - 07-29-10 PM - Petition for Reconsideration
 P. 4-5 discusses concerns with cost recovery
- Document: Rewrite Order** 6/9/2010 <https://e9radar.link/yap>
 Rewrite Opinion & Order-2123950-OSA-0038-First Energy Smart Meter Plan
 Order to rewrite the Implementation Plan, cost issues listed on p. 21

Utility / Holding Company

Analysis

Metropolitan Edison Co FirstEnergy						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$0.8	Restructured	2014	•	<input checked="" type="checkbox"/>	<input type="checkbox"/>	326,410

Summary The Pennsylvania FirstEnergy companies (Metropolitan Edison Co., Pennsylvania Electric Co., and Pennsylvania Power company [Penn Power]) filed their smart meter implementation plan (SMIP) jointly in August 2009. This plan created described company actions for the commission-approved 30-month grace period. During the grace period in 2010, FirstEnergy deployed limited AMI, DA, VVO, and direct load control devices in the MetEd territory through a SGIG. In January 2013, the FirstEnergy companies proposed a smart meter deployment plan, which included an assessment period which studied an initial deployment in the Penn Power service territory and full deployment over three years. The plan also added plans to deploy AMI in West Penn Power territory, which was recently acquired by FirstEnergy. The plan was approved in March 2014, but was quickly followed by a petition from the FirstEnergy companies to accelerate the deployment timeline by one year. The commission accepted the accelerated plan in June 2014. Debate around cost recovery and annual tariff adjustments continued in several dockets after the approval of the deployment plan.

Notable Resources:

SGIG: <https://e9radar.link/pmw3>

Proceeding:	Year	Type	url
Met-Ed Smart Meter Deployment Plan <i>M-2013-2341990</i>	2012	AMI Proposal	http://e9radar.link/b5qs

Description:

In December 2012, four related FirstEnergy Companies—MetEd, Penn Power, and West Penn Power, and Penelec— filed their joint smart meter deployment plan, following the extended smart meter assessment period established in docket no. M-2009-2123950. The new plan cited deployment of 2.1M meters, 98% of which would be installed by 2019, and requested recovery through each of the companies' Smart Meter Technologies Rider (SMT-C), including recovery of an additional \$5.1M for West Penn's rider (2009-2010 costs). The plan was estimated to cost \$1.3B. In March 2014, the commission issued an order approving the original deployment plan and directed the companies to implement an accelerated deployment schedule. In August 2014, the FirstEnergy companies filed tariff supplements requesting base rate increases related to smart meter deployments. The Commission separated these cases into 8 separate dockets (a base rate increase and Smart Meter Charge Rider for each company). Despite the separation, the FirstEnergy companies filed identical compliance documents in each docket, except for cost recovery issues.

Document: Revision 4/7/2014 <https://e9radar.link/aw59>

FE Smart Meter Deployment Plan Supplemental Testimony Fitzpatrick with plans

FE Updated plan in compliance with commission order, contains updated testimony and CBA. P. 165-170 show cost adjustments, p. 79 shows cost savings chart

Document: Application 12/31/2012 <https://e9radar.link/fa7>

Smart Meter Deployment Plan Petition - Met Ed

Fitzpatrick testimony (statement no. 4, starting on p. 179 of pdf) describes business case and plans. P. 189 of pdf

Document: Cost Recovery Settlement 1/30/2016 <https://e9radar.link/1hsr>

Met-Ed Joint Petition for Settlement and Exhibits 2 thru 7.pdf

Describes the cost savings issue and solutions for Met-Ed

Proceeding:	Year	Type	url
FirstEnergy Smart Meter Technology Plan Filings M-2009-2123950	2009	AMI Proposal	http://e9radar.link/tvt7

Description:

In August 2009, Metropolitan Edison Company (Met-Ed), Pennsylvania Electric Company (Penelec) and Pennsylvania Power Company (Penn Power) (collectively, FirstEnergy companies) filed a smart meter implementation plan, anticipating a cost of \$325M for service to over 1.3M customers. The companies proposed a two-year assessment period to inform a 15-year full-scale deployment of smart metering across service territories, to be filed after the assessment period. The trial period was proposed to deliver 5,000-10,000 smart meters and will progress to build out an additional 60,000 meters in order to 'debug' the system prior to full deployment. The Assessment Period was estimated to cost \$29.5M. In June 2010, the commission issued an order requesting a rewrite of the companies smart meter plans due to issues with cost recovery. Later that month, the commission approved the tariff revisions, noting that the proposal for a reconcilable automatic adjustment clause was favored over inclusion of costs in base rates. In May 2011, the FirstEnergy companies filed for an extension of time for their deployment plan to December 2012 due to technological and process-related issues. Docket no. M-2013-2341990 was opened in January 2013 to house the FirstEnergy companies' updated smart meter deployment plan.

Document:	Application	8/14/2009	https://e9radar.link/m94
	First Energy's Smart Meter Technology Plan		
	P. 6 has long-term plan, p. 24 of pdf provides full smart meter plan and detailed costs; does not quantify benefits		
Document:	Request for extension	5/25/2011	https://e9radar.link/q37z
	Petition for Extension to file Smart Meter - Met Ed, Penelec, Penn Power		
	Notes technical and procedural issues that led to plan delay		
Document:	Order approving revisions	8/3/2010	https://e9radar.link/b0kc
	Opinion and Order - 2123950-OSA-0051 - 07-29-10 PM - Petition for Reconsideration		
	P. 4-5 discusses concerns with cost recovery		
Document:	Rewrite Order	6/9/2010	https://e9radar.link/yap
	Rewrite Opinion & Order-2123950-OSA-0038-First Energy Smart Meter Plan		
	Order to rewrite the Implementation Plan, cost issues listed on p. 21		

Utility / Holding Company						Analysis
Pennsylvania Power Co First Energy						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$0.3	Restructured	2014		<input checked="" type="checkbox"/>	<input type="checkbox"/>	167,639
Summary See Metropolitan Edison Co. for details.						

Proceeding:	Year	Type	url
PennPower Smart Meter Charge <i>M-2014-2435169</i>	2014	Cost Recovery	http://e9radar.link/l7yz

Description:

This docket provides a summary of the smart meter recovery charge up to June 30, 2014

Document: Financial Update	7/31/2014	https://e9radar.link/270
Financial Update		

Proceeding:	Year	Type	url
FirstEnergy Smart Meter Technology Plan Filings <i>M-2009-2123950</i>	2009	AMI Proposal	http://e9radar.link/tvt7

Description:

In August 2009, Metropolitan Edison Company (Met-Ed), Pennsylvania Electric Company (Penelec) and Pennsylvania Power Company (Penn Power) (collectively, FirstEnergy companies) filed a smart meter implementation plan, anticipating a cost of \$325M for service to over 1.3M customers. The companies proposed a two-year assessment period to inform a 15-year full-scale deployment of smart metering across service territories, to be filed after the assessment period. The trial period was proposed to deliver 5,000-10,000 smart meters and will progress to build out an additional 60,000 meters in order to 'debug' the system prior to full deployment. The Assessment Period was estimated to cost \$29.5M. In June 2010, the commission issued an order requesting a rewrite of the companies smart meter plans due to issues with cost recovery. Later that month, the commission approved the tariff revisions, noting that the proposal for a reconcilable automatic adjustment clause was favored over inclusion of costs in base rates. In May 2011, the FirstEnergy companies filed for an extension of time for their deployment plan to December 2012 due to technological and process-related issues. Docket no. M-2013-2341990 was opened in January 2013 to house the FirstEnergy companies' updated smart meter deployment plan.

Document: Application	8/14/2009	https://e9radar.link/m94
First Energy's Smart Meter Technology Plan		

P. 6 has long-term plan, p. 24 of pdf provides full smart meter plan and detailed costs; does not quantify benefits

Document: Request for extension	5/25/2011	https://e9radar.link/q37z
Petition for Extension to file Smart Meter - Met Ed, Penelec, Penn Power		
Notes technical and procedural issues that led to plan delay		

Document: Order approving revisions	8/3/2010	https://e9radar.link/b0kc
Opinion and Order - 2123950-OSA-0051 - 07-29-10 PM - Petition for Reconsideration		

P. 4-5 discusses concerns with cost recovery

Document: Rewrite Order	6/9/2010	https://e9radar.link/yap
Rewrite Opinion & Order-2123950-OSA-0038-First Energy Smart Meter Plan		

Order to rewrite the Implementation Plan, cost issues listed on p. 21

State Summary

RI

In April 2017, Rhode Island Public Utilities commission announced the Power Sector Transformation Initiative. As part of its November 2017 Phase 1 report, the PUC recommended the utilities invest in AMI and other grid connectivity services, noting, "As we modernize the electric grid, we have the opportunity to create greater intelligence at the grid edge that may fundamentally transform the capabilities, costs, and control... To take advantage of this opportunity, Rhode Island must invest in Advanced Meter Functionality (AMF) and software platforms." In response, in November 2017, National Grid filed its Power Sector Transformation Plan, which outlined a vision which includes AMI. In 2019, National Grid began a stakeholder engagement process which may shape how the state regulates AMI.

Utility / Holding Company							Analysis		
Narragansett Electric							National Grid	Detailed	
\$B	Class	Year	ben/cost/net		app./deny/set/pend		AMI Meters		
\$1.0	Restructured	2017	•	•	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	257

Summary In November 2017, Narragansett Electric (National Grid) proposed a Power Sector Transformation Plan (PSTP) and an associated rate case which outlined several grid-related investment plans. The PSTP included AMF deployment. In June 2018, parties submitted a settlement agreement in the PSTP proceeding. The AMI portion of the PSTP settlement agreement included a requirement for National Grid to file a revised business case, including a cost benefit analysis, data governance plan, and a detailed customer engagement plan. The settlement also requires the cost benefit analysis to incorporate the cost/benefit framework filed in May 2017 in the electric distribution system investigation docket. The commission approved the settlement in June 2018, which acknowledged that AMI is a foundational part of grid modernization, though it didn't explicitly authorize deployment. In compliance with the settlement, starting in 2018, National Grid engaged in several stakeholder processes to develop a new AMI business case and implementation plan. In National Grid's 2018/2019 Annual Report, the company committed to filing an updated request for AMF approval and business case in 2020.

Notable Resources:

AMF presentation:

2018/2019 Annual Report:

Proceeding:	Year	Type	url
National Grid Power Sector Transformation Plan 4780	2017	AMI Proposal	https://e9radar.link/q4grh

Description:

In November 2017, National Grid filed the Power Sector Transformation Plan (PSTP), which outlined the company's investment plans. The plan proposed numerous grid modernization and DER investments and initiatives, divided into the following categories: investments that enable grid modernization; advanced metering functionality; electrification proposals, including an electric heat initiative and an electric transportation initiative; utility-owned energy storage and solar demonstration programs; and a rewards program for income-eligible customers. Cost recovery was considered in a separate rate case docket. The settlement agreement, filed in June 2018, included a requirement for National Grid to update its advance metering business case and engage in a stakeholder process to develop additional plans for AMI deployment. In June 2018, the PUC verbally issued an approval of the settlement agreement for National Grid's rate case and \$29.1M.

Document: Settlement	6/6/2018	https://e9radar.link/1a80a
Settlement		

Requires NG to refile its business case before December 2018.

Document: Proposal	11/27/2017	http://e9radar.link/cbcb1
Proposal		

Chapter 2, beginning on p.38 of pdf, compares costs/benefits, p. 274 of pdf cites AMI benefits/impacts. P. 96 shows a comparison of CBA results.

Proceeding:	Year	Type	url
National Grid 2017 Rate Case 4770	2017	Cost Recovery	https://e9radar.link/gveup

Description:

In November 2017, National Grid filed for a rate increase which included continued upkeep and maintenance; job additions which in part would assist in processing interconnection of DER; and low-income customer engagement including providing a fixed 15% bill discount. In addition to typical investments, the rate case supported the company's Power Sector Transformation Plan (PSTP), filed in a separate docket. The PSTP and associated costs included a full advanced metering functionality (AMF) roll-out to all of its 790,000 customers coupled with an opt-out time varying rates program by 2022, a data portal, grid modernization investments, a 3-year electric transportation acceleration initiative, and a suite of performance incentive mechanisms. In August 2018, the parties crafted a settlement plan which included the obligation to update the AMF business case, to be filed no later than February 2019. The settlement also called for stakeholder processes, a precise schedule, rate class allocation, a data governance plan, and other notes.

Document: Table of Contents	11/27/2011	https://e9radar.link/ie1xw
Transmittal Letter (Table of Contents)		

Provides a guide to attached testimony books on p. 3-7; p. 11 of pdf summarizes general requests

Proceeding:	Year	Type	url
Investigation Into the Changing Distribution System 4600	2016	Report	http://e9radar.link/pqcm

Description:

In March 2016, the commission opened a docket to develop a report for the PUC's review of the National Grid's rate structure in future proceedings. The scope included a review of the necessary factors for determining rates in the Renewable Energy Growth Program, and to improve consistency within and across programs. In October 2017, the PUC approved the guidance document. The guidance document detailed how the PUC should implement distribution system goals, rate design principles, and benefit-cost framework.

Document: Final Guidance 11/15/2017 <https://goo.gl/evu9X7>

Public Utilities Commission's Guidance on Goals, Principles and Values for Matters Involving The Narragansett Electric Company d/b/a National Grid

Result of the proceeding: a guidance document to aid the commission in distribution cases.

State Summary

SC

South Carolina IOUs file information about AMI deployment plans primarily in cost recovery dockets. Coops in South Carolina have significant AMI development (>90%).

Utility / Holding Company

Analysis

Duke Energy Carolinas Duke								Detailed
\$B	Class	Year	ben/cost/net		app./deny/set/pend			AMI Meters
\$1.8	Integrated	2016	•	•	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	520,261

Summary In 2013, Duke Energy was awarded a SGIG to deploy AMI in its North and South Carolina territories. Upon its first official AMI cost deferral filing in 2016, DEC had deployed 95,000 meters and committed to deploying 490,000 more in a two-year period. DEC noted that it had 'already begun' full deployment. A 2016 cost recovery filing requested deferral of \$45M of AMI costs, and noted that deployment was nearly complete. In DEC's 2018 rate case, DEC was allowed to recover \$15M in May 2019.

Proceeding:	Year	Type	url
DEP 2018 Rate Case 2018-318-E	2018	Cost Recovery	https://e9radar.link/2ykj

Description:

In October 2018, Duke Energy Progress (DEP) filed its 2018 rate case, which requested an increase in retail revenues of \$59M, which includes \$5.1M and \$5.8M for grid investments in 2020 and 2021. DEP also requested additional accounting orders relating to AMI deployment and other grid investments between rate changes. At the time of application, DEP had deployed 38,000 smart meters, and planned to deploy the remaining 128,000 meters. The case also requests approval of AMI-enabled programs, such as the Prepaid Advantage Pilot Program

Document: Proposed Order 5/1/2019 <https://e9radar.link/w97r>

Proposed Order of the South Carolina Office of Regulatory Staff

Does not break out AMI into its own category of consideration, but requires annual AMI benefit report

Document: Application 11/8/2018 <https://e9radar.link/7kf1>

Application Of Duke Energy Progress, LLC For Adjustments In Electric Rate Schedules And Tariffs And Request For An Accounting Order

P. 10 lists meter numbers (128,000), p. 17 details AMI-enabled programs

Document: Testimony 11/8/2018 <https://e9radar.link/myvf>

Direct Testimony of Donald Schneider, Jr. for Duke Energy Progress, LLC

The Schneider testimony is the only AMI-specific testimony filed in this case. P. 10 explains customer benefits

Proceeding:	Year	Type	url
DEC 2018 Rate Case 2018-319-E	2018	Cost Recovery	https://e9radar.link/ttq1

Description:

In DEC's 2018 rate case, the company sought to recovery the financial effects of the depreciation of three years of AMI meter deployment (\$15M of the \$231M increase requested), carrying costs on investments, and carrying costs on the deferred costs. At the time of application, DEC's deployment program was nearly completed. The case notes that approval to defer AMI costs to a future rate case was approved in Docket No. 2016-240-E. This rate case also originally contained the company's Grid Improvement Plan (GIP), which integrates some smart meter benefits, but a stipulation in March 2019 moved consideration of the GIP and cost recovery to another docket.

Document: Testimony 11/8/2018 <https://e9radar.link/x57c>
 Direct Testimony of Donald Schneider Jr., for Duke Energy Carolinas LLC
 The Schneider testimony broadly explains AMI savings and implementation;

Document: Final Order 5/21/2019 <https://e9radar.link/g882>
 ORDER - Application of Duke Energy Carolinas, LLC for Adjustments in Electric Rate Schedules and Tariffs and Request for an Accounting Order
 P. 53-54 discuss AMI amortization

Document: Application 11/8/2018 <https://e9radar.link/vh54>
 Application On behalf of: Duke Energy Carolinas, LLC
 P. 11 generally describes the AMI request

Proceeding:	Year	Type	url
DEC Deferral of AMI Costs 2016-240-E	2016	Cost Recovery	https://e9radar.link/uhy6

Description:

In this request, DEC petitioned to defer the costs of their AMI deployment to date for no more than \$45M (weighted average cost of capital). Additionally, DEC requested approval for retaining the book value of retired, non-AMI meters in the amount of \$31M in a regulatory asset. The deferral of costs helps the company bridge the timing gap between installation and realization of customer benefits. In August 2018, the commission approved this request.

Document: Petition 6/13/2016 <https://e9radar.link/cu64>
 Petition On behalf of: Duke Energy Carolinas, LLC

Utility / Holding Company

Analysis

Duke Energy Progress - (SC) Duke

\$B	Class	Year	ben/cost/net	app./deny/set/pend	Detailed AMI Meters
\$0.6	Integrated	2018	•	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	

Summary In June 2018, Duke Energy Progress (DEP) filed a petition to defer \$1.4M of AMI deployment costs into a regulatory asset for future recovery. Later that year, DEP filed its 2018 rate case, which requested an increase in retail revenues of \$59M, which includes \$5.1M and \$5.8M for grid investments in 2020 and 2021. Between rate cases, DEP requested additional accounting orders relating to AMI deployment recovery. At the time of application, DEP had deployed 38,000 smart meters, and planned to deploy the remaining 128,000 meters. The case also requested approval of AMI-enabled programs, such as the Prepaid Advantage Pilot Program. Through the April 2019 stipulation, DEP agreed to supply an annual report on quantified customer benefits. The stipulation also requested that DEP examine an opt-out program similar to its North Carolina program.

Proceeding:	Year	Type	url
DEP Deferral of AMI Costs 2018-205-E	2018	Cost Recovery	https://e9radar.link/60g2

Description:

This case is the first docket that contains Duke Energy Progress' (DEP) South Carolina AMI plans. DEP filed this case in order to defer \$1.4M into a regulatory asset account for the incremental operating and maintenance expense and the depreciation expenses incurred once the Advanced Metering Infrastructure technology (AMI) meters are installed. DEP notes that about 11,000 meters were already replaced at the time of application, with 166,000 more to be replaced through their next phase.

Document: Petition 6/25/2018 <https://e9radar.link/xyrf>

Petition On behalf of: Duke Energy Progress, LLC

P. 5 describes the AMI deployment status and future,

Document: Order 7/25/2018 <https://e9radar.link/5lx6>

Public Service Commission of South Carolina Commission Directive

Order approving the deferral of costs into a regulatory asset

State Summary

TX

In 2005, the Texas Legislature adopted HB 2129 to create a cost recovery framework for AMS deployment within the Electric Reliability Council of Texas (ERCOT) region. In July 2005, the PUC opened a proceeding to consider the new directives, and in May 2007, the PUC issued an order which created minimum standards for AMI proposals, including communication equipment, data privacy and access policies, and functionality requirements. Additionally, in September 2007, energy efficiency legislation HB 3693 included a section which directed utilities to deploy net metering and advanced meter information networks "as rapidly as possible." In January 2010, Texas released the first version of its statewide online data portal: SmartMeterTexas.com. In May 2019, three bills (HB 853, HB 986, and HB 1595) extended the applicability of PURA to electric utilities outside of ERCOT. These modifications created new cost recovery opportunities, and reinforced legislative request for rapid deployment. The commission opened a rulemaking in July 2019 to implement the changes.

Notable Resources:

TX AMI Report 2008: <https://e9radar.link/unf>

TX AMI Report 2010: <https://e9radar.link/2ctc>

AMS History, Oncor: <https://e9radar.link/l2hw>

HB 2129: <https://e9radar.link/bryk>

HB 3693: <https://e9radar.link/czm9>

Utility / Holding Company

Analysis

Entergy Texas Entergy		Detailed AMI Meters			
\$B	Class	Year	ben/cost/net	app./deny/set/pend	
\$1.4	Integrated	2017	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Summary In July 2017, Entergy Texas, Inc. (ETI) filed an application for an AMS, opt-out provision, an AMS surcharge tariff, and approval of its deployment plan. The application contained a customer engagement plan, data security considerations, and other key details. In October 2017, ETI filed an agreement resolving intervenor issues, including to consider joining Smart Meter Texas and data issues in a future case, reduction of the AMS surcharge by \$10M, allowance for customers to keep existing meters, investment in low-income programs, and exclusion of opt-out customer rate-case expenses from future cases. ETI agreed to defer issues around data management and privacy, the customer web-based portal, and membership to Smart Meter Texas (considered in an October 2018 docket).

Proceeding:	Year	Type	url
Entergy Smart Meter Texas Plan 48745	2018	Reference	https://e9radar.link/4x0h

Description:

This case was opened in accordance to the Commission's final order in Docket No. 47416, which required Entergy Texas to address: (1) whether and to what extent ETI will participate in Smart Meter Texas; (2) what changes, if any, should be made to ETI's web-based customer interface; and (3) whether and to what extent ETI should provide third-party direct access to customer AMS data. This proceeding discussed AMS data management at length.

Document: Compliance 10/9/2018 <https://e9radar.link/2cav>

Compliance Filing of Entergy Texas, Inc.

Discusses reasons for not joining Smart Grid Texas, and omits true cost numbers throughout

Proceeding:	Year	Type	url
Entergy AMS Deployment Plan 47416	2017	AMI Proposal	https://goo.gl/hMkZEg

Description:

Entergy filed its AMS deployment plan in July 2017 with a total revenue requirement of \$154M over a 12-year surcharge life resulting in \$13M in annual retail revenue. ETI filed this case in order to deploy an AMS and seek Commission approval of its deployment plan, surcharge, and non-standard metering service fees.

Document: Application (p. 101-200) 7/18/2017 <https://e9radar.link/devj>

Application Of Entergy Texas, Inc. For Approval Of Advanced Metering System (AMS) Deployment Plan, AMS Surcharge, And Non-standard Metering Service Fees

The Lewis Testimony (p. 82 of pdf) discusses analysis of benefits, calculation of costs and benefits. P. 85 shows benefits table.

Document: Final Order 12/14/2017 <https://e9radar.link/3c0k>

Order

Provides excellent case summary

Document: Stipulation 10/23/2017 <https://e9radar.link/wgyz>

Unopposed Stipulation and Agreement

Explains resolution of data concerns, p. 2-3 summarizes the case

Document: Application (p. 1-100) 7/18/2017 <https://e9radar.link/bub5>

Application Of Entergy Texas, Inc. For Approval Of Advanced Metering System (AMS) Deployment Plan, AMS Surcharge, And Non-standard Metering Service Fees

P. 16 of pdf explains technology. P. 60 of pdf discusses customer benefits

Document: Application (p. 201-300) 7/18/2017 <https://e9radar.link/29ne>

Application Of Entergy Texas, Inc. For Approval Of Advanced Metering System (AMS) Deployment Plan, AMS Surcharge, And Non-standard Metering Service Fees

The Lain testimony (p. 13 of pdf) explains revenue request and calculation; difficult to parcel out AMI costs, p. 42 of pdf summarizes request

Utility / Holding Company

Analysis

AEP Texas Central American Electric Power

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
	Integrated	2009	• •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	837,964

Summary In April 2009, AEP Texas Center and AEP Texas North company (together, AEP Texas) filed a petition and application for an AMS deployment plan and an associated AMS surcharge tariff, which was requested to last for eleven years through 2020. The AMS installment plan included a four year deployment plan (2009-2013) for revenue requirements of \$291.7M for TCC and \$68.4M for TNC. At the time of the proposal, AEP Texas noted that a customer education plan was already underway. Meter reading was cited as the primary cost saving category, which would save \$6M for TCC and \$2M for TNC, respectively. AEP Texas reached a stipulation agreement with various stakeholders in November 2009. The plan was approved in December 2009.

Proceeding:

Year	Type	url
2019	Cost Recovery	https://e9radar.link/zptp49494

Description:

In May 2019, AEP filed its 2019 Rate Case. In this case, the Company asked to roll AMS recovery rates into its base rates. A 7-year meter life was used, and at the time of application meters has been deployed for 10 years and were fully depreciated.

Document: Application

5/1/2019

<https://e9radar.link/mx5l>

Application of AEP Texas Inc. for Authority to Change Rates

Includes high-level summary of AMS and cost recovery goals

Utility / Holding Company

Analysis

AEP Texas North American Electric Power

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
	Integrated	2009		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	190,085

Summary See AEP Texas Central for details.

Proceeding:

Year	Type	url
2019	Cost Recovery	https://e9radar.link/zptp49494

Description:

In May 2019, AEP filed its 2019 Rate Case. In this case, the Company asked to roll AMS recovery rates into its base rates. A 7-year meter life was used, and at the time of application meters has been deployed for 10 years and were fully depreciated.

Document: Application

5/1/2019

<https://e9radar.link/mx5l>

Application of AEP Texas Inc. for Authority to Change Rates

Includes high-level summary of AMS and cost recovery goals

State Summary

UT

In 2008, the Utah Public Utilities commission (PUC) opened a docket to consider the PUC's authority to control ratemaking and other utility actions. This docket established a series of workshops and stakeholder groups to discuss smart grid development. Utah's utilities filed comments that generally supported AMI deployment. The commission decided against mandatory smart grid implementation, though the data-access-oriented Smart Grid Information Standard was enacted. In 2011-2015, Rocky Mountain Power filed reports included a variety of commission-mandated topics, including EV integration, report of smart grid activities, demand-side programs, and AMI implementation. In February 2016, in response to Rocky Mountain Power and other intervenors, the commission discontinued smart meter reporting requirements.

Utility / Holding Company

Analysis

PacifiCorp Berkshire Hathaway

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$2.0	Integrated			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Summary In response to Utah PUC directives, PacifiCorp (doing business as Rocky Mountain Power, or RMP) filed Smart Grid Reports from 2011-2015. These reports included evaluation of a variety of smart grid technologies, including AMI. In 2014, RMP cited exploration of AMI deployment and an initial rollout in Oregon. In RMP's business case, RMP stated that installation of IT upgrades would be necessary prior to AMI rollout and that AMI benefits were only "marginally positive". RMP determined that AMI rollout was unnecessary at the time. Smart Grid reporting requirements were discontinued the following year. In November 2018, RMP proposed its Advanced Resiliency Management System (ARMS) project under the Sustainable Transportation and Energy Plan Act. The ARMS project opted to install AMR throughout Utah, as opposed to AMI. The petition was approved in June 2019.

Notable Resources:

2015 Report: <https://e9radar.link/ygpk>

Proceeding:

	Year	Type	url
RMP STEP Act Initiatives 16-035-36	2016	Tech Upgrades	http://e9radar.link/87ig

Description:

In August 2016, In response to SB-115, the Sustainable Transportation and Energy Plan Act (STEP), Rocky Mountain Power filed an application to implement programs authorized by STEP. Tariff revisions included rates to recover the cost of three new programs: a power balance and DR to optimize charging project, a development partnership for battery DR, and Advanced Resiliency Management System Project (ARMS). The ARMS project, estimated to cost \$16.5M, included the installation of AMR, communication radios, and other technologies. RMP stated that it will not use any additional STEP funds to implement AMI, and that while it continued to evaluate AMI, it would not deploy now. RMP estimated \$71.1M in benefits over the life of AMI, but compared to costs, AMI was not cost effective. In June 2019, the commission approved the ARMS project and RMP began to deploy AMR meters.

Document: Comments

5/31/2019

<https://e9radar.link/jfzu>

RMP Reply Comments

Discusses the choice to implement AMR instead of AMI.

Proceeding:

	Year	Type	url
Utah Consideration of EISA 2007 08-999-05	2008	Rulemaking	

Description:

This docket was opened to consider the PUC's authority to control ratemaking, and how the Commission would implement the 2007 Energy Independence and Security Act. This docket established a series of workshops and stakeholder groups to discuss smart grid development, and the Smart Grid Investments and Smart Grid Information Standards were developed. Utah utilities filed comments which generally supported AMI deployment. Several intervenors recommended that the Commission deny both standards because "more time is needed to ensure that smart grid technology is mature enough to warrant Rocky Mountain Power investment and ratepayer support in Utah." The Commission finally decided against mandatory smart grid implementation, though the data-access-oriented Smart Grid Information Standard passed. Rocky Mountain Power was also required to file annual Smart Grid Reports, though this was discontinued in 2016 due to perceived lack of value.

Document: RMP 2011 Report

8/17/2011

<https://e9radar.link/1khq>

Report on Smart Grid Technologies

P. 12-13 discusses AMI in brief, primarily supports AMR

Document: Smart Grid Order

12/17/2009

<https://e9radar.link/zhbc>

Determination Concerning the PURPA Smart Grid Investment and Smart Grid Information Standards

Provides procedural summary, p. 14-15 describes approved data policies

Document: RMP meter comments

6/23/2009

<https://e9radar.link/dmzl>

RMP View of Automated Metering and Smart Grids

RMP's general outlook on upgrading its meters

State Summary

VA

In 2018, the Grid Transformation and Security Act (SB 966) declared that electric distribution grid transformation projects are in the public interest. This bill established a framework for incentives and cost recovery mechanisms for grid modernization, including AMI technology. This Act required utilities to submit 10-year modernization plans to the commission. Virginia's largest utilities, Appalachian Power and Dominion, each proposed system-wide AMI deployments in 2018, but Dominion's petitions was rejected and two months later APCo withdrew its petition. In 2019, the General Assembly also passed HB 2547, requiring Dominion to convene a stakeholder process to develop time-varying rates and other related topics.

Notable Resources:

SCC Press Release: <http://bit.ly/31myUHA>

SB 966: <https://e9radar.link/cf3k>

Utility / Holding Company

Analysis

Virginia Electric & Power Dominion						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$7.5	Integrated	2019	• • •	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>		381,483

Summary Pursuant to 2018 legislation, in January 2018 Virginia Electric & Power (Dominion) filed a Grid Transformation Plan (GT) that included AMI deployment. Dominion's application did not include a complete cost benefit analysis; Dominion opted for excluding a traditional cost-benefit analysis due to the significant non-quantifiable benefits. In January 2019, the Virginia commission denied the application. In January 2019, Dominion filed a new grid modernization plan, budgeting \$594M for a variety of projects, including a 6-year, 2.1M smart meter installation plan. The plan will use the AMI head-end system already in place, retiring AMR head-end systems. Dominion cited AMI as a foundational investment for the rest of its GT. In December 2019, Dominion filed a separate application for the approval of experimental TOU rates for 10,000 customers, which would rely on the implementation of AMI.

Notable Resources:

Dominion website: <http://bit.ly/31j26iv>

Utility Dive: <http://bit.ly/2KiEtRJ>

Energy News: <https://energynews.us/?p=1307796>

Seeking Alpha: <https://e9radar.link/mbfj>

Proceeding:	Year	Type	url
Dominion Grid Transformation Projects <i>PUR-2019-00154</i>	2019	AMI Proposal	https://e9radar.link/b9bd6

Description:

In September 2019, Virginia Electric and Power Company (Dominion Energy Virginia) filed its second petition for approval of its updated Grid Transformation Plan. Specifically, Phase IB represents the first 3 years of the 10-year plan. Phase IB included 9 components, many of which are foundational to a transformed grid: AMI, CIP, stakeholder engagement and customer education, grid technologies, grid hardening, telecommunications infrastructure, cybersecurity, physical security, and the Smart Charging Infrastructure Pilot Program. According to an updated CBA and testimony on January 2020, the total 10-year GT plan included \$2.81B of capital investment and \$452.4M in O&M costs; Phase IB included all components except physical security, and revised costs were estimated at \$510.5M in capital costs and \$83M in O&M. The plan included the deployment of 2.1M AMI meters over a 6-year period beginning in 2019. The company also proposed a revenue neutral opt-out policy for residential customers.

In March 2020, the Virginia SCC issued a final order which reduced \$7B plan to a cost of \$212M. The commission denied Dominion's AMI proposal and noted the lack of a comprehensive TOU rate program, as directed in the 2018 Grid Mod Final Order. Dominion proposed a pilot TOU rate plan in December 2019 for 10,000 customers.

Document: Petition 9/30/2019 <https://e9radar.link/h548>

Virginia Electric & Power Company - Public Version - Petition for approval of a plan for electric distribution grid transformation projects pursuant to sec. 56 -585.1 A 6 of Code, et al. - Vol. 1. (part 1 of 17 - Petition & Plan Document)

Describes the need for grid modernization, p. 3 briefly discusses AMI, p. 8 -14 shows table of contents, p. 27 of pdf starts overview plan. P. 47-51 describes stakeholder engagement

Document: Testimony (Hulsebosch) 9/30/2019 <https://e9radar.link/r5a5>

Virginia Electric & Power Company - Public Version - Petition for approval of a plan for electric distribution grid transformation projects pursuant to sec. 56 -585.1 A 6 of Code, et al. - Vol. 2. (part 6 of 17 - Testimony of T. Hulsebosch)

Discusses project CBA and methodology, p. 4 shows bundled grid mod CBA, p. 30-35 shows detailed CBA

Document: Testimony (Frost) 9/30/2019 <https://e9radar.link/x9hj>

Virginia Electric & Power Company - Public Version - Petition for approval of a plan for electric distribution grid transformation projects pursuant to sec. 56 -585.1 A 6 of Code, et al. - Vol. 2. (part 7 of 17 - Testimony of N. Frost)

Focuses on the opt-out program and implementation plan, customer engagement and communication

Proceeding:	Year	Type	url
Dominion Grid Transformation Plan <i>PUR-2018-00100</i>	2018	AMI Proposal	https://e9radar.link/6bz2b

Description:

In July 2018, Dominion petitioned for approval of its first three-year Grid Transformation Plan. Dominion opted to not include a traditional cost-benefit analysis due to significant non-quantifiable benefits. In January 2019, the Virginia commission denied the application due to imbalanced costs and benefits.

Document: Testimony 7/24/2018 <https://e9radar.link/2i7>

Testimony (Part 2)

Included justification for not including traditional cost benefit analysis on p. 18; p. 20 describes benefits

Document: Order 1/17/2019 <https://e9radar.link/Onj>

Order Denying Petition

Summary on p. 15, p. 13-14 cited costs

Document: Petition 7/24/2018 <https://e9radar.link/yxo7>

Virginia Electric and Power Company's Petition and Direct Testimony (V.1 - Public Version)

P. 3-5 overviews smart meter plans at a high level

Utility / Holding Company

Analysis

Appalachian Power		American Electric Power						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend				AMI Meters
\$1.4	Integrated	2018		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	54,453

Summary Pursuant to 2018 legislation, in 2018 Appalachian Power Co. (APCo) submitted a Grid Transformation plan in response to the Grid Transformation and Security Act. The plan noted that though legislation did not mandate a CBA, Dominion was criticized for not producing one; APCo stated that many project benefits were "not easily quantifiable." The plan demonstrated that APCo began transitioning end-of-life AMR to AMI in 2017, and its transition would be complete by 2022. In March 2019, APCo withdrew its Grid Transformation petition, citing the recent denial of Dominion's Grid plan. APCo stated that it intends to file a more robust proposal in the future. In 2019, APCo's website stated that the company was continuing to deploy AMI meters in its Virginia, West Virginia, and Tennessee territories.

Proceeding:	Year	Type	url
APCo Grid Transformation Plan <i>PUR-2018-00198</i>	2018	AMI Proposal	https://e9radar.link/5b8c0

Description:

In December 2018, APCo submitted a Grid Transformation Plan application, but withdrew it in March 2019. The Plan included a variety of grid transformation projects which facilitate DER integration, reliability, and security. APCo noted that it began transitioning to AMI in 2017 and will have replaced 167,000 meters by 2018, with plans to replace an additional 264,000 in 2019 and complete meter replacement through its territory by the end of 2022. In the motion to withdraw, APCo noted that the Commission's denial of Dominion's Grid Transformation plan was a driving factor for reconsideration. APCo stated that it need more time to properly address the Commission's concerns.

Document: Application 12/14/2018 <https://e9radar.link/3bz>

Petition of Appalachian Power Company for approval of a plan for electric distribution grid transformation projects

Overview of AMI benefits and costs beginning on p. 13 of pdf (Castle testimony), cost of plan for on Witness: BTM - P. 18 of pdf, p. 34 overviews AMI plan and methodology (Martin testimony).

Document: Motion to Withdraw 3/12/2019 <https://e9radar.link/492c6>

Appalachian Power Company's Motion to Withdraw Petition

P. 1-2 summarizes why APCo withdrew its petition, esp. due to Dominion lessons.

State Summary

VT

In April 2007, the Vermont PUC initiated a docket to investigate smart meter technology, alternative rate designs, opt-out provisions and energy efficiency. In 2009, Vermont Transco's utility-wide, \$69M SGIG application was approved. This grant initiated smart meter deployment for Vermont's IOUs and created the eEnergy Vermont collaborative, which consists of members of all twenty distribution utilities, energy efficiency utilities, and the state's transmission utility. The legislature authorized access of some smart meter data by the Department of Public Service in order to produce a comprehensive smart meter report in March 2016, which supported the business case for AMI in the state. Vermont requires utilities to provide written notices of smart meter installation and free opt-out provisions, according to a 2012 law (Act 0170).

Notable Resources:

2016 Statewide Report: <https://e9radar.link/4uc1>

eEnergy Vermont: <https://e9radar.link/1020>

SGIG Page: <https://e9radar.link/7itg>

State AMI Plans: <https://e9radar.link/woov1>

Utility / Holding Company

Analysis

Green Mountain Power Corp		Green Mountain Power						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend				AMI Meters
\$0.6	Restructured	2010	• •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				265,682

Summary In September 2008, the Vermont Public Service Board approved a stipulation between Central Vermont Public Service Corp. (CVPS merged with Green Mountain Power, or GMP, in 2012), committing CVPS to AMI implementation "as fast as it reasonable could." CVPS filed an AMI Plan within its SmartPower Plan in April 2009 and noted plans to collaborate with GMP for networking capabilities. CVPS' application was approved in August 2010. GMP filed its own AMI Implementation Plan in December 2010 which included the supporting business case, measurement and verification plan, qualitative description of benefits, and communications plan. The plan was approved in July 2011, when GMP began implementing AMI throughout its entire service territory. GMP partnered with other Vermont utilities to submit an application for SGIG funds; GMP's share of the grant was \$19.2M, of which GMP allocated \$11M for AMI deployment. The SGIG award provided funding for approximately 50% of the project costs. The estimated net cost to GMP for AMI was \$10.6M with the remaining approximately \$8M to be used to implement grid automation and customer information system projects. GMP's overall Smart Grid efforts are comprised of three separate projects: AMI; grid automation; and CIS overhaul.

Notable Resources:

Final Order: <https://e9radar.link/sqny>

2017 M&V Report: <https://e9radar.link/bd2a0>

Proceeding:	Year	Type	url
CVPS AMI Plan 7612	2014	AMI Proposal	http://e9radar.link/tnoh

Description:

In April 2010, Central Vermont Public Service (CVPS) filed its AMI Implementation Plan and business case, titled the SmartPower Plan. In addition to providing information about AMI deployment, the SmartPower Plan included strategies for new rate designs and DR programs. The Board held a workshop in May 2010 and requested additional supplemental information. CVPS informed the Board in June 2010 that it discovered a discrepancy in benefit timing which adjusted its NPV of benefits to \$1.41M or \$1.63M. In August 2010, the Board approved the plan with modifications. In December 2010, CVPS filed updates to its business case to reflect material modifications. The updated business case was approved in September 2011. The Vermont PUC website designated this case as a "Legacy Case" and does not provide access to documents other than commission orders.

Document: Final Order 5/24/2010 <https://e9radar.link/dfec5>

Order re: Advanced Metering Infrastructure Plan

Order overviews history of the AMI implementation plan development, major components, etc. P. 4 summarizes the application.

Proceeding:	Year	Type	url
Smart Metering and Alternative Rate Design 7307	2007	Rulemaking	https://e9radar.link/f5f4c

Description:

In April 2007, the Vermont PSB initiated a proceeding to examine the potential use and deployment of smart metering technology by Vermont electric distribution utilities. After numerous workshops and comment solicitations, in November 2008 the Conservation Law Foundation entered a Memorandum of Understanding (MOU) that established a regulatory framework for review and approval of AMI implementation plans and CBAs. In August 2009, the PSB approved the MOU between all eleven Vermont distribution companies and several stakeholders. The commission continued to hold workshops, and in December 2017 several groups petitioned to include Vermont electric efficiency utilities in the Cybersecurity Principles. In December 2019, the commission approved a Statement of Principles Relative to Cyber Security.

Document: Final Order (Cybersecurity) 12/11/2019 <https://e9radar.link/hdbe>

Final Order Approving a Statement of Principles relative to cyber security for electric utilities

Order addresses case history and approves a final set of cybersecurity guidelines, in addition to clarity of which Vermont utilities are subject to the principles.

State Summary

WA

In May 2009, HB 2289 modified the energy freedom program, Washington's bioenergy research and development program, to receive federal funding for smart grid technologies. The following year, the Washington PUC investigated smart grid definitions and requirements. This established a requirement for electric utilities to file reports on smart grid implementation in 2011, 2014, and 2017. In April 2018, the commission issued a policy statement which declared smart meters a "foundational technology" and mandated that opt-out tariffs be provided. In July 2018, the commission issued a notice of proposed rulemaking on other AMI issues, including data privacy, remote disconnection, and customer notification.

Notable Resources:

PNW Project: <https://e9radar.link/p64z>

Utility / Holding Company

Analysis

Puget Sound Energy PSE						Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend		AMI Meters
\$2.2	Integrated	2018	•	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5,125

Summary Puget Sound Energy (PSE) completed its installation of 1.5M AMR meters in 2000. PSE began replacing its AMR platform with AMI in 2016 as part of its six-year Meter Upgrade Project, and its 2016 Smart Grid Technology Report cited the formation of an AMI strategy and business case. The project included replacement of 1.1M electric and 800,000 gas meters, to be completed in 2023. PSE stated that the project mitigated the risk of aging infrastructure and provided a framework for grid modernization. In October 2018, PSE submitted a petition for an opt-out tariff, which was approved in January 2019.

Notable Resources:

-:

Proceeding:	Year	Type	url
Puget Sound Opt-Out Tariff <i>UE-180860</i>	2018	Opt-Out	https://e9radar.link/cba6a

Description:

In October 2018, Puget Sound Energy filed a modification to its tariff schedules to include an opt-out program, to start in January 2019. The company petition referenced meter deployment strategy and a 2016 PSE smart grid report. In January 2019, the commission approved the tariff revisions with conditions, including PSE's commitment to filing AMI deployment status reports starting in January 2020. PSE also committed to generating a final report before January 2026 to summarize the costs of its program and rates of opt-out participation.

Document: **Final order** 1/11/2019 <https://e9radar.link/n4lw>
Order 01, Order Allowing Tariff Revisions to Go Into Effect Subject to Condition.

Final order approving opt-out fees; p. 4 describes PSE commitment to filing AMI reports

Document: Petition

10/17/2018

<https://e9radar.link/t8e5>

Revises Tariff No. WN U-60, on behalf of Puget Sound Energy, from Jon Piliaris. (via web portal)

Provides background of meter deployment, cites commission directives, and compliance with opt-out tariff.

Proceeding:

	Year	Type	url
PSE 2016 Smart Grid Tech Report <i>UE-161048</i>	2016	AMI Proposal	https://e9radar.link/b1ca6

Description:

In September 2016, Puget Sound Energy filed their 2016 Smart Grid Technology Report. The informational report described past, current, and future integration of smart grid infrastructure. A key initiative referenced throughout the report was the replacement of AMR meters with AMI. The AMI transition was estimated to take a decade, and PSE cited deployment of some new meter reading network components in 2016. PSE also described lessons learned from studying AMI deployment amongst other utilities.

Document: 2016 Report

9/30/2016

<https://e9radar.link/ablq>

2016 Smart Grid Technology Report, on behalf of Puget Sound Energy, from Ken Johnson. (via web portal)(hard copies rec'd 09/02/16)

References AMI plans throughout; p. 38 details AMI progress, cost/benefit estimates, and plans to formulate strategy and business case. Also summarizes AMI project on p. 30.

Utility / Holding Company**Analysis****Avista Corp** Avista

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$0.5	Integrated	2017	• • •	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Summary In 2009, Avista implemented a SGIG-funded smart meter project in addition to a smart grid demonstration project which included the installation of 13,000 meters. In February 2016, Avista filed a rate case with a petition to approve its Washington AMI Project. Avista estimated a total project cost of \$215.2M with \$241.7M in benefits (PV). Avista further elaborated on its plans to integrate AMI into its systems in its September 2016 Smart Grid Technology Report. In December 2016, the commission rejected the AMI project, requested a different business case, noted a lack of stakeholder engagement, and recommended that Avista file a request for deferred accounting treatment. In May 2017, following commission advice, Avista filed a petition requesting deferred accounting treatment for legacy meters and AMI deployment. In September 2017, stakeholders helped form an amended petition which narrowed the scope of its requests and deferred full revenue requirement considerations to a future rate case. The amended petition was approved in September 2017.

Proceeding:	Year	Type	url
Avista AMI Proposal <i>UE-170327</i>	2017	AMI Proposal	https://e9radar.link/c1x3

Description:

In May 2017, Avista filed a request for a deferred accounting treatment of AMI deployment costs. This proposal would allow the commission the opportunity to evaluate prudence and cost recovery after deployment. This application follows the company's initial presentation and rejection of AMI plans (250,000 electric and 160,000 gas meters) in its 2016 rate case (docket no. UE-160228). At the time of the accounting order request, the company had already signed contracts and begun deployment of AMI meters in Washington. Avista noted that the total project cost could change as additional details emerged; the initial estimate was for a capital cost of \$166.7M. Avista explicitly stated that it was not requesting prudence of investments and operating costs associated with AMI, and that cost recovery would be requested in future proceedings. In September 2017, Avista filed an amended petition to only defer depreciation expenses associated with actual investments in AMI that began in 2017. The commission approved the amended petition later that month.

Document: Business Case 2/1/2016 <https://e9radar.link/f30b>

Avista Utilities Advanced Metering Project – Business Case

Full business case, originally presented in previous AMI case. P. 2-4 summarizes costs, p. 5-7 summarizes benefits, p. 8-10 summarizes net benefits. P. 19 shows deployment plan, p. 50 discusses qualitative benefits

Document: Order 9/14/2017 <http://e9radar.link/3e5a0>

Order 01; Order Granting Amended Petition

Reviews the case and approves the project.

Document: Amended Petition 9/7/2017 <https://e9radar.link/zy27>

Amended Accounting Petition, on behalf of Avista Corporation d/b/a Avista Utilities, from David Meyer. (via web portal)(hard copies rec'd 09/08/17)

Modified petition, complying with commission directives to adjust cost adjustments

Document: Petition 5/1/2017 <https://e9radar.link/fjzc>

Petition for an Order Authorizing Deferred Accounting Treatment related to the Company's Investment in Advanced Metering Infrastructure and Approval of Depreciation Rate, on behalf of Avista Corporation d/b/a Avista Utilities, from David Meyer. (via web portal)

Provides a summary of AMI deployments and cost recovery petitions to date, including the new request for an accounting order.

Proceeding:	Year	Type	url
Avista 2016 Rate Case <i>UE-160228</i>	2016	AMI Proposal	http://e9radar.link/545d

Description:

In February 2016, Avista filed a its 2016 rate case, which included a petition to launch an AMI project to replace 253,000 meters. In December 2016, the Commission rejected Avista's rate case, noting that AMI was a contentious issue. The commission also suggested that Avista further engage with stakeholders and develop another business case. The commission also suggested that Avista file for an accounting order outside of a rate case proceeding to address AMI. To close the AMI portion of its order, the commission quoted itself: "We generally support utilities' provision of technologically advanced service to customers when a utility demonstrates that the investment is used and useful and prudent... We expect Avista to continue planning and evaluating carefully the costs and benefits of AMI as its expected deployment date approaches." After this order, Avista filed a petition for rehearing, which was rejected.

Document: Business Case 2/1/2016 <https://e9radar.link/kc8>
Washington Advanced Metering Project Business Case
Contains the AMI business case; p. 2-4 summarizes costs, p. 4-6 summarizes benefits, p. 8-10 discusses positive net benefits

Document: Order 12/15/2016 <https://e9radar.link/dsqg>
Order 06, Final Order Rejecting Tariff Filing
Order rejecting rate increase and AMI. P. 51-53 addresses AMI issues.

State Summary

WI

In January 2017, the Wisconsin PSC ordered the administration of a smart meter survey to all IOU and municipal utilities. Topics covered include upcoming meter replacement and project upgrades, AMI-enabled programs, MDMS, and meter capabilities. The survey revealed that 78% of meters in the state used AMR or AMI; approximately 39% employed AMI. Later in 2017, the commission issued an additional grid modernization priority survey to utilities and various stakeholders. AMI use and benefits emerged as a top priority in both groups, and the commission affirmed stakeholders' interest in AMI-enabled information services through meetings with respondents. Wisconsin Public Service company noted in a December 2016 application that the state of Wisconsin does not have a statutory requirement to file an AMI application.

Notable Resources:

WPSC Strategic Energy Assessment: <https://e9radar.link/qrd>

Grid Modernization Survey: <https://e9radar.link/6aua>

Utility / Holding Company

Analysis

Wisconsin Electric Power WE Energies					Detailed
\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$2.8	Integrated	2018		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	463,124

Summary In January 2018, Wisconsin Electric Power Co (We Energies) filed a report with the Securities and Exchange commission which included the description of its Wisconsin AMI program. The program was estimated to cost \$200M over two years, and the company's interstate capital plan cited a budget of \$0.4B on automated meters from 2018-2022. In 2019, We Energies announced a partnership with a smart meter vendor in 2019 to deploy AMI to its 500,000 Wisconsin gas and electric customers.

Notable Resources:

Article: <https://e9radar.link/jnx>

Article: <https://e9radar.link/5pz0>

SEC Report: <https://e9radar.link/61g3>

Proceeding:	Year	Type	url
Retention of Meters and Reading Records 1-AC-227	2001	Rulemaking	http://e9radar.link/yxm7

Description:

In February 2009, the Wisconsin commission opened this proceeding to investigate rulemaking for the retention of meter reading information for testing purposes. In March 2015, the commission issued a final order approving modification to several rules.

Document:	Order	3/27/2015	https://e9radar.link/Okmt
Order Adopting Proposed Rules			
Order implementing new rules and adjustments.			

Utility / Holding Company

Analysis

Wisconsin Power & Light Alliant

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.1	Integrated	2007		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	470,507

Summary In August 2007, the holding company of Wisconsin Power & Light (Alliant Energy) announced that it would deploy AMI to over 1M of its customers. In October 2007, Alliant filed an application in Wisconsin to replace its AMR system with 173,000 gas and 455,000 electric meters in two phases over three years. The application noted that commission approval was not required for the electric portion of the project. The project was estimated to be complete in 2010, and to cost \$91M (\$71.6M for its electric portion). Benefits were described on an annual basis. WPL described AMI as a necessary technology to gather energy, consumption usage, and billing data to enhance customer service, operational efficiency, and accelerate the revenue cycle.

Notable Resources:

Article: <https://e9radar.link/4gnw>

Article: <https://e9radar.link/3pdm>

Proceeding:

	Year	Type	url
WPL Application for AMI 6680-CG-152	2007	AMI Proposal	https://e9radar.link/46gt

Description:

In October 2007, WPL filed an application to deploy gas and electric AMI throughout its territory, although WPL stated that it does not need to request commission approval for its electric AMI meters. The ability of AMI meters to collect useful information was cited as a primary benefit, in addition to overlapping capabilities of gas and electric meters. In January 2008, the commission approved the project and required a variety of reports.

Document: Application

10/12/2007

<https://e9radar.link/7sr>

Application

P. 74 contains cost/benefits.

Revenue requirement calculations on p. 72.

Document: Order

2/22/2008

<https://e9radar.link/xtc>

Certificate and Order

Order approving AMI project. Overview of cost/benefits on p. 4-5

State Summary

WV

At this time, there is no specific guidance from either the state legislature or commission with regard to AMI.

Notable Resources:

Investigation: <https://e9radar.link/2c5>

Utility / Holding Company

Analysis

Appalachian Power American Electric Power

Detailed

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.2	Integrated	2017		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1,210

Summary In June 2017, Appalachian Power Co. (APCo) and Wheeling Power Co. jointly filed their Annual Smart Grid Matters report. The report discussed the parent company AEP's gridSMART® plan to integrate advanced distribution technologies, including AMI deployment. In West Virginia, the companies described deployment of DA circuit reconfiguration, VVO, and 540,000 AMI meters in 2017. The AMI "Phase I" project included a customer information access portal.

Proceeding:

	Year	Type	url
West Virginia's Smart Grid Investigation 08-2072-E-GI	2008	Report	http://e9radar.link/a3ji

Description:

This docket was opened in response to the national directive to investigate smart grids within local Commissions. West Virginian IOUs filed annual smart grid plans, which described updates, new technology, and general integrations. Reports also summarized holding-company smart grid activities in other states.

Document: 2019 APCo Report

6/14/2019

<https://e9radar.link/nktr>

Annual Report on Smart Grid Matters, filed by Counsel for Appalachian Power Company and Wheeling Power Company (Closed Entry)

On o. 4, APCo summarizes AMI deployment and benefits

Document: 2012 MP/PE Report

6/15/2012

<https://e9radar.link/3rfs>

Smart Grid Report of Monogahela Power Company and The Potomac Edison Company

P. 2-3 describes the Super Circuit project, technology, budgets, etc.

Document: 2018 APCo Report

6/18/2018

<https://e9radar.link/tio7>

Annual Report on Smart Grid Matters, filed by Counsel for Appalachian Power Company and Wheeling Power Company (Closed Entry)

On p. 4, APCo explains its 2018 plans to deploy more meters, and also describes smart meter benefits

Document: 2018 MP/PE Report

6/15/2018

<https://e9radar.link/ekck>

Smart Grid Report of Monogahela Power Company and The Potomac Edison Company

P. 2 describes the MonPower Super Circuit project and why it did not complete CBAs

Document: 2017 APCo Report

6/15/2017

<https://e9radar.link/kbde>

Annual Report on Smart Grid Matters, filed by Counsel for Appalachian Power Company and Wheeling Power Company (Closed Entry)

On p. 8, APCo explains its initiative to replace 54,000 smart meters in 2017.

Utility / Holding Company**Analysis****Monongahela Power Co** FirstEnergy

Summary

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
\$1.1	Integrated			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Summary Monongahela Power Co. (MonPower) was awarded a DOE grant to complete its "West Virginia Super Circuit" smart grid demonstration project, which was proposed to demonstrate improved performance and reliability through the integration of distributed resources and advanced technology, which included AMI. The project was estimated at \$9.8M over four years (2010-2014) and was funded 57% through the DOE. In 2014, Potomac Edison and MonPower Co. stated in a joint response to a request for information that the companies had not completed an evaluation of AMI for West Virginia, "nor are the companies aware of any statute or commission rule requiring their use in West Virginia." MonPower also stated that because AMI was not deployed on a utility-scale, the CBAs could not be completed.

Notable Resources:

DOE site: <https://e9radar.link/lf85>

Proceeding:

Year

Type

url

West Virginia's Smart Grid Investigation 08-2072-E-GI	2008	Report	http://e9radar.link/a3ji
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Description:

This docket was opened in response to the national directive to investigate smart grids within local Commissions. West Virginian IOUs filed annual smart grid plans, which described updates, new technology, and general integrations. Reports also summarized holding-company smart grid activities in other states.

Document: 2019 APCo Report

6/14/2019

<https://e9radar.link/nktr>

Annual Report on Smart Grid Matters, filed by Counsel for Appalachian Power Company and Wheeling Power Company (Closed Entry)

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6/15/2012

<https://e9radar.link/3rfs>

Smart Grid Report of Monogahela Power Company and The Potomac Edison Company

P. 2-3 describes the Super Circuit project, technology, budgets, etc.

Document: 2018 APCo Report 6/18/2018 <https://e9radar.link/tio7>

Annual Report on Smart Grid Matters, filed by Counsel for Appalachian Power Company and Wheeling Power Company (Closed Entry)

On p. 4, APCo explains its 2018 plans to deploy more meters, and also describes smart meter benefits

Document: 2018 MP/PE Report 6/15/2018 <https://e9radar.link/ekck>

Smart Grid Report of Monogahela Power Company and The Potomac Edison Company

P. 2 describes the MonPower Super Circuit project and why it did not complete CBAs

Document: 2017 APCo Report 6/15/2017 <https://e9radar.link/kbde>

Annual Report on Smart Grid Matters, filed by Counsel for Appalachian Power Company and Wheeling Power Company (Closed Entry)

On p. 8, APCo explains its initiative to replace 54,000 smart meters in 2017.

Utility / Holding Company

Analysis

Potomac Edison Company FirstEnergy

Summary

\$B Class Year ben/cost/net app./deny/set/pend AMI Meters

\$0.3 Integrated

☐ ☐ ☐ ☐

Summary In Potomac Edison's annual smart grid reports, the company does not include information on AMI deployment in its territory. See Monongahela Power Co. for sister company details.

Notable Resources:

ROI (AMI info): <https://e9radar.link/zyxu>

Proceeding:

Year

Type

url

West Virginia's Smart Grid Investigation 08-2072-E-GI

2008

Report

<http://e9radar.link/a3ji>

Description:

This docket was opened in response to the national directive to investigate smart grids within local Commissions. West Virginian IOUs filed annual smart grid plans, which described updates, new technology, and general integrations. Reports also summarized holding-company smart grid activities in other states.

Document: 2019 APCo Report 6/14/2019 <https://e9radar.link/nktr>

Annual Report on Smart Grid Matters, filed by Counsel for Appalachian Power Company and Wheeling Power Company (Closed Entry)

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Document: 2018 APCo Report 6/18/2018 <https://e9radar.link/tio7>

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On p. 8, APCo explains its initiative to replace 54,000 smart meters in 2017.

State Summary

Utility / Holding Company

Analysis

\$B	Class	Year	ben/cost/net	app./deny/set/pend	AMI Meters
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Document: Opening 10/27/1995 <https://e9radar.link/334l>
 Order No. 10720 Dated October 27, 1995 Opening Docket
 Discusses changes in the electricity industry, esp. relating to deregulation

Document: Order 5/25/2017 <https://e9radar.link/c54ad>
 Order
 Order approving CPCN and riders

Document: Stipulation 12/6/2016 <https://psc.ky.gov/bscecf/2016>
 Duke Energy Kentucky, Stipulation and Recommendation

Document: Testimony 4/25/2016 <https://e9radar.link/33b19>
 Donald Schneider Testimony: Case No. 2016-00152 Exhibit 8 along with DLS Attachments
 See p. 90 (pdf)

Document: Decision 4/12/2007 <https://e9radar.link/9k4>
 Decision

Document: Petition <https://e9radar.link/14l>
 Petition

Document:	Testimony (rate)	7/3/2019	https://e9radar.link/9lo3
	Direct Testimony of Steven M. Willis		
Document:	Testimony	7/3/2019	https://e9radar.link/9lo3
	Testimony		

Document:	Application	3/2/2015	https://e9radar.link/zbrk
	Joint Application of Westar Energy and Kansas Gas and Electric Company		
	Overall summary; little AMI information		

Proceeding:	Year	Type	url
Montana AMI Opt-Out 2019.12.108	2019	Opt-Out	

Description:

In December 2019, the Montana PSC opened a docket pursuant HB 267, passed by the 2019 legislature, which requires the commission to make a determination whether utilities should be mandated to provide an opt-out program for AMI meters. The commission was instructed to make a decision prior to July 2020.

Document:	Request for comment	12/18/2019	https://e9radar.link/ipd9
	Request For Comment		
	PSC request for comment, opening up the proceeding, summarizing legislation		

Proceeding:	Year	Type	url
Xcel MN 2019 Integrated Distribution Plan 19-666	2019	AMI Proposal	

Description:

In November 2019, Xcel filed its Integrated Distribution Plan (IDP), as mandated by the commission in July 2019 (docket no. 18-251). Xcel's IDP largely seeks certification of an advanced distribution planning tool and other components of its Advanced Grid Intelligence and Security (AGIS) initiative: AMI, FAN, DA (fault location, isolation, and service restoration), and integrated VVO. These technologies advance the ADMS deployment that is underway. The 2019 IDP also contains DER projections, a NWA analysis, EV and grid modernization pilots, and a summary of near- and long-term action plans. Xcel noted that its general rate case (docket no. 19-564) was filed on the same day and only incorporates AGIS costs from 2020-2022. Attachments in the 2019 IDP pull from the concurrent rate case testimonies and attachments.

Document: Plan (full) 11/1/2019 <https://e9radar.link/6t48>

Initial Filing--integrated Distribution Plan - 01 Cover Letter, IDP Report And Atts A1 Through C

Initial pages provide high-level summary, followed by the formal plan; p. 35 of pdf indexes attachments, p. 186 of pdf explains aging AMR, p. 189 of pdf shows timeline, p. 190 shows project costs, p. 194 shows benefits, CBA ratio summarized on p. 205

Document: Attachments file 2 of 2 11/1/2019 <https://e9radar.link/9min>

Initial Filing--integrated Distribution Plan - 04 IDP Atts M3 Through O4

Full CBA found on p. 194 of pdf, Attachment M5, p. 233 shows AMI chart, p. 240 shows meter reading chart

Document: Attachments file 1 of 2 11/1/2019 <https://e9radar.link/pr41>

Initial Filing--integrated Distribution Plan - 03 IDP Atts D1 Through M2

See Plan for full index of attachments. P. 478 of pdf begins to discuss benefits at length, p. 497 of pdf discusses qualitative benefits. P. 121 of pdf begins comprehensive AGIS testimony (from rate case), p. 136 and 186 of pdf explains stakeholder process

Proceeding:	Year	Type	url
HECO Phase 2 Grid Modernization 2019-0327	2019	Reference	https://e9radar.link/c60e5

Description:

In September 2019, HECO filed its Phase 2 Grid Modernization Project, consisting of the four-year deployment plan for Advanced Distribution Management Plan (ADMS). ADMS will support principles of maintaining and enhancing the safety, interoperability, security, reliability, and resiliency of the electric grid. The ADMS Project was focused on: (1) integrating greater renewable energy, specifically DER, and empowering customer energy options and (2) establishing an interoperable, standards-based system. The Companies estimate the total capital, deferred, and operations and maintenance (O&M) costs of the project through implementation to be \$45.8M, and they will seek to recover these costs through the Major Project Interim Recovery adjustment mechanism.

Document: Application 9/30/2019 <https://e9radar.link/ehf>

Application of Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc. and Maui Electric Company, Limited; Verification; Exhibits "A" - "K"; Docket No. 2019-0327

Summary of requests on p. 2, description of strategy p. 10, ADMS project p. 23, benefits/costs p. 30-34

Proceeding:	Year	Type	url
Duke 2019 Rate Case <i>E-7 Sub 1214</i>	2019	Cost Recovery	https://e9radar.link/3cb52

Description:

In September 2019, Duke Energy Carolinas filed a rate case to increase its retail base revenues by \$445.3M (9.2%). The increase was primarily driven by investments made since its 2017 rate case (docket no. E-7, Sub 1146), especially accounting for generation/transmission/distribution modernization plans, deployment of AMI, and environmental regulation compliance. Various testimony and stakeholder presentations cite AMI as a foundational technology that enables a variety of other programs, especially alternative rate design.

Document: Exhibits	9/30/2019	https://e9radar.link/zum7
Oliver Direct Testimony and Exs. 1-6 and 8-18		
P. 460 describes GIP program costs but does not distinguish AMI costs. P. 491 of PDF cites AMI as a foundational investment.		

Proceeding:	Year	Type	url
AEP gridSMART® Phase 3 <i>19-1475-EL-RDR</i>	2019	AMI Proposal	https://e9radar.link/l3pk

Description:

In July 2019, AEP Ohio filed its proposed continuation of gridSMART® deployment through gridSMART® Phase 3. Phase 3 builds upon AEP's successful Phase 1 and Phase 2 experience, with a focus on expanding reliability benefits. Phase 3 included completion of the deployment of AMI to the company's remaining 475,000 customers.

Document: Application	7/26/2019	https://e9radar.link/06e96
In the Matter of the Application of Ohio Power Company to Initiate its gridSMART Phase 3 Project electronically filed by Mr. Steven T. Nourse on behalf of Ohio Power Company.		
Brief mention of AMI on o. 4, including expansion of functionalities		

Proceeding:	Year	Type	url
IPL TDSIC Plan 2019 <i>45264</i>	2019	AMI Proposal	https://e9radar.link/50fx

Description:

IPL's Meter Replacement Project, housed within the broader Transmission, Distribution, and Storage System Improvements Charge (TDSIC), requested the replacement of 350,000 residential and small commercial single- and three-phase meters through a five-year period starting in 2020. Costs were estimated at \$55.9M in capital expenditures, and net benefits were estimated at \$17.6M. The total TDSIC seven-year plan requested \$1.2B in investments from two categories: Deliverability, and Condition/Age.

Document: TDSIC Plan 2019	7/24/2019	https://e9radar.link/oqa
Indianapolis Power & Light Company Transmission Distribution Storage System Improvement Charge (TDSIC) Plan July 2019		
TDSIC plan is included as Attachment BJB-2; p. 46 begins AMI details; p. 48 describes benefits, p. 17 details benefits of the whole program		

Document: Peition

7/24/2019

<https://e9radar.link/i8be>

Petition

Contains directory of testimony, evidence, and full TDSIC plans

Proceeding:	Year	Type	url
CA EPIC Research Administration Plan A.19-04-026	2019	Report	https://e9radar.link/zfpl

Description:

In response to a mandate from the CPUC in case no. 18-10-052, Southern California Edison Company, Pacific Gas and Electric Company, and San Diego Gas & Electric Company filed a petition to fund and complete a Research Administration Plan for the Electric Program Investment Charge (EPIC). The paper application explores the precedence of new grid, transmission, and distribution technologies and rules. The companies note several stakeholder involvement processes, including R&D meetings, leading up to this proposal. The utilities intend to publish quantified results, use plain language, and conduct research with other energy companies.

Document: Application

4/19/2019

<https://e9radar.link/980x>

Joint Application Of Southern California Edison Company (U 338-e), Pacific Gas And Electric Company (U 39-e), And San Diego Gas & Electric Company (U 902-e), For Approval Of The Research Administration Plan For The Electric Program Investment Charge

P. 9 of pdf begins explanation of research and impetus

Proceeding:	Year	Type	url
TECO AMI Opt-Out 20190024	2019	Opt-Out	https://e9radar.link/65f19

Description:

In January 2019, Tampa Electric Co. filed an application to implement an opt-out tariff program for customers who wish to keep their legacy AMR meter. The application also provides a brief overview of the company's AMI deployment program. The opt-out program included a one-time fee of \$96.27 and a monthly surcharge of \$20.64.

Document: Application

1/18/2019

<https://e9radar.link/yybg>

Application

Contains a summary of the AMI replacement program. P. 3 describes scope of project and basic strategy.

Proceeding:	Year	Type	url
Cyber-Security Reporting 9492	2018	Reference	https://e9radar.link/6vdct9492

Description:

This case discusses cyber security issues around and potential requirements for AMI data. In February 2019, the commission issued an order requiring all Maryland electric, gas, or water companies that have 30,000 or more customers to file periodic Cyber-security Reports.

Document: Order 2/4/2019 <https://e9radar.link/lws1>
Order No. 89015

Proceeding:	Year	Type	url
IPL AMI Opt-Out Program SPU-2018-0007	2018	Opt-Out	https://e9radar.link/1a3rv

Description:

In March, 2018 Interstate Power and Light Company (IPL) filed with the Utilities Board a proposed tariff regarding non-standard meter alternatives for its electric service customers. IPL proposed to charge customers who opt out of AMI meter installation a \$15 per month charge per meter. In July, 2018 the board consolidated the AMI tariffs together with formal complaints against IPL's proposed AMI upgrade and program opt-out procedures.

Document: Testimony 7/30/2019 <https://e9radar.link/c25m>
Direct Testimony of Randy D. Bauer
Summarizes the implementation of AMI deployment

Proceeding:	Year	Type	url
Investigation into Microgrids 2018-0163	2018	Reference	https://e9radar.link/smndu2018-0163

Description:

In September 2018, the Hawaii PUC opened up this docket to investigate the implementation of Act 200, which sought to "establish greater structure around microgrid interconnection and the value of microgrid service." The Hawaii legislature expressed interest in creating enhanced reliability and resilience to the Hawaii grid.

Document: Opening Order 7/10/2018 <https://e9radar.link/49106>
Order No. 35566 Opening the Docket; Public Utilities Commission
Scopes the subject of this proceeding

Proceeding:	Year	Type	url
Rulemaking for AMI <i>U-180525</i>	2018	Rulemaking	

Description:

In June 2018, the commission initiated a rulemaking to consider several policy issues including data privacy, remote disconnection, and customer notification. The opening documents noted that the commission began examining smart grid technologies in 2009, and that in April 2018 the commission issued a Policy and Interpretive Statement on Customer Choice for Advanced Meter Installation in docket no. U-180117. The commission issued several opportunities to file written comments and held a workshop to discuss the draft rules.

Document: Notice 7/10/2018 <https://e9radar.link/t58w>
 Notice of Opportunity to File Written Comments (by September 7, 2018).

Outlines issues for consideration

Proceeding:	Year	Type	url
Inquiry on Smart Meter Customer Choice <i>U-180117</i>	2018	Rulemaking	

Description:

In February 2018, the commission initiated an inquiry into customer choice policies for advanced meters. The proceeding gathered comments and held a workshop to discuss issues. The commission noted that Washington utilities planned to deploy AMI as early as August 2018. In April 2018, the commission issued an AMI Customer Choice Policy Statement which ordered companies pursuing AMI technology to file opt-out tariffs prior to AMI installation.

Document: Policy 4/10/2018 <https://e9radar.link/glvv>
 Policy and Interpretive Statement on Customer Choice for Advanced Meter
 Installation

Contains commission decisions on opt-out and other customer choice
 details

Proceeding:	Year	Type	url
Investigation into Distribution System Planning 17-12-03	2017	Rulemaking	https://e9radar.link/bzt7t

Description:

In December 2017, a new docket was opened by PURA in order to investigate distribution system planning, including goal development, modernizing data capabilities, and modified planning processes. In October 2019, PURA reopened this proceeding and created several sub-dockets dedicated to various distribution-related technologies relating to its Framework for an Equitable Modern Grid. PURA requested the continued investigation of AMI (sub-docket 17-12-03RE02) and the development of a statewide smart meter deployment business case in Connecticut. PURA will also examine efficiencies that may be gained through AMI deployment. CL&P proposed an expedited procedural conference to consider next steps.

Document: Reopening 10/7/2019 <https://e9radar.link/85t>

Notice of Proceeding

States statewide actions that led to reopening, also discusses AMI deployment and business plans

Document: Procedural Conference 10/18/2019 <https://e9radar.link/6f5e>

Joint Motion for Procedural Conference

CL&P and UI proposed an expedited stakeholder process to discuss case integration

Proceeding:	Year	Type	url
National Grid 2017 Rate Case 4770	2017	Cost Recovery	https://e9radar.link/gveup

Description:

In November 2017, National Grid filed for a rate increase which included continued upkeep and maintenance; job additions which in part would assist in processing interconnection of DER; and low-income customer engagement including providing a fixed 15% bill discount. In addition to typical investments, the rate case supported the company's Power Sector Transformation Plan (PSTP), filed in a separate docket. The PSTP and associated costs included a full advanced metering functionality (AMF) roll-out to all of its 790,000 customers coupled with an opt-out time varying rates program by 2022, a data portal, grid modernization investments, a 3-year electric transportation acceleration initiative, and a suite of performance incentive mechanisms. In August 2018, the parties crafted a settlement plan which included the obligation to update the AMF business case, to be filed no later than February 2019. The settlement also called for stakeholder processes, a precise schedule, rate class allocation, a data governance plan, and other notes.

Document: Book 1 11/27/2019 <https://e9radar.link/qatv>

Book 1 - Direct Case

P. 28 briefly describes AMF technology as part of the PST plan

Proceeding:	Year	Type	url
Duke Energy Progress 2017 General Rate Case <i>E-2 Sub 1142</i>	2017	AMI Proposal	https://e9radar.link/xiutt

Description:

In Duke Energy Progress' 2017 rate case, Duke requested the establishment of a regulatory asset to recover their replacement of AMR with AMI. Within its request for an increase of \$477.5M, this case also requested approximately \$13B for grid modernization over ten years, of which \$549M was allocated to AMI. The Stipulation reached set a ten-year remaining life for the meters that are being retired pursuant to the Company's AMI program and a seventeen-year life for new meters.

Document: Order (approving stipulation) 2/23/2018 <https://e9radar.link/bij1>
Order Accepting Stipulation, Deciding Contested Issues, and Granting Partial Rate Increase

P. 20 explains approval of old meter recovery, p. 230 cites approval

Document: Application 6/1/2017 <https://e9radar.link/On22>
Application of Duke Energy Progress, LLC for Adjustment of Rates and
Charges Applicable to Electric Service in North Carolina and Request for an
Accounting Order

Docket No. E-2, Sub 1142

Briefly mentions establishment of regulatory asset for AMI

Document: Testimony (Simpson) 6/1/2017 <https://e9radar.link/del2>
Direct Testimony and Exhibits

Simpson testimony contains AMI details, starting on p. 756 of pdf,
estimated costs p. 758 of pdf

Proceeding:	Year	Type	url
RMP 2017 IRP <i>PAC-E-17-03</i>	2017	AMI Proposal	https://e9radar.link/vvzts

Description:

As part of its 2017 IRP, PacifiCorp overviewed activities in its interstate jurisdictions. A similar filing was made in Oregon, in docket UM-1667, around the same time. This docket notes the intention to replace 590,000 customer meters in Oregon with advanced meters from 2017-2019. Idaho smart meter plans were not addressed.

Document: Application (Volume II) 4/4/2017 <https://e9radar.link/ukh16>
2017 Integrated Resource Plan, Volume II - Appendices
p. 86 lists smart meter plans

Proceeding:	Year	Type	url
O&R 2017 AMI Program 17-M-0178	2017	AMI Proposal	https://e9radar.link/vi6kf

Description:

In February 2017, Orange & Rockland requested approval of incremental EE Programs, full deployment of AMI in O&R territory, an AMI Customer Engagement Plan and AMI Rate Pilot Program, and a framework for NWA projects. O&R submitted three separate AMI system-related proposals, which will expand the AMI program approved in Case No. 14-E-0493, O&R's previous rate case. O&R seeks approval to move forward with AMI implementation, authorization to deploy an expanded scope and functionality in Rockland County (an increase of \$17.7M from its original proposal totaling \$61M), and expansion of the Orange and Sullivan Counties deployment effort (adding a cost of \$37M). The cost of these projects results in an overall cost estimate of \$98M for AMI deployment. In November 2017, the commission approved the AMI project and customer engagement plan, with a capital expenditures cap of \$98.5M. The commission rejected O&R's rate pilot and also required regular reporting.

Document: Order	11/16/2017	https://e9radar.link/9qskn
Order Granting Petition In Part		
Order approving the AMI project and NWA but denying certain cost recovery programs. P. 2-5 overviews AMI petition; p. 16 begins commission analysis.		

Proceeding:	Year	Type	url
NYSEG AMI Program 17-E-0058	2017	AMI Proposal	http://e9radar.link/h7q6

Description:

In December 2016, NYSEG and RG&E requested authorization for full-scale deployment of AMI (1.8M meters) and establishment of a surcharge to recover associated costs. The Companies note that full deployment is necessary to realize REV goals, especially the implementation of DER. The AMI roll-out was proposed to begin in 2018 and end in 2021, which will include the installation of 12,000 smart meters in the Ithaca Energy Smart Community REV Demonstration project. In March 2017, Department of Public Service (DPS) staff postponed the AMI case indefinitely as a result of the 2017 windstorm, outages, and restoration efforts. In February 2018, the case resumed, and NYSEG and RG&E filed updates to the financial portion of their petition. Following the initiation of NYSEG and RG&E's 2020 rate case, which included a provision for AMI deployment, the DPS closed this case due to its duplicative nature.

Document: Exhibit - Financial	3/30/2018	https://e9radar.link/9d0a0
PUBLIC - Exhibit __ (AMI-3) - March 2018 Petition Update - 03-28-2018		
Various updated financial estimates		

Proceeding:	Year	Type	url
WPS AMI Application 6690-CG-171	2016	AMI Proposal	

Description:

In December 2016, Wisconsin Public Service Corp. (WPS) filed an application to replace its AMR network with 330,000 gas and 457,000 electric AMI meters, network software, and meter modules over four years (2017-2020). The application did not include any supporting testimony. WPS described the initial installation of gas and electric AMR in 2003 with estimated meter life of 20 years. The application noted that its scope primarily addresses the replacement of gas meters because Wisconsin does not have a statutory requirement for electric meters replacement. The commission granted intervention of another party, but no other opposing comment or testimony was filed. The application was approved in April 2017.

Document: Final Order 4/3/2017 <https://e9radar.link/qeb3>

Final Decision Signed and Served 4/3/17

Final decision of the commission; overviews the application.

Document: Revised Application 12/7/2016 <https://e9radar.link/90c76>

Revised Application

WPS' initial application was removed in lieu of the revised application. Document describes history of AMR/AMI, general costs, statutory requests, etc. P. 1-3 discusses methodology and technology, p. 4 overviews benefits; p. 5 breaks out costs.

Proceeding:	Year	Type	url
Avista 2016 Smart Grid Tech Report UE-161045	2016	AMI Proposal	

Description:

In September 2019, Avista filed its third Smart Grid Technology Report, pursuant commission orders. Topics included the AMI-Washington project, energy storage, EV supply equipment, demand response systems, VVO, and a variety of other technologies. The report also reviewed Avista's implementation of AMI through its SGIG demonstration project which included the installation of 13,000 electric and 5,000 gas meters. The AMI-Washington project included the implementation of 253,000 new electric and 155,000 new gas meters, to be installed from 2017-2022. A business case and description of benefits was provided.

Document: 2016 Report 9/1/2016 <https://e9radar.link/ablq>

2016 Smart Grid Technology Report, on behalf of Avista Corporation d/b/a Avista Utilities

P. 27-30 contains the AMI project business case and project overview.

Proceeding:	Year	Type	url
Clark Energy Application for AMI System 2016-00220	2016	AMI Proposal	http://e9radar.link/lh4w

Description:

In June 2016, Clark Energy Cooperative (Cleco) filed an application to deploy AMI in its territory. The company estimated \$10.1M in net benefits over 15 years. Cleco noted that its AMI project was part of the Clark Energy 2016-2019 Construction Work Plan, which included the purchase of 10,638 new AMI meters and 1,920 upgraded meters with built-in remote switch devices.

Document: Application 6/27/2016 <https://e9radar.link/zk5q>

Clark Energy Cooperative, Inc. Application for a Certificate of Public Convenience and Necessity to Install an Advanced Metering Infrastructure (AMI) System

Follows filing requirements; P. 4 overviews pilot plan and benefits, p. 7 performs cost-effectiveness test, testimony of J. Robert Cleghorn (p. 120 of pdf) provides AMI project details; Exhibit JRC-3, p. 152 of pdf, details project costs; Exhibit JRC-6, p. 155 of pdf, details benefits; other JRC exhibits provide other revenue requirement info

Proceeding:	Year	Type	url
Rockland Electric AMI Program EO16060524	2016	AMI Proposal	http://e9radar.link/k4fs

Description:

In May 2016, Rockland Electric Co. filed a rate case (case no. ER16050428) which included a request to deploy AMI. Following a BPU order, Rockland Electric Co. opened up a docket to address its AMI portion. The request sought pre-approval to remove and replace 74,000 existing meters with AMI over a 3-year period (2017-2019). Rockland Electric did not request cost recovery or file an estimated cost cap, though costs were estimated at \$32.2M. The majority of cost savings were from meter reading elimination (\$22.3M), and cumulative benefits valued at \$82M. Net benefits were estimated at \$49.9M. The request included allowance of \$8.9M of stranded costs for retired meters in a future rate case.

Document: Testimony 9/9/2016 <https://e9radar.link/1e25>

Tim Woolf AMI Testimony

Testimony from an external consultant; provides project details. P. 5 describes number of meters and estimated costs.

Proceeding:	Year	Type	url
Rockland Electric Rate Case and AMI Program <i>ER16050428</i>	2016	Cost Recovery	http://e9radar.link/0579

Description:

In May 2016, Rockland Electric Co. filed for a \$9.6M (13.5%) rate increase, attributed to lower sales, infrastructure construction, removing old assets, inflation pressures, and vegetation management. The rate case included a provision for re-approval for AMI deployment. AMI was described as an enabling technology for DER, dynamic rates, renewable resource integration, DA, and other smart grid functionalities. Deployment of 74,000 meters was proposed for 2017-2019. An opt-out provision was also provided, for a one-time fee of \$45 and a monthly fee of \$15. In June 2016, the New Jersey BPU ruled that the AMI portion of the case should be considered separately, and case no. EO16060524 was opened.

Document: Testimony 5/13/2016 <https://e9radar.link/wwu6>

Direct Testimony, Volume I

P. 77 of pdf begins to discuss AMI implementation; p. 81 of pdf describes AMI specifics, p. 86-87 of pdf describes benefits, p. 100 includes opt-out, p. 107-108 of pdf summarizes business case

Proceeding:	Year	Type	url
SWL&P AMI System <i>5820-CU-101</i>	2016	AMI Proposal	http://e9radar.link/d591

Description:

In April 2016, SWL&P filed an application to install an AMI system over a 5-year period to its electric, gas, and water customers. SWL&P cited its current status of AMI in its territory: as of December 31, 2018, SWL&P had installed 14,319 electric, 5,645 gas, and 5,208 water AMI meters in the field. For 2019, SWL&P projected to convert or install approximately 2,600 gas meters and 2,700 water meters. SWL&P planned to deploy AMI water and gas technology for the residential and business district with the City of Superior. SWL&P listed customer service benefits, including Accurate and Reliable meter reads for billing, move-ins/move-outs and off-cycle reads, improved electric outage restoration, increased detection and alert capabilities, safety, and new rate offerings. Total cost was estimated at \$11.2M, approximately \$1.4M of which was cited as 'routine costs,' to be allocated between SWL&P's 3 utilities.

Document: Order 11/11/2016 <https://e9radar.link/8zkg>

Certificate of Authority and Order signed 11-10-16 and served 11-11-16

Delivers approval for the project

Document: Exhibit E - Technical 4/20/2016 <https://e9radar.link/1k4j>

Exhibit E: Sensus Technical Information

Technology overview of meter vendor

Document: Application 4/20/2016 <https://e9radar.link/fyu5>

Application

Overviews the project and explains pilot projects/research to date; p. 3-4 shows timeline, p. 11-12 overviews costs, p. 12-15 describes value categories

Document: Exhibit F - Financial

4/20/2016

<https://e9radar.link/5uts>

Exhibit F: SWLP Application for Certificate of Authority for Advanced Metering Infrastructure

Provides financial modeling; not a CBA, but provides useful numbers

Proceeding:

	Year	Type	url
Duquesne Smart Meter Plan Modification <i>P-2015-2497267</i>	2015	Tech Upgrades	http://e9radar.link/gysl

Description:

In August 2015, Duquesne Light filed a petition to modify its smart meter procurement and installation plan. Specifically, the company requested implementation of an enhanced outage communication and voltage monitoring capabilities, to be recovered through the smart meter charge. Costs were estimated between \$22-44M. Duquesne also requested a waiver from certain meter testing obligations for legacy meters, which was denied.

Document: Petition

8/4/2015

<https://e9radar.link/bije>

Petition to Modify Smart Meter Procurement & Installation Plan - Duquense Light Co

P. 13 references costs/benefits. P. 14 references a Phase One survey that quantifies benefits for ADMS

Proceeding:

	Year	Type	url
KCP&L 2015 IRP <i>EO-2015-0254</i>	2015	AMI Proposal	https://e9radar.link/4d17

Description:

Kansas City Power & Light filed its triennial IRP in April 2015 to represent KCP&L- Missouri, KCP&L- Kansas, and KSP&L- Greater Missouri Operations. The IRP spanned twenty years and contained load and forecasting analyses, supply- and demand-side resource analyses, market studies (mandated for every four years), and resource acquisition strategies. KCP&L cited an AMI deployment plan across territories by 2020 (100% deployed in KCP&L- KS and MO by 2016 and a 2018-2020 GMO deployment [rural areas]), and as of 2015 50% of AMI had been deployed through KCP&L KS and MO territories. AMI was described as a foundational technological investment that enables many other DSM programs. The Demand-Side study found that MDMS installment only yields surplus benefit when analyzed over a twenty year horizon. The IRP was approved with a few modifications to wind resource acquisition plans.

Document: Application (Vol 5)

4/1/2015

<https://e9radar.link/ewfx>

Volume 5, Demand-Side Resource Analysis, Kansas City Power & Light Company (KCP&L) Integrated Resource Plan

Volume 5 analyzes demand-side resources. AMI investment is included here. P. 70-71 explains AMI deployment timelines, technology, and its integration with other DSM infrastructure (also p. 39)

Document: Application (Vol 1)

4/1/2015

<https://e9radar.link/xrx8>

Volume 1, Executive Summary, Kansas City Power & Light Company (KCP&L) Integrated Resource Plan

Volume 1 provides basic overview of report and methodologies. P. 24 discusses Navigant DSM study and stakeholder engagement

Document: Demand Side Report 4/1/2015 <https://e9radar.link/xrx8>

Appendix 5b, Demand-Side Resource Potential Study Report- Demand Response

Discusses AMI as the foundational technology to support DSM programs; p. 7 discusses the 'optional' delay of installing MDMS, p. 16 shows MO and KS deployment timelines (100% deployments by 2016, p. 46-47 lists cost-benefit ratios, p. 26-30 redacted costs. Appendix 5d reviews Kansas City demonstration project

Proceeding:	Year	Type	url
PECO Rate Case <i>R-2015-2468981</i>	2015	Cost Recovery	http://e9radar.link/ni6z

Description:

This rate case includes AMI recovery costs after years of implementation. PECO noted that it would be the first PA utility to complete its deployment of smart meters, largely due to a DOE grant. By 2016, PECO argued that its smart meter deployment will have been substantially completed, and proposed to eliminate the SMCRS and roll its \$44.98M smart meter costs into its base rates.

Document: Testimony 3/27/2015 <https://e9radar.link/5o8>

Testimony

AMI summary testimony of Michael Innocenzo

Document: Application 3/27/2015 <https://e9radar.link/s4f>

Application

P. 15 explores smart meter roll-in into rate case

Proceeding:	Year	Type	url
DTE Rate Increase 2015 <i>U-17767</i>	2014	AMI Proposal	

Description:

In December 2014, Detroit Edison Electric Co. (DTE) filed an application for a rate increase for \$370M for 2015. The company cited investments in generation, continuous improvement efforts, staff, and deployment of 930,000 AMI meters. At the time of application, DTE noted that its AMI installations were nearly 50% complete, with expected full deployment by 2017. The AMI business case presented cited a present value revenue requirement of \$87.2M. In X, the commission approved recovery of the AMI expenditures and requested continued CBAs while the project was in its implementation phase.

Document: Exhibit - CBA 12/19/2014 <https://e9radar.link/eppx>

Exhibit 18 (AMI CBA)

Includes gas and electric costs/benefits

Document: Order 12/11/2015 <https://e9radar.link/mwjv>

(Order) Authorizes the utility to increase its rates

P. 31-35 discusses AMI arguments; p. 35 affirms the commission's approval

Document: **Application** 12/19/2014 <https://e9radar.link/07b4d>

DTE Electric Company Application Proposed Notice of Hearing Direct
Testimony and Exhibits along with a Proof of service

P. 6 overviews AMI from other cases; p. 212 of pdf begins the Sitkauskas testimony, which provides AMI details. P. 221 of pdf describes costs, p. 224 of pdf describes the CBA

Proceeding:	Year	Type	url
O&R Rate Increase <i>14-E-0493</i>	2014	Cost Recovery	http://e9radar.link/rcic

Description:

In November 2014, Orange and Rockland Utilities (O&R) filed a petition to increase rates by 5.2%, or \$33.4M in electric revenue. The company also requested an initial implementation of an AMI system to support REV policies and goals, reduce operating costs, assist in more timely identification of customer outages, and improve overall outage response and efficiency. During "Phase One," O&R would begin AMI system implementation in Rockland County. During the first year, AMI for both electric and gas will be funded at \$11.7M, \$8.9M in year two, and \$8.9M in year three. O&R's noted that its AMI plans could change depending upon the companies' Distribution System Implementation Plan (DSIP), which would be filed by January 2016. In February 2015, O&R filed a preliminary update that decreased its proposed increase to \$25.2M. In April 2015, a settlement process began, and a joint proposal was filed in June 2015. In October 2015, the commission approved the joint proposal, which requested the filing of a BCA, and noted contingency of the AMI program on the outcome of the DSIP.

Document: **BCA Summary** 7/29/2016 <https://e9radar.link/kbli>

ORU AMI BCA Benefit Summary

One-page summary of costs and benefits.

Document: **BCA Matrix** 7/29/2016 <https://e9radar.link/9wde>

ORU AMI BCA Matrix

Commission-required business case matrix.

Document: **Order** 10/16/2015 <https://e9radar.link/kazy>

Order Adopting Terms of Joint Proposal and Establishing Electric Rate Plan

Order reviewing and approving the joint proposal with modifications. P. 79 of pdf begins the joint proposal section on AMI; p. 16-19 of pdf describes commission reaction.

Proceeding:	Year	Type	url
KCP&L 2015 Rate Case <i>15-KCPE-116-RTS</i>	2015	AMI Proposal	https://e9radar.link/ujns

Description:

In September 2014, KCP&L incorporates its AMR to AMI replacement program into its 2015 rate case. The case included the amortization of AMR meters (annual depreciation of \$1.2M), and meter costs were estimated at \$10.7M.

Document: Order 9/10/2015 <https://e9radar.link/nb70>

Order on KCP&L's Application for Rate Change

P. 20 explains the timeline of deployment (starting in 2014), p. 22 describes amortization rate of 10 yrs

Document: Application 1/2/2015 <https://e9radar.link/ikhp>

Kansas City Power & Light's Minimum Filing Requirements/Application (Sections 1-17)

Full rate case app with tariff sheets. P. 29 shows integration of meter costs into rate base (\$10.7M), p. 6-7 describes testimony subjects (non are AMI-specific), p. 24 of pdf shows press release announcing AMI, p. 29-37 lists various costs (meter reading, replacement, O&M) which were pulled into E9 summary chart

Document: Testimony (AMR recovery) 1/2/2015 <https://e9radar.link/ymc8>

Direct Testimony, Dane A. Watson, on Behalf of Kansas City Power & Light Company

Testimony discusses integration of AMR replacement into rate case. Annual depreciation of \$1.2M on p. 10, p. 17 has depreciation study of meters with costs

Proceeding:	Year	Type	url
2015 IRPs and RESs <i>E-100 Sub 141</i>	2014	Reference	https://e9radar.link/3wr6

Description:

This docket houses North Carolina 2015 utility IRPs, RES compliance filings, Smart Grid Technology Plans, and other planning documents. Duke Energy Carolinas discusses full deployment of AMI for the first time in their 2014 Smart Grid Technology Plan.

Document: DEC SGTP 2014 10/1/2014 <http://e9radar.link/xgta>

DEC 2014 Smart Grid Technology Plans

DEC cites AMI rollout as part of its SGTP; p. 3-4 explains current actions and first citation of budget (\$102M, 25% of which was paid by SGIG). P. 22 describes DEC's primary upgrades as distribution automation and AMI deployment

Document: DEP SGTP 2014 10/1/2014 <https://e9radar.link/bcvl>

DEP 2014 Smart Grid Technology Plans

P. 3-4 and shows DEP has deployed meters since 2012, thanks to SGIG

Proceeding:	Year	Type	url
Reforming the Energy Vision (REV) 14-M-0101	2014	Rulemaking	http://e9radar.link/e4kn

Description:

This proceeding contains over 1,700 filings for the formation of the NY Reforming the Energy Vision. AMI deployment supports several of the initiatives listed in REV, and all major NY utilities filed comments or reports in this proceeding. New York utilities also filed Distribution System Implementation Plans in this docket, some of which included AMI plans.

Document: DSIP 6/30/2016 <https://e9radar.link/mwpg>

O&R Initial DSIP

Orange & Rockland's distribution plan; includes AMI Business Plan. P. 4 overviews the AMI program, p. 261 includes the AMI Business Plan. P. 290 details business case.

Proceeding:	Year	Type	url
AEP gridSMART® Phase 2 13-1939-EL-RDR	2013	AMI Proposal	http://e9radar.link/q54l

Description:

In September 2013, AEP Ohio filed its gridSMART® Phase 2, which included AMI for approximately 894,000 customers across urban and suburban areas of the Company's service territory; Distribution Automation Circuit Reconfiguration (DACR) for 250 priority circuits; and VVO for 80 circuits. AEP Ohio is targeted a deployment timeline of approximately four years for all three technologies as proposed. The business case identified benefits and costs for each technology type. The proposal also included a gridSMART® Phase 2 Rider. In February 2017, the Ohio PUC accepted the stipulation created and mandated several additional filings, considerations, and programs in addition to the program as described.

Document: Application 9/13/2013 <https://e9radar.link/q5ay>

In the matter of the application of Ohio Power Company to Initiate Phase 2 of its gridSMART Project and to Establish the gridSMART Phase 2 Rider electronically filed by Mr. Yazen Alami on behalf of Ohio Power Company.

Summary on p. 2-3, business case is Attachment A, p. 7 of pdf, p. 10-13 of pdf describe AMI benefits.

Proceeding:	Year	Type	url
Ameren AMI Deployment Plan 12-0244	2012	AMI Proposal	http://e9radar.link/ywxo

Description:

As part of the Illinois Energy Infrastructure and Modernization Act, Ameren was ordered to invest \$265M in distribution infrastructure and \$260M in smart grid upgrades over a 10-year period. In 2012, the Commission approved Ameren's AMI plan. Projected costs included \$314M in new capital and \$236M of incremental operating expense to deploy and implement AMI over 20 years. Cumulative, quantifiable benefits are calculated to be \$859M with a NPV of \$153M. In May 2012, the commission ruled generally in favor of the AMI plan, but could not approve that it was cost effective. In June 2012, Ameren filed a revised AMI plan and CBA. The revised plan was approved in December 2012. In May 2016, Ameren requested that the Commission reopen this docket to consider an accelerated deployment schedule. The new schedule proposed to deploy AMI to 62% of its customers by 2018 as opposed to 2019; and to deploy AMI to 100% of its customers by the end of 2019.

Document: Order 12/5/2012 <https://e9radar.link/fmll>

Order on Rehearing

Approves the revised AMI plan and CBA.

Document: Revised CBA 6/28/2012 <https://e9radar.link/sb63>

Revised CBA

Revised CBA starts on p. 19 of pdf.

Document: Final Order 5/29/2012 <https://e9radar.link/9428>

Final Order

Order finding that the commission could not approve the AMI plan. P. 31 begins to describe commission analysis and findings.

Proceeding:	Year	Type	url
Idaho Power Smart Meter Complaints IPC-E-12-04	2012	Opt-Out	

Description:

This case was instigated by two formal complaints from Idaho residents who requested to remove and replace their smart meters in January 2012. Idaho Power estimated the costs of replacing the meters, and noted that 99% of its customers utilize AMI in 2012. The analog and electromechanical meters previously used were discontinued in 2007. In March 2012, the commission dismissed the customers' complaints, effectively denying the need for an opt-out provision.

Document: Final Order 3/27/2012 <https://e9radar.link/qwc>

Order 32500

Dismissing the case and discussing estimated opt-out prices

Proceeding:	Year	Type	url
Smart Meter Investigation 17000	2012	Rulemaking	http://e9radar.link/44mg

Description:

In January 2012, the MPSC opened this docket to address concerns raised by individuals and local governments regarding the deployment of AMI in Michigan. The Commission directed utilities to submit deployment plans, costs and benefits, scientific studies, opt-out provisions, and technological specifications relating to AMI. Primary concerns included issues of public health, privacy concerns, cybersecurity, and cost implications. Staff determined that AMI does not pose a risk to public health, and that AMI is a useful technology for Michigan utilities. The Commission agreed, and determined that AMI costs, benefits, and cybersecurity /data policies should be reviewed in the context of general rate proceedings. Additionally, the Commission required utilities to file opt-out provisions for their AMI plans within 60 days of the September 2012 order.

Document: Final Order 9/11/2012 <https://e9radar.link/o0xo>

Accepts report; directs company to file proposed customer opt-out tariff

Summarizes Commission opinion of proposed issues and directs utilities to file opt-out tariffs. P. 4-6 describes Commission opinion.

Proceeding:	Year	Type	url
Smart Grid and Smart Meter Considerations 2012-00428	2012	Rulemaking	https://e9radar.link/27f07

Description:

In October 2012, the commission initiated this proceeding to consider the implementation of smart grid technologies and dynamic pricing for all of the state's electric utilities. In its April 2016 final order, the commission ordered the utilities to: 1) provide basic historical usage information to all customers; 2) develop internal procedures on how smart grid investments and policies will be considered; 3) formalize customer privacy, education, and cybersecurity policies; 4) offer opt-out policies for smart meters on a case-by-case basis; 5) consider developing dynamic pricing pilots; and 6) identify smart grid investments in each future rate case.

Document: Final Order 4/13/2016 <https://e9radar.link/dpwe>

Final Order

Determining not to adopt a standard, but directs utilities to provide various information

Document: Order Initiating Proceeding 10/1/2012 <https://e9radar.link/bae51>

Order on the implementation of the EISA 2007 Smart Grid Investment Standard.

Opening order considering whether to implement EISA 2007

Proceeding:	Year	Type	url
Smart Meter Complaints <i>E-00000C-11-0328</i>	2011	Report	https://e9radar.link/h3rk

Description:

This docket was opened to house various complaints against smart meters. The majority of comments were filed from 2011-2016 and primarily cited major health concerns related to the radiation given off by smart meters. No rulemaking or other procedures was conducted, but petitions requesting opt-out options and better studies into smart meter technology were proposed. In response to the volume of complaints in this docket, Staff ordered the Arizona Department of Health Services to conduct a study on the impact of smart meters on human health, which confirmed that the meters tested were operating within the FCC standard.

Document: Study 11/4/2014 <https://e9radar.link/hr2>
Public Health Evaluation of Radio Frequency Exposure from Electronic Meters
Filing of the AZ Dept. of Health Services report on smart meter impacts on health (determined to be negligible)

Proceeding:	Year	Type	url
Investigation into Smart Meter Opt-out <i>2011-00262</i>	2011	Opt-Out	http://e9radar.link/fkc

Description:

In 2010, the Maine PUC received several complaints regarding the safety of smart meters. In January 2011, the commission initiated a proceeding to consider whether CMP should provide an opt-out program to its customers. Several other complaints were filed and consolidated into Docket No. 2010-00398. In May 2011, the Commission ordered that CMP provide its residential and small commercial customers with two alternatives: an electro-mechanical meter or a standard meter, both of which include a one-time charge and monthly charge. Following additional complaints, the commission issued a Notice of Investigation in July 2012. In December March 2014, the commission ruled that CMP's smart meters were consistent with federal and state policies, enabling continued deployment.

Document: Order 12/19/2014 <https://e9radar.link/gf93>
Order
P. 3 gives background of smart meter proceedings, p. 23 affirms decision

Document: Report 3/24/2014 <https://e9radar.link/23rf>
Examiners' Report
Provides insight on the safety of smart meters, also cites other orders that require opt-out and other case history pieces

Proceeding:	Year	Type	url
GMP AMI Plan 7704	2011	AMI Proposal	

Description:

In January 2011, Green Mountain Power (GMP) filed its AMI Plan with the Vermont Public Service Board. The Board conducted a joint workshop with Central Vermont Public Service Corp. (docket no. 7612) following the application to address the joint proposal for a backhaul network solution. In February 2011, GMP filed additional testimony, a revised business case, and an update on its MDMS plan. The Plan was approved in July 2011, which was followed the next month by a request to amend the plan to include an opt-out provision. The Vermont PUC website designated this case as a "Legacy Case" and does not provide access to documents other than commission orders.

Document: Order 7/22/2011 <https://e9radar.link/d6494>
Final Order

Reviews case history and general AMI plan. P. 16 provides commission discussion and overview of the plan.

Proceeding:	Year	Type	url
Investigation into Smart Grid, DR, and AMI 10-102-U	2010	Reference	

Description:

This case was opened in accordance to a February 2010 order in docket no. 08-144-U. The opening order contains a summary of smart grid, demand response, and AMI plans and policies in Arkansas to date, and welcomes additional reports and comments. After six months of little activity, this docket was closed.

Document: Opening Order 10/12/2010 <https://e9radar.link/bnaf>

1. Order #1 (Commission) Establishing Docket No 10-102-U for the purpose of continued investigation of Smart Grid, AMI, and DR-related technologies.

Summarizes plans so far and provides context to state policies.

Proceeding:	Year	Type	url
Rulemaking for smart grid data privacy 10R-799E	2010	Reference	

Description:

In November 2010, the Colorado PUC issued a notice of public rulemaking for smart grid data privacy and security. In January 2012, a final version of proposed rules were adopted and enacted in February 2012.

Document: Adopted rules 1/9/2012 <https://e9radar.link/8vgx>

Adopted Rules (clean version) as e-filed with Secretary of State for publication

Clean version, shows rules enacted

Document: Notice 11/3/2010 <https://e9radar.link/hdad>

C10-1192 Notice of Proposed Rulemaking

Opening notice of public rulemaking, establishing questions and proposed rules

Proceeding:	Year	Type	url
Smart Grid Coordinators 2010-00267	2010	Reference	

Description:

In reaction to the March 2010 Smart Grid Policy Act, this docket was initiated in September 2010 to investigate whether it is in the public interest to use smart grid coordinators. The smart grid coordinator would “manage access to smart grid functions and associated infrastructure, technology and applications,” including data access, collection and reporting. In September 2012, a stipulation was in support of the Mid-Coast Smart Grid Reliability Pilot, and the designation of a smart grid coordinator was dismissed during consideration of the pilot project. GridSolar was elected to serve as smart grid coordinator for the pilot project, and later petitions to fulfill this role for the state were denied.

Document: Stipulation Order 10/29/2012 <https://e9radar.link/9403b>

Order Approving Stipulation

Notes the dismissal of smart grid coordinator issues as the pilot program is considered

Proceeding:	Year	Type	url
Evaluation of CL&P Meter Proposal 05-10-03RE04	2010	AMI Proposal	

Description:

This case was opened under the parent docket that considered CL&P’s TOU and AMI pilot program. Order No. 4 in docket no. 05-10-03RE01 requested formalized results of the 2009 meter project in addition to a full CBA for meter deployment. Upon review of the CBA, which was filed in the RE01 subdocket, the commission filed a draft decision recommending the rejection of the AMI plan. Staff’s own analysts found a net cost of \$142M, and the commission recommended a gradual approach to AMI instead. No final order was issued in this case.

Document: Draft Decision 8/29/2011 <https://e9radar.link/mpct>

Draft Decision

P. 2-3 summarizes the reasons for denial. P. 25 contains CBA comparison chart. Also discusses AMI capabilities, related technologies, the rate pilot, and an overview of AMI deployment on p. 23. Appendix A, p. 70 of doc, provides CL&P CBA information

Document: Response 11/4/2010 <https://e9radar.link/qou6>

Questions Answered

Responses 14 and 15 provide detailed CBA numbers

Proceeding:	Year	Type	url
NY Smart Grid Modernization <i>10-E-0285</i>	2010	Rulemaking	https://e9radar.link/v0ws

Description:

This case was opened as an inquiry in "how to make the smart grid smarter," largely in response to the new funding made available by the American Recovery and Reinvestment Act, which provided new funding for smart grids. This case created baseline smart grid policies for the state of New York. The opening Order mandated that all major New York IOUs file answers to the proposed topics. Questions included topics of the vision for smart grid design, implementation priorities, engaging customers, benefit cost analyses, cost uncertainties, inoperability/cyber-security standards, consumer data/privacy, communications, and timing.

Document: Final Policies 8/19/2011 <https://e9radar.link/vvy>
Regulatory Policies Regarding Smart Grid Systems and the Modernization of the Electric Grid, Smart Grid Policy Statement
P. 3 summarizes Commission conclusions, including the provision for benefits to exceed costs

Document: Opening Order 7/16/2010 <https://e9radar.link/mkd>
Smart Grid Systems, Order Instituting Inquiry into Smart Grid
General history of policy and new questions

Proceeding:	Year	Type	url
Cleco AMI Proposal <i>U-31393</i>	2010	AMI Proposal	https://e9radar.link/lq5k

Description:

Cleco filed this application to rollout AMI across its service territory after receiving its \$20M SGIG to invest in smart grids. The projected included 285,000 meters, which covered all of Cleco's residential, commercial, and small industrial customers. MDMS was also included in the application.

Document: Application 6/9/2010 <https://e9radar.link/4a8s>
Application Received
CBA summary on p. 8, benefits described in depth on p. 31 of pdf (Sikes testimony), p. 123 of pdf (Cleghorn testimony) provide CBA details

Document: Final Order 2/23/2011 <https://e9radar.link/ugs5>
Order U-31393 grants Cleco Power, LLC's application to install, own and operate an advanced metering infrastructure system.
Approving the AMI project

Proceeding:	Year	Type	url
NV Energy Triennial IRP 2010-2029 10-02009	2010	AMI Proposal	http://e9radar.link/b512

Description:

Nevada Power filed its triennial IRP for 2010-2029 in March 2010, which contains many plans and programs to address energy efficiency and clean energy needs. Notably, Nevada Power filed under Nevada Energy, which blended several initiatives with its other subsidiary Sierra Pacific Power Co. A key feature of this plan was the addition of the Advanced Service Delivery (ASD) Initiative to its Demand Side Plan, which was established to implement energy efficiency education and engagement. Nevada Power filed a separate docket, docket no. 10-03023, to address the addition of this program. The ASD initiative included AMI, complementary IT, and devices. The ASD initiative was initiated to facilitate and enhance the effectiveness of the company's demand response program. Nevada Power emphasized the need to integrate technologies within this program. This docket contained debate around a variety of issues (PPAs, transmission lines, the ASD, etc.).

Document: DSM Attachments 2/1/2010 <https://e9radar.link/hho7>

Triennial Integrated Resource Plan Vol. 16 - Technical Appendix - Demand Side Plan.

Contains project summary, tech, and benefits in DSM-29 (savings by category, p. 189 of pdf) and DSM-30 (project summary, p. 191 of pdf). P. 194 outlines project, p. 226-230 shows benefit categories

Document: Order 7/28/2010 <https://e9radar.link/fwp2>

Order issued in Dockets 10-02009, 10-03022 and 10-03023 - Application, Petition and Application granted as delineated in the Order.

Order accepting the ASD. P. 2 describes procedural history

Document: Testimony 5/18/2010 <https://e9radar.link/auq4>

Exhibit #59 Filed

The Scott testimony summarizes costs on p. 9 and provides great overview. Technically, this was filed under Sierra Pacific Power Co.

Document: Staff Testimony 4/26/2010 <https://e9radar.link/6s9p>

Staff filed Direct Testimony in Dockets 10-02009 and 10-03023: Yasuji Otsuka

Testimony suggests that staff approve the ASD project with compliance to provide updated reports and business cases for future rate cases. P. 76-88 of pdf recites relevant NVE cost/benefit files, p. 6 shows overview of costs/benefits, p. 22 gives more detail into costs/benefits

Document: Demand Side Plan 2/1/2010 <https://e9radar.link/lve1>

Triennial Integrated Resource Plan Vol. 6 - Demand Side Plan.

Initial proposal of AMI through the ASD program. P. 9 of pdf explains the integration of AMI into the ASD initiative; p. 5 describes the high-level plan, p. 15 of pdf shows budget, p. 39 of pdf shows stakeholder engagement map and subcommittees, p. 53-64 shows DSM budgets/benefits. 69 cites operational savings and implementation timeline, p. 103 explains tracking/program management

Proceeding:	Year	Type	url
NV Energy/Sierra IRP Amendments <i>10-03023</i>	2010	AMI Proposal	http://e9radar.link/b512

Description:

In March 2010, Nevada Energy filed its eighth revision to its 2007 Resource Plan, originally filed in June 2007. This modification amended the Demand Side Plan and introduced an Advanced Service Delivery project (ASD) and two-measure DR program for Sierra Pacific Power Co. The ASD considered AMI deployment, MDMS, and a DR management system. The companies requested \$2.5M in electric commitments, a budget of \$24M for electric programs, and the creation of a regulatory asset to accumulate the unrecovered cost of the non-AMI meters. In July 2010, the commission approved the amendments and several other docketed petitions.

Document: Final Order 7/30/2010 <https://e9radar.link/d216>

Order (Approving IRP and other dockets)

P. 52 provides background of the ASD initiative; p. 64-65 implements reporting requirements.

Document: Application 3/18/2010 <https://e9radar.link/Okte>

Application. Volume 4 - Summary.

Reviews the IRP modifications and application for ASD. P. 14 lists technology types

Proceeding:	Year	Type	url
OG&E Smart Grid Deployment <i>PUD 201000029</i>	2010	AMI Proposal	

Description:

In 2009, OG&E was awarded a \$130M SGIG to develop an Integrated/Crosscutting Smart Grid. In March 2010, OG&E filed an application with the commission to deploy smart grid technology across its service territory. In the application, OG&E noted that the smart grid program supports their goal of deferring the need for additional fossil fuel generation until after 2020. In June 2010, the commission approved a settlement agreement which included modified cost recovery and the development of a web portal for customers.

Document: Final Order 6/22/2010 <https://e9radar.link/8oze>

Final Order Approving Joint Stipulation and Settlement Agreement

Summarizes case and stipulated items.

Document: Testimony 3/15/2010 <https://e9radar.link/3b9v>

Direct Testimony of Jesse B. Langston on behalf of Oklahoma Gas and Electric Company

Covers AMI benefits/reductions in cost. P. 7-11 describes various categories of cost reduction.

Document: Testimony 3/15/2010 <https://e9radar.link/t93t>
Direct Testimony of Howard Motley on behalf of Oklahoma Gas and Electric Company

Summarizes the smart grid application, other testimony, cost recovery. P. 9 discusses regulatory assets. P. 17 overviews program benefits.

Document: Testimony 3/15/2010 <https://e9radar.link/w9pz>
Direct Testimony of Kenneth Grant on behalf of Oklahoma Gas and Electric Company

P. 23 of pdf shows smart grid timeline.

Proceeding:	Year	Type	url
OR PUC Smart Grid Objectives <i>UM 1460</i>	2009	Rulemaking	

Description:

In November 2009, the Oregon PUC received a reward under the ARRA to fund an Oregon Electricity Regulators Assistance Project. The project created electricity initiatives for Oregon utilities in five topic areas: EVs, energy efficiency, smart grid, renewable energy, and energy storage. In December 2009, the commission opened a docket to create a five-year action plan for smart grid development. In May 2012, in order 12-158, the commission established a reporting requirement for annual smart grid reports in addition to commission policy objectives. The order noted that utilities should accomplish a variety of goals, including reduced costs of meter reading. In July 2017, the commission modified its directive to allow biannual report filing.

Document: Order 5/8/2012 <https://e9radar.link/ps6yq>
Order 12-158 (Establishing Reporting Requirements)

Order establishing smart grid reporting requirements; mentions meter reading costs and efficiencies on p. 3.

Document: Application 12/8/2009 <https://e9radar.link/1lxw>
Initial Application

Order defining the scope of the docket; summarizes OR smart grid history.

Proceeding:	Year	Type	url
Investigation into Smart Grid Security & Privacy <i>09I-593EG</i>	2009	Reference	

Description:

In August 2009, the Colorado PUC issued Decision No. 09-0878 to open a docket which investigates the impact of smart grid technology, especially AMI, on consumer privacy. This docket collected stakeholder comments and informed docket no. 10R-799E, which conducted a formal notice of public rulemaking procedure.

Document: Opening Order 8/12/2009 <https://e9radar.link/ez11>
Establishing Procedures & Dates, & Seeking Comments & Information

Discusses current customer data rules and poses questions for comment

Proceeding:	Year	Type	url
Duquesne Smart Meter Technology Plan <i>M-2009-2123948</i>	2009	AMI Proposal	https://e9radar.link/nx7h

Description:

In August 2009 Duquesne filed its initial smart meter plan, which requested a Grace Period through 2012 in order to study smart meters and replace the relatively-new AMR system and take advantage of their depreciation rates. Duquesne requested the establishment of a Smart Meter Charge in order to recover start up and research costs through the Grace Period (\$38M) and future deployments. The initial plan included meter-replacement on request, and noted that strategy and cost estimates would change depending on assessments. A CBA was filed in July 2010, and an Assessment Application explained technical needs/plans. Further iterations of the plan, filed in this docket, added details and analyses through stakeholder engagement. Duquesne also filed an amendment to the final order, requesting for modified cost recovery regarding the FOCUS portion of their plan.

Document: Final Plan 6/29/2012 <https://e9radar.link/g9vo>

Pet for Approval of Final Smart Meter Plan-Duquesne Light

P. 7 onwards summarizes milestones and updates, p. 9 explains the new plan, p. 13 explains rollout timeline, p. 21 shows cost chart, p. 49 of pdf shows full plan

Document: CBA 7/1/2010 <https://e9radar.link/wufl>

Duquesne Light

Company's Cost Benefit Analysis

CBA without quantified benefits. Divides CBA by AMI capabilities pursuant PUC standard. P. 5 explains budget of \$152-262M, P. 4 explains the exclusion of certain costs from CBA and future adjustments in 2011, p. 8 summarizes implementation order

Document: Final Order (revision) 1/9/2014 <https://e9radar.link/jk3j>

Opinion and Order - 2123948-OSA - 01-09-14 PM - Petition of Duquesne Light Company to Amend Order Approving Settlement

Summarizes the modified cost recovery and final order

Document: Petition 8/14/2009 <https://e9radar.link/ktvy>

Petition Of Duquesne Light Company For Approval Of Smart Meter Procurement And Installation Plan

P. 4-5 explains the general strategy, p. 10 explains customer engagement, p. 14 shows initial budget, p. 15-16 shows cost recovery, p. 22 of pdf begins detailed implementation plan

Proceeding:	Year	Type	url
PECO Smart Meter Technology Plan <i>M-2009-2123944</i>	2009	AMI Proposal	

Description:

In August 2009, PECO Energy filed an application to approve its Smart Meter Plan. The application described two general phases of implementation and noted that PECO would implement the two phases through three major filings with the commission. The first petition in this docket sought approval of phase I, the IT/communications infrastructure build-out and initial deployment of 100,000 meters, projected to deploy in 2011. The application foreshadowed a second filing for approval of dynamic pricing in June 2010, and a third filing in 2012 to seek approval for universal deployment of AMI meters (600,000) throughout PECO territory. PECO won a SGIG to support its smart meter project, and allocated \$140M of the SGIG to the phase one plan and \$60M to phase two. The SGIG also allowed PECO to commit to completely deploying smart meters over ten years instead of the commission-instigated fifteen. PECO filed its petition for universal deployment of smart meters (1.2M meters) for a cost of \$282M in January 2013. In August 2013, the commission accepted the joint stipulation.

Document: Petition 1/18/2013 <https://e9radar.link/1dxh>

Petition for Approval of the Smart Meter Universal Plan

P. 56 of pdf contains CBA (exhibit MJT-1); p. 36 of pdf provides testimony details of universal deployment, p. 40 of pdf mentions stakeholder engagement, p. 50 of pdf describes CBA via testimony,

Document: Order 5/6/2010 <https://e9radar.link/651da>

Order approving the PECO Smart Meter Plan (Phase I)

Order approving the stipulation with several modifications.

Document: Exhibit - Plan 8/14/2009 <https://e9radar.link/o32y>

Volume II of II, PECO Exhibit I, Smart Meter Technology Procurement and Installation Plan

Details vendor selection process and timeline; p. 34 contains cost details

Document: Petition 8/10/2009 <https://e9radar.link/09u8>

Petition

Initial petition for smart meter deployment. P. 5-8 overviews strategy, phases of deployment, etc.

Proceeding:	Year	Type	url
AEP AMS Proposal 36928	2009	AMI Proposal	https://e9radar.link/l238

Description:

In April 2009, AEP Texas Center and AEP Texas North Company (AEP Texas) filed a petition and application for an AMS deployment plan and an associated AMS surcharge tariff. This application discussed at length the use of the System Integration Agreement (SIA) funds to moderate the AMS surcharges. After a stipulation process, the application was approved with requested waivers in December 2009. The stipulation included a waiver from certain requirements for installing advanced meters prior to full deployment.

Document: Application (p. 51-100) 4/20/2009 <https://e9radar.link/e8dz>
AEP Texas Central Company And AEP Texas North Company's Request For Approval Of Advanced Metering System (AMS) Deployment Plan And Request For AMS Surcharges

Stracener testimony describes AMS functionality; P. 41-50 of pdf details AMS technology and capabilities

Document: Application (p. 101-150) 4/20/2009 <https://e9radar.link/aqon>
Pages 101 to 150

Continued testimony of Jeff Stracener; P. 7 of pdf describes cost savings for meter reading

Document: Final Order 12/17/2009 <https://e9radar.link/lksp>
Final Order

P. 4-5 summarizes deployment plan, p. 9 describes costs/savings data, p. 11 details the rider. Exhibit C, p. 50 of pdf, breaks out costs

Proceeding:	Year	Type	url
WA Considers EISA 2007 U-090222	2009	Rulemaking	

Description:

This docket was opened to consider new rules pertaining to the implementation of the Energy Independence and Security Act of 2007. The Commission questioned how to define smart meter technologies and if a similar-but-separate planning process should examine smart grid technology. Eventually, the Commission determined that intermittent (in 2011, 2014, and 2017) smart grid reports explain Washington utilities' smart grid plans. Other provisions, like a required cost-effectiveness test, were denied.

Document: Final Order 3/26/2010 <https://e9radar.link/4n4d>
General Order R-559 - Order Adopting Rule Permanently

P. 7-8 discusses smart grid definitions and rules

Proceeding:	Year	Type	url
Establishment of Smart Meter Plans <i>M-2009-2092655</i>	2009	Rulemaking	http://e9radar.link/8yqz

Description:

Commission staff opened this docket in March 2009 to consider implementation of smart meter plans in Pennsylvania. Data access and privacy questions were posed, in addition to cost recovery and appropriate commission incentives. In June 2009, the Commission adopted a Smart Meter Procurement and Installation Implementation Order, which established smart meter plan standards, commission procedures, cost recovery mechanisms, data access standards, and minimum smart meter capabilities. Utilities were directed to work through the Electronic Data Exchange Working Group (EDEWG) to process and develop electronic data interchange standards. The proceeding continued for seven years as the commission considered standardization of meter data and utility-specific web-based platform plans.

Document: Implementation Order 6/24/2009 <https://e9radar.link/rd2p>

Smart Meter implementation Order incorporating Motion 6-23-09

P. 16-17 discusses minimum capabilities, p. 24-27 considers data privacy and access, p. 28-31 establishes a cost recovery framework

Document: Data Order 12/5/2012 <https://e9radar.link/t2rzv>

20121009 SMI Final Order

Establishes a standard electronic format for providing customers and third-party representatives with usage and price data

Document: Staff Proposal 3/30/2009 <https://e9radar.link/0pc0>

Smart Meter Staff Proposal and questions for comment 3-27-09.doc

Opens questions about data access/privacy

Proceeding:	Year	Type	url
NY AMI <i>09-M-0074</i>	2009	Reference	https://e9radar.link/kq65

Description:

This docket reacts to the AMI portion and implications of the American Recovery and Reinvestment Act of 2009, which provided new funding for smart grid investment. This case considered utility AMI filings and projects, established minimal functional requirements, and made an inquiry into BCA of AMI. In July 2009, the Commission approved several smart grid initiatives proposed by the six New York IOUs, totaling \$825M. This case was closed in July 2010 and proposed to continue regulatory development in Case No. 10-E-0285, which more broadly focuses on the smart grid.

Document: Order 10/19/2010 <https://e9radar.link/pf2>

American Recovery and Reinvestment Act of 2009 - Utility Filings for New York Economic Stimulus, Order Establishing Recovery Mechanisms for Smart Grid Projects

This order finalizes NY pilot projects and discusses minimal requirements

Document: Order

7/24/2009

<https://e9radar.link/7o6>

Order Authorizing Recovery of Costs Associated with Stimulus Projects

P. 14 notes that the projects proposed so far were all small and did not necessitate BCAs

Proceeding:

	Year	Type	url
DTE Rate Increase 2009 <i>U-15768</i>	2015	Reference	https://e9radar.link/pvz7

Description:

In December 2008, in case no. U-14244, the commission approved capital expenditures related to the installation of a combined total of approximately 10,000 gas and electric meters on Grosse Ile as a pilot program. In January 2009, DTE filed its 2009 rate case, which expanded upon that program and discussed necessary costs. Upon approving the rate case and expanded pilot program in January 2011, the commission required the submission of an updated business case in the next rate case. The decision of the commission was later appealed by several groups, and the Court of Appeals declared that DTE submitted insufficient AMI benefit information in April 2012. After reopening the case and several rounds of evidence and testimony, the commission formally re-approved AMI pilot program cost recovery in October 2013.

Document: Final Order

10/17/2013

<https://e9radar.link/kks3>

(Order) Approves AMI cost recovery

Order addressing the rehearing, appeal and evidence; summarizes the appeal process

Document: Rate Case Approval

1/11/2011

<https://e9radar.link/64690>

(Order) Approves rates and orders refund; report due within 90 days, directs company to file new application by 02-10-2010 in new docket to conduct the refund

On P. 55, the commission directs DTE to file a CBA in its next rate case.

Proceeding:

	Year	Type	url
Smart Grid Technology Ruling <i>R08-12-009</i>	2008	Rulemaking	https://e9radar.link/xqpt

Description:

In December 2008, the California PUC opened up a docket to consider processes and review criteria for Smart Grid projects, including how to manage SGIG funding. Over 700 documents were filed in this proceeding as California debated

Document: Opening Order

12/22/2008

<https://e9radar.link/988ff>

Order Instituting Rulemaking to Consider Smart Grid Technologies Pursuant to Federal Legislation and on the Commission's own Motion to Actively Guide Policy in California's Development of a Smart Grid System.

Summary in beginning; preliminary scoping memo on p. 13

Proceeding:	Year	Type	url
Consideration of EISA 2007 2008-00408	2008	Reference	

Description:

This case was opened to consider implementation of the Energy Independence and Security Act of 2007 (EISA) in Kentucky. The commission created a Smart Grid Collaborative and noted the intention to create an additional docket to house smart grid considerations. The commission accepted some provisions of EISA and related PURPA standards.

Document: Kentucky Power Testimony 1/12/2009 <https://e9radar.link/0e42>
Direct Testimony of Errol K Wagner on Behalf of Kentucky Power Company
P. 24 describes AMI benefits, and p. 29 explains that KP will not deploy AMI until 2012 or later

Document: Order 10/6/2011 <https://e9radar.link/0q1f>
Final Order
P. 127-128 provides orders. p. 106-108 describes Kentucky Power AMI deployment to date

Proceeding:	Year	Type	url
Investigation into AR Sustainable Energy Resources 08-144-U	2008	Reference	

Description:

This docket was opened to conduct an investigation into Arkansas' Sustainable Energy Resources (SER) in order to create a Sustainable Energy Resources Guide for this Commission to use in promoting SER initiatives. This contains some of the first hints at AMI deployment and smart grid development, in addition to setting up a framework for prioritization of sustainable resources. Filings on March 2, 2010 contain utility smart grid plans.

Document: Presentation 10/12/2009 <https://e9radar.link/k2bp>
90. The Arkansas Public Service Commission hereby submits its workshop presentation on the Smart Grid, Demand Response, and Automated Metering Infrastructure: The Emergence of Dynamic Pricing.

Document: Workshop 9/23/2009 <https://e9radar.link/e3cr>
88. Press Release
Announcement of the first AMI, DR, and smart grid workshop

Proceeding:	Year	Type	url
Smart Grid Standards and Definitions 08-948	2008	Rulemaking	

Description:

In August 2008, the Minnesota PUC opened a docket to investigate smart grid standards. In June 2009, the commission adopted a working definition of smart grid and ordered utilities to seek recovery of smart grid investments, to provide information to future customers, and file annual reports on past, current, and planned smart grid projects. A notice in March 2011 clarified the kinds of information sought in the smart grid reports, which included AMR and AMI capabilities. In December 2014, the commission ruled that the reports were no longer necessary, and the docket was closed.

Document:	Order Closing Docket	12/31/2014	https://e9radar.link/lhkf
	Order Closing Docket		

Notes the lack of necessity; information gathered

Document:	Notice	3/4/2011	https://e9radar.link/fkur
	Notice Clarifying Information Sought in Smart Grid Reports		
	Clarifies need for AMI information		

Document:	Order- Definitions	6/5/2009	https://e9radar.link/6w1a
	Order Taking Action Under Federal Independence and Security Act of 2007		
	P. 3 describes smart grid definition, p. 4 describes utility AMI/smart grid deployments to date		

Proceeding:	Year	Type	url
ACE Blueprint for the Future EO08050326	2008	AMI Proposal	

Description:

In July 2008, the BPU directed New Jersey's utilities to file demand response (DR) programs. ACE submitted its DR program, Residential Controllable Smart Thermostat Program, along with its November 2017 "Blueprint for the Future," a strategic plan which mirrored other plans filed by its parent company, PHI. The Blueprint was designed to accomplish BPU goals, and included a section for the evaluation of AMI deployment and dynamic pricing. This application did not explicitly request approval for AMI.

Document:	Order	7/29/2009	https://e9radar.link/il4d
	Order Adopting Stipulation		
	Adopts stipulation for the P. 36 (Appendix 4) contains CBA		

Proceeding:	Year	Type	url
Duke Energy Electric Security Plan 08-920-EL-SSO	2008	AMI Proposal	https://e9radar.link/gdlz

Description:

In July 2008, Duke Energy Ohio filed its three-year Electric Security Plan pursuant Ohio code. The ESP represents Duke's best efforts to meet the requirements of stakeholders, provide stable prices, and maintain profits. The ESP contained capacity additions, a renewable and energy efficiency portfolio to meet statutory mandates, and opportunities to enhance economic development. Within the ESP, Duke proposed Distribution upgrades and riders, which included the upgrade of mechanical meters to smart meters. Though the detailed cost-benefit analysis is redacted, all other projected costs include other bundled smart grid investments.

Document: Attachment 10/7/2008 <https://e9radar.link/4lo2>

Attachment TES-1, to be included with direct testimony of Theodore E. Shultz, Attachment 4, to direct testimony of Richard G. Stevie, PhD, Direct testimony of Christopher D. Kiergan, Direct testimony of Richard G. Stevie filed on behalf of Duke Energy by E. Watts.

P. 7-9 explains cost categories, smart grid benefits p. 13-14, summary of cost-benefit analysis p. 17-18

Document: Testimony (adjustments) 9/16/2008 <https://e9radar.link/6t0u>

Supplemental Direct Testimony of Paul G. Smith on Behalf of Duke Energy Ohio

P. 4 and 5 discusses opt-out provision, p. 7-10 describes updates to CBA

Document: Testimony 7/31/2008 <https://e9radar.link/9i9o>

Direct Testimony of Todd W. Arnold, on Behalf of Duke Energy Ohio

More in-depth summary of the whole project. p. 26 shows deployment schedule, p. 18 discusses smart meters

Document: Final Order 12/17/2008 <https://e9radar.link/nqgk>

Opinion and order stating that the stipulation be adopted as modified; application for approval of a standard service offer by Duke Energy be granted, to the extent set forth; Duke shall notify customers of the changes approved by this opinion and order and that the Commission's docketing division file a copy of this order in cases 08-974-EL-UNC and 08-975-EL-UNC.

P. 17-18 discusses cost recovery adjustments, mandated stakeholder groups, meter costs

Document: Testimony 7/31/2008 <https://e9radar.link/metj>

Direct Testimony of Wiliam Don Wathen Jr., on Behalf of Duke Energy Ohio

Discusses recovery of old meters

Document: Testimony 7/31/2008 <https://e9radar.link/u3sz>

Direct Testimony of Richard G. Stevie, Ph.D., on Behalf of Duke Energy Ohio

Describes load forecast and long-term benefits of smart meters on o. 31, but relevant numbers are redacted

Document: Redacted CBA 7/31/2008 <https://e9radar.link/8zxs>

Direct Testimony of Christopher D. Kiernan, on Behalf of Duke Energy Ohio

P. 14 would contain the CBA if it was public; information is all redacted

Document: Application 7/31/2008 <https://e9radar.link/76xg>

In the matter of the application of Duke Energy Ohio for approval of an Electric Security Plan.

P. 17, Part E, Distribution Riders, lists automated meter reading as one of the reasons for rate increase

Proceeding:	Year	Type	url
Oncor AMS Request 35718	2008	AMI Proposal	

Description:

In May 2008, Oncor filed an application to modify its previous plan to install an AMR system. Oncor's new proposal to install AMS included a proposed surcharge for cost recovery and details on dynamic pricing implementation. Oncor also included documentation of compliance with the Texas commission's functionality requirements. Oncor's proposed AMS surcharge was based on an estimated capital investment of \$690M, O&M estimates of \$148M, and total savings for the surcharge period of \$176M. The total revenue requirement requested was for \$1.1B. After the development of a settlement agreement, the commission approved the application in August 2008.

Document: Order 8/29/2008 <https://e9radar.link/r2fl>

Order

Order reviewing stipulation and approving the project.

Document: Request 5/28/2008 <https://e9radar.link/tafi>

Request for Approval of Advanced Metering System (AMS) Deployment and Request for Advanced Metering System (AMS) Surcharge.

Application divided into sections. Overview of case found in first section on p. 4-5, p. 6 provides revenue request numbers.

Proceeding:	Year	Type	url
IP AMI Proposal IPC-E-08-16	2008	AMI Proposal	https://e9radar.link/n2o9

Description:

In May 2008, Idaho Power filed a petition for approval of an AMI deployment plan. This plan followed AMR reports, commission encouragement for AMI, an AMI Status report, and AMI Implementation plan in docket no. IPC-E-06-01. The updated plan requested an AMI system to cover 99% of its customers, to be deployed between 2009-2011. CBA analysis showed that short-term costs outweighed benefits.

Document: Testimony 8/5/2008 <https://e9radar.link/avs4>

Idaho Power Direct Testimony of Courtney Waites

P. 13 of pdf contains the only CBA

Document: Final Order 2/12/2009 <https://e9radar.link/2b3b>
Final Order

Approving AMI and potential cost recovery. Provides a summary of the proceeding and AMI strategy

Document: AMI Application 5/8/2008 <https://e9radar.link/83f2>
Notice of Application

Application outlines TOU and AMR history. P. 5 contains requests, p. 9 estimates costs

Proceeding:	Year	Type	url
CenterPoint AMS 35639	2009	AMI Proposal	

Description:

In May 2008, CenterPoint Energy Houston Electric (CEHE) filed an application to deploy a limited AMS (250,000 meters or the number of meters that could be supported by 6,000 cell relays) where and when requested by retail electric providers. The application also requested a waiver for certain retail customers and service types. CEHE claimed that after the AMS market matured, it would consider full deployment, and that the initial deployment of AMS would not produce savings for the company. Testimony was divided into explanation for each cost category. CEHE stated that it had already spent \$25M on an AMS pilot, and estimated \$256M in capital expenditures and \$145M in O&M through 2016. In December 2008, the company filed a stipulation agreement which included a revised AMS plan to deploy 2.4M meters. The stipulation contained estimated costs of \$639.6M in capital and \$207.9M in O&M from 2007-2021. The revised plan and stipulation were approved in December 2008.

Document: Final Order 12/22/2008 <https://e9radar.link/xe2w>
Final Order

Order approving the stipulation and updated AMS plan.

Document: Stipulation 12/11/2008 <https://e9radar.link/de71e>
Stipulation, Pages 1 to 50

Overviews proceeding and adjustments to the AMS plan. P. 17 provides a proposed order, p. 20 updates estimated costs.

Document: Application 5/5/2008 <https://e9radar.link/6b74b>
Application, Pages 1 to 50

Contains initial application and several pages of confidentiality agreements. P. 46 of pdf provides an executive summary and begins general testimony of case. P. 14 of pdf overviews the purpose of each testimony.

Proceeding:	Year	Type	url
ACE Blueprint for the Future <i>EO07110881</i>	2007	AMI Proposal	

Description:

In November 2007, Atlantic City Electric (ACE) filed its Blueprint for the Future. Key elements of this proposal include system-wide AMI deployment, DSM initiatives, DR program proposals, low income and solar programs, and cost recovery. The proposal also included a formal business case with a CBA. In June 2009, a settlement stipulation was reached.

Document:	Petition	11/19/2007	https://e9radar.link/gskn
	Verified Petition		
	Business Case included as Exhibit A		

Proceeding:	Year	Type	url
PGE AMI <i>UE 189</i>	2007	AMI Proposal	https://e9radar.link/11he

Description:

In March 2007, PGE filed an application to deploy AMI in its territory. The timeline of the revenue requirement cites systems acceptance testing in July 2007, AMI deployment from February 2008-September 2009, and AMI tariff implementation in July 2007 for an estimated \$13.4M. Costs over the 20-year project life included \$130.1M in capital costs, savings in O&M of \$16M in the year following deployment, and an overall net present value benefit of \$17.6M. Prior to commission approval in May 2008, PGE participated in a variety of meetings and workshops to discuss issues.

Document:	Testimony and Exhibits	11/21/2007	https://e9radar.link/0ey
	PGE & STAFF's Joint Direct Testimony and Exhibits of Lisa Schwartz, Carla Owings, & Alex Tooman		
	Detailed information on the AMI project, p. 5-6 breaks out costs/benefits		

Document:	Order	5/5/2008	https://e9radar.link/kwhs
	Order No. 08-245 signed by Commissioners Lee Beyer, John Savage, and Ray Baum; DISPOSITION: APPLICATION GRANTED.		
	Appendix A, on p. 20 of the pdf, describes AMI conditions		

Document:	Application	3/7/2007	https://e9radar.link/phu
	PGE Advice No. 07-08, Advanced Metering Infrastructure (AMI)		
	P. 3 of pdf lists costs and savings, p. 28-30 of pdf explains quantitative benefits		

Proceeding:	Year	Type	url
MD Investigation into AMI, DSM, and Cost Recovery 9111	2007	Rulemaking	https://e9radar.link/o2rx

Description:

The Commission opened this docket in January 2007 to house DSM/AMI proposals and associated rulemaking around cost recovery, technical requirements, and program requirements. In March 2007, Pepco and Delmarva filed their first applications to establish DSM and AMI surcharges and collaborative working groups, which together made up each company's Blueprint For The Future. This plan included investment in AMI, distribution automations, smart thermostats linked to AMI, and an improved communications network.

Document: Order 9/28/2007 <https://e9radar.link/wzv4>
The Commission- Order No. 81637 (ML 107677)

Established collaborative processes to consider technical standards for meters, the extent to which DSM programs are offered on a competitively-neutral basis, recovery of DSM programs, and appropriate measures of cost effectiveness of DSM programs.

Document: Pepco Business Case 12/21/2007 <https://e9radar.link/ns3q>
Potmac Electric Power Company - Business Case Demonstrating Filing for Automated Metering Infrastructure. Case No. 9111 (ML 108822)

This business case was re-filed in Case No. 9207.

Document: Delmarva Business Case 12/21/2007 <https://e9radar.link/koi6>
Delmarva Power and Light Company - Business Case Demonstrating Filing for Automated Metering Infrastructure. Case No. 9111 (ML 108815)

This business case was re-filed in Case No. 9207.

Document: Application 3/21/2007 <https://e9radar.link/aq60>
Potomac Electric Power Company - an Application for Authority to Establish a Demand-Side Management Surcharge, an Advance Metering Infrastructure Surcharge and to Establish a DSM Collaborative and an AMI Advisory Group. Case No. 9111. (ML 105286)

AMI deployment plan starts on p. 60 of pdf, p. 65 of pdf discusses network technology, p. 67 of pdf

Proceeding:	Year	Type	url
Investigation into Advanced Metering <i>06-00391-UT</i>	2006	Report	http://e9radar.link/tepc

Description:

In September 2006, the PRC released a Notice of Inquiry pertaining to Time-Based Metering and Communications ("Advanced Metering") standards and its requirements relating to time-based rates. This docket required utilities to prepare and file white papers detailing existing programs and plans, as well as an analysis of the potential benefits to the utility and its customers. Specific topics included AMS, MDMS, demand response programs, TOU rates, real-time pricing, and more. The commission scheduled a series of workshops to investigate the adoption of advanced metering and time-based rate standards in New Mexico. Each New Mexico utility, including co-ops, filed a white paper in this docket.

Document: Notice of Inquiry 9/26/2006 <https://e9radar.link/1h09>
 Notice Of Inquiry Requiring White Papers And Scheduling Workshops
 Opening notice scoping various investigation topics

Proceeding:	Year	Type	url
PURPA Time-Based Metering Ruling <i>E-000004-06-0038</i>	2006	Rulemaking	https://e9radar.link/i1so

Description:

Pursuant to Section 1252 of the Energy Policy Act of 2005, State Commissions are required to conduct a proceeding regarding "Smart Metering." The Commission of each state may decline to implement the Time-based Metering and Communications standard (for all utilities with >500,000MWh in retail sales) or adopt a modified statement. The AZ PSC set up a smart meter workshop in June 2016. In July 2007, the Staff adopted a policy similar PURPA, but modified the statement to apply only to electric distribution companies with retail sales of >500,000 MW.

Document: Recommendation 7/30/2007 <https://e9radar.link/sp1>
 Recommendation
 Summarizes new rule and modifications, final rule on p. 16

Proceeding:	Year	Type	url
IP AMR Report <i>IPC-E-06-01</i>	2006	Report	https://e9radar.link/3q5z

Description:

This docket was opened to house Idaho Power's Phase One AMR Implementation Report, filed in December 2005. In July 2006, the commission issued order 30102, which ordered Idaho Power to file a follow-up AMR Deployment Report with details on technology, progress, costs, and benefits following the 2005 report. The Commission requested that IP deploy AMI as fast as possible.

Document: AMI Implementation Plan 8/31/2007 <https://e9radar.link/vofu>
 Supplement to Phase I AMI Implementation Status Report

Contains initial proposal/plan to deploy AMI.

Document: Phase I Report

5/2/2007

<https://e9radar.link/wrsi>

Phase One AMI Implementation Status Report

Describes initial AMR deployment.

Proceeding:	Year	Type	url
LA Smart Meter Investigation <i>R-29213 Subdocket A</i>	2005	Rulemaking	

Description:

In December 2005, docket was opened to determine if the Louisiana Commission had regulatory agency over the installment of smart meters. Additionally, this docket questioned smart meter data management. A variety of stakeholders filed comments, and no final decision or order was posted.

Document: Notice - Comments

5/9/2007

<https://e9radar.link/vjln>

Notice of Request for Comments issued by Melissa Watson, LPSC Staff Attorney.

Request for comments on requirements for pilot programs, mandatory meter replacement, etc.

Proceeding:	Year	Type	url
AMR and TOU Pricing <i>IPC-E-02-12</i>	2002	Reference	

Description:

In November 2001, case no. IPC-E-01-13, the Commission directed Idaho Power Company and the Energy Efficiency Advisory Group to investigate a TOU metering pilot program by September 2002. In September 2002, Idaho Power filed their findings in the current case (IPC-E-12-2). The report concluded that TOU pricing provides a variety of benefits, but will not be "economically viable" without the implementation of AMR. The Idaho PUC disagreed with Idaho Power's proposal to delay AMR implementation until 2004, and in February 2003, Order 29196 directed Idaho Power to submit a meter replacement program by March 2003. The commission also explicitly recorded, "We believe that AMR should be implemented as soon as possible, with installation commencing this year and completed in 2004."

Document: AMR Order

2/21/2003

<https://e9radar.link/ro9>

Order 29196

P. 10 explicitly discusses AMR and the quote mentioned above

Proceeding:	Year	Type	url
Rulemaking on advanced metering, demand response, dynamic pricing <i>R.02-06-001</i>	2002	Rulemaking	

Description:

In June 2002, the commission opened this docket as a policymaking forum to develop demand response, which included the consideration of AMI. At its onset, the commission directed Pacific Gas & Electric (PG&E), San Diego Gas & Electric (SDG&E), and Southern California Edison Company (SCE) to act as participants. Docket matters primarily concerned demand response programs, but the development of an advanced metering business case framework was also a priority. In January 2004, several stakeholders filed comments on advanced metering business cases, and in April 2004 commission staff filed a draft analysis framework for AMI business cases. The commission adopted a final framework in July. PG&E and SDG&E filed business case analyses in October 2004, while SCE filed comments stating it did not intend to apply at the time. The November 2005 final order confirmed that utilities wishing to impose time-differentiated tariffs must utilize smart meters.

Document: Order (Final) 11/18/2005 <https://e9radar.link/ee0r>

Decision Closing This Rulemaking and Identifying Future Activities Related to Demand Response

P. 5 discusses resolved smart meter issues, p. 18 implements rule for sophisticated meters

Document: Order delaying 11/24/2004 <https://e9radar.link/7pz8>

Peevey Cooke Ruling for Technical Conference Beginning Development of Reference Design, Delaying Filing Date of Utility Advanced Metering Infrastructure Applications, Directing Filing of Rate Design Proposals

Discusses the development of the AMI business case, and the two submissions for extended time. P. 3 cites SCE's desire to not deploy.



COMPENDIUM II: Entity Review Notes

The following report provides information about the specific research categories that were analyzed for each of the 80 utilities that received a detailed review. It compiles information included in the report, AMI in Review Appendix A, Index of Utility Entities Reviewed. The report is organized alphabetically by utility and contains the following information:

- Utility and holding company, if applicable
 - Research category (detailed or summary)
 - Annual revenue in billions of U.S. dollars (per EIA 2018 Form 861)
 - Regulatory structure/class
 - AMI proposal type
 - Type of costs and benefits
 - Status of decision (as of December 2019): approved (app), denial (deny), settlement (sett) or decision pending (pend)
 - Number of meters deployed (per EIA 2018 Form 861)
 - Summary of utility-specific AMI proceedings, activity, etc.
 - Review notes, organized by the following categories:
 - Cost-Benefit Methodology: Captures how the costs/benefits and the meter deployment timeline were presented in application (time period, tests, discount rates, etc.)
 - Technology: Captures information on legacy meter equipment and other proposed, accompanying technology (MDMS, networks, etc.)
 - Policy: Captures which policy directives were cited, if applicable
 - Proceeding: Captures the proceeding format which AMI was requested in (rate case bundled with other requests or independent AMI docket)
 - Stakeholder Engagement: Captures stakeholder processes and activities, if applicable
 - Cost Recovery: Captures cost recovery proposals and other notable cost recovery issues
 - Qualitative Benefits: Captures qualitative benefit categories, if cited
 - Other Notes: Captures additional information, including unique proposal characteristics and approach to opt-out
 - Decision and Outcome: Captures information on commission decision
-

Appalachian Power American Electric Power					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$1.4	Integrated	2018		✓	54,453

Pursuant to 2018 legislation, in 2018 Appalachian Power Co. (APCo) submitted a Grid Transformation plan in response to the Grid Transformation and Security Act. The plan noted that though legislation did not mandate a CBA, Dominion was criticized for not producing one; APCo stated that many project benefits were "not easily quantifiable." The plan demonstrated that APCo began transitioning end-of-life AMR to AMI in 2017, and its transition would be complete by 2022. In March 2019, APCo withdrew its Grid Transformation petition, citing the recent denial of Dominion's Grid plan. APCo stated that it intends to file a more robust proposal in the future. In 2019, APCo's website stated that the company was continuing to deploy AMI meters in its Virginia, West Virginia, and Tennessee territories.

Review Notes:

Cost-Benefit Methodology Notes:

Began replacing end-of-life AMR with AMI in 2017, deployed 167,000 in 2018, 264,000 in 2019, stated goal to finish deployment by 2022.

Technology Notes:

AMI, distribution upgrades, grid automation

Policy Notes:

Cited as meeting the Grid Transformation and Security Act

Proceeding Notes:

Bundled

Qualitative Benefit Notes:

Facilitate DER, reliability and security, restoration/outages, problem identification, enablement of programs (pre-pay, remote connect)

Other Notes:

Noted obsolescence of AMR meters. Also distinctly chose not to propose any customer programs as part of this plan; anticipated EV charging and pre-payment in the future.

Decision and Outcome Notes:

Rescinded application following the Dominion denial

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Appalachian Power American Electric Power						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters

\$1.2	Integrated	2017		✓		1,210
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In June 2017, Appalachian Power Co. (APCo) and Wheeling Power Co. jointly filed their Annual Smart Grid Matters report. The report discussed the parent company AEP's gridSMART® plan to integrate advanced distribution technologies, including AMI deployment. In West Virginia, the companies described deployment of DA circuit reconfiguration, VVO, and 540,000 AMI meters in 2017. The AMI "Phase I" project included a customer information access portal.

Review Notes:

Cost-Benefit Methodology Notes:

In 2017, replaced 54,000 AMR, 132,000 in 2018, 250,000 in 2019. Using a phased approach [with no overall timeline] from urban/suburban areas to help study AMI and determine effective use for 'larger later development.' Uses a phased approach to technology integration.

Technology Notes:

AMR to AMI. AMI integration with DA programs

Proceeding Notes:

Bundled

Cost Recovery Notes:

General tariffs

Qualitative Benefit Notes:

Efficient operations, allowance for quick and safe connects/disconnects, help with turnover in apartments/colleges, customer theft

Decision and Outcome Notes:

Did not request approval; filed informationally

DOMAIN 1 Capital & Financial

DOMAIN 2 Operational

DOMAIN 3 Customer & Other

Utility / Holding Company

analysis

Entergy Arkansas Entergy						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters

\$1.7	Integrated	2016	• • •	✓	✓	511
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In August 2016, Entergy Arkansas Inc. (Entergy) proposed a three-phase/five-year AMI Plan, which included an outage management and distribution management system. In August 2017, Entergy, commission staff, and the attorney general submitted a settlement agreement. The settlement was approved in October 2017, and Pre-Deployment Customer Education Materials were submitted in August 2018. The PSC approved the education materials in December 2018.

Review Notes:

Cost-Benefit Methodology Notes:

15-year expected life, 5-year plan w/ 3-year deployment, 2016 dollars NPV. NPV was stated at \$26.3M. Created internal Project Management Office to head the initiative, which reviewed other utilities' AMI deployments to determine customer participation. . EAI claimed that "based on historical experience, 90% of meter services payroll and vehicle costs are O&M expenses and 10% are capital additions." Benefits are broken down into two categories: Operational benefits were estimated at \$94M, other benefits total \$340M, and net AMI benefits are cited at \$232M (NPV 2016).

Technology Notes:

Meter replacement, new MDMS, new DMS, new communications two-way network; IT is cited as support for AMI information. Number of meters unclear.

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

Internal team: "Project Management Office" conducted research on other utility-scale AMI deployment. settlement Agreement reached between Entergy the AG, and staff.

Cost Recovery Notes:

Inclusion in 2017 Rider FRP for 2018 projected year costs. Sought recovery for stranded costs of meters (remaining book value and annual depreciation rate of existing meters, \$57M). settlement allowed for the accounting treatment with retirement and transfer of the remaining book value to a regulatory asset to be amortized over a 15-year period.

Qualitative Benefit Notes:

Broken into customer service and operational benefits, future benefits (like grid resiliency), and additional qualitative benefits: Unaccounted for energy, increased customer information, improved outage management and billing accuracy, call center volume decrease, safety, improved distributed generation, and future distribution system optimization.

Other Notes:

The company included an opt-out program for residential meters.

Decision and Outcome Notes:

AMI rollout approved in Oct. 2017. Required customer communication and education plan approved in Dec. 2018.

DOMAIN 1	13%	Capital & Financial
DOMAIN 2	86%	Operational
DOMAIN 3	1%	Customer & Other

Utility / Holding Company

analysis

Duke Energy Progress - (NC) Duke					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$3.6	Integrated	2017	• • •	✓	

In October 2016, DEP cited an internal investigation of AMI technology in its Smart Grid

Technology Plan (SGTP). DEP subsequently requested cost recovery in its 2017 rate case. In this proceeding, DEP contested that it did not file rate design programs alongside its AMI proposal due to the premature nature of the new technology. In February 2018, the commission approved portions of a stipulation agreement, which included cost recovery for the replacement of AMR meters with AMI. DEP filed an updated CBA in the SGTP case in June 2018.

Review Notes:

Cost-Benefit Methodology Notes:

3-year deployment within a 10-year grid mod project, 17-year meter life, began with phased meter replacement and then moved to full deployment proposal. Included AMI-specific costs; Initial analysis noted a capital cost of \$276.4M and 9.3M from reduction in meter reading and operations costs.

Technology Notes:

AMR to AMI

Policy Notes:

NC commission requires SGTPs as part of the IRP process.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Grid modernization stakeholder group created in rate case

Cost Recovery Notes:

Though much of the DEP grid modernization proposal was denied, deferral of cost recovery of AMR meters was approved.

Qualitative Benefit Notes:

Primary benefits are reduction in meter reading resources/costs in addition to enhanced basic services for customers, new choice, control and flexibility in energy usage, billing, and program offerings.

Decision and Outcome Notes:

Approved in the 2017 rate case via approval of regulatory asset w/ stipulation.

DOMAIN 1	2%	Capital & Financial
DOMAIN 2	98%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Duke Energy Progress - (SC) Duke					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$0.6	Integrated	2018	•	✓	✓

In June 2018, Duke Energy Progress (DEP) filed a petition to defer \$1.4M of AMI deployment costs into a regulatory asset for future recovery. Later that year, DEP filed its 2018 rate case, which requested an increase in retail revenues of \$59M, which includes \$5.1M and \$5.8M for grid investments in 2020 and 2021. Between rate cases, DEP

requested additional accounting orders relating to AMI deployment recovery. At the time of application, DEP had deployed 38,000 smart meters, and planned to deploy the remaining 128,000 meters. The case also requested approval of AMI-enabled programs, such as the Prepaid Advantage Pilot Program. Through the April 2019 stipulation, DEP agreed to supply an annual report on quantified customer benefits. The stipulation also requested that DEP examine an opt-out program similar to its North Carolina program.

Review Notes:

Cost-Benefit Methodology Notes:

10-year life for existing meters, 17-year life for new meters, deploying AMI by zones (first installing FAN), book value of non-AMI meters \$6.1M, began deploying AMI in 2016

Technology Notes:

AMI, FAN, others

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Hosted Grid Improvement Plan Workshops, plans on releasing quarterly reports for stakeholders

Cost Recovery Notes:

DEP originally deferred \$1.4M of AMI-related costs

Qualitative Benefit Notes:

Customer access to information, greater convenience, remote disconnect/reconnect, better outage management (limited info)

Other Notes:

Noted learning from the DEC experience to translate door hangers into English and Spanish. The commission required analysis of an opt-out program.

Decision and Outcome Notes:

No explicit commission decision other than approval to defer costs, though the commission stated a requirement for Annual Report. Stipulation was reached in April 2019.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Cleco Power LLC Cleco Power					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$0.9	Integrated	2010	• • •	✓	286,186

In 2008, Cleco Power began a small demand response study using smart meters and in-home smart thermostats. In 2009, the DOE selected Cleco to receive a \$20M SGIG, and in 2010 Cleco filed its system-wide AMI proposal. The Cleco application was approved in February 2011.

Notable Resources:

Smart Grid Gov: <https://e9radar.link/dk5x>

Review Notes:

Cost-Benefit Methodology Notes:

15-year benefit horizon, 2-year deployment (4 phases). Budget of \$61.8M (quoted elsewhere as \$52.9M remaining). Notes that most savings are from operational savings. 450 customers in its initial DR study.

Technology Notes:

287,000 meters, backhaul communications, meter communications network, MDMS, smart meter (industrial)

Policy Notes:

The commission encouraged AMI rollout in Docket No. R-29213, which also created minimum requirements for proposals

Proceeding Notes:

AMI

Cost Recovery Notes:

Rate case recovery, suggested at a fixed amount

Qualitative Benefit Notes:

Reduced meter reading costs (noted as one of the most influential categories), truck fleet fuel usage, costs from theft, and greenhouse gas emissions. Customer benefits include increased data usage, accurate outage monitoring, and necessary data for demand changes.

Other Notes:

DOE's Assistance Agreement required that the implementation of the AMI project must be completed no later than May 3, 2013 to comply with the grant

Decision and Outcome Notes:

Approved

DOMAIN 1	0%	Capital & Financial
DOMAIN 2	100%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Cleveland Electric Illum Co		First Energy				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$1.0	Restructured	2016		✓	✓	34,204
See Ohio Edison for First Energy's joint application for full AMI deployment. In 2010, FirstEnergy deployed limited AMI, DA, VVO, and direct load control devices in the Cleveland Electric Illuminating Co. territory through a SGIG.						

Notable Resources:

SGIG: <https://e9radar.link/pmw3>

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Commonwealth Edison	Exelon					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$5.0	Integrated	2012	• • •	✓		?

Commonwealth Edison (ComEd) first proposed its AMI plan in April 2012. The petition was approved with modifications in June 2012. In response to a commission ruling in a concurrent rate case, ComEd filed a petition in July 2012 for approval to accelerate the deployment timeline. In response, the commission reopened and consolidated two ComEd dockets. In June 2014, the commission approved the proposed AMI acceleration, maintaining the consumer education budget and modifying the level of resources for education and outreach that it had planned for its original scenario. ComEd's 4M meter rollout was completed in 2018 rather than 2021, and was part of the utility's \$2.6B grid modernization initiative.

Notable Resources:

B&V Evaluation Report (2011): <http://bit.ly/2MfQGYw>

Final Order: <https://e9radar.link/vblv>

Review Notes:

Cost-Benefit Methodology Notes:

ComEd's modified AMI plan set deployment timeline for 10-years, evaluated benefits over 20-year investment and operations timeframe (cumulative value) at an updated 4.27% discount rate. Updated BCA showed fewer line-item costs but explained each adjustment. ComEd accelerated its deployment timeline to realize benefits sooner through new rate formulas. Completed deployment in 2018.

Technology Notes:

AMI meters, wireless or Radio Frequency (RF) communications network, IT systems, implementation services, and on-going operational expenses, MDMS.

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

Workshop process with stakeholders and evidentiary hearings

Qualitative Benefit Notes:

The AMI program is estimated to drive energy savings to the degree that various forms of behavior associated with bad debt, consumption on inactive, theft, and tamper conditions are reduced. But AMI also enables other programs and benefits; B&V notes that a challenge is isolating effects and ascribing a certain domain of costs and benefits to specific areas of the business case.

Other Notes:

As a part of its accelerated deployment application, ComEd submitted a report that summarizes the costs and benefits of its AMI plan under the proposed accelerated scenario as well as the current scenario. The report was prepared by Black and Veatch

Corporation (B&V), cited as the CBA in this report.

Decision and Outcome Notes:

ComEd first proposed a smart meter pilot project (200,000 meters) as part of its 2007 rate case, proposed as part of Rider System Modernization Project, providing commission pre-approval of capital expenditures on specific projects (including AMI). The Illinois ICC approved the pilot in October 2009.

DOMAIN 1	15%	Capital & Financial
DOMAIN 2	85%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Connecticut Light & Power Eversource					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$2.9	Restructured	2010	• • •	✓	

In March 2007, CL&P proposed AMI deployment in compliance with a DPUC order in their TOU rate proposal, which was also created under a DPUC directive. In July, CL&P filed a Revised AMI Plan to comply with the Energy Efficiency Act, which included several options for deployment. In December 2007, the PUC approved several pilot programs. Study results were published in 2009. In August 2010, CL&P proposed system-wide rollout in conjunction with a review of its pilot programs. A draft decision in August 2011 recommended gradual deployment of smart meters due to the low cost-benefit ratio of the proposal; additionally, the DPU found a net negative CBA from its own analysis. The decision directed CL&P to generate four reports on the latest advancements in AMI technology in 2012-2013. This case was put on hold as the newly-created Department of Energy and Environmental Protection considered statewide clean energy goals. Though a final decision was not published, AMI was effectively denied. In October 2019, PURA reopened CL&P's rate pilot case and requested the development of a statewide AMI deployment business case.

Notable Resources:

State Website: <https://e9radar.link/Owt>

Smart Grid Summary : <https://e9radar.link/Owt>

Review Notes:

Cost-Benefit Methodology Notes:

20-year meter life, 4-year deployment. \$492M cost of project, \$600M in savings depending on customer response. Evaluated base, best, and worse case scenarios. Included dynamic pricing plans.

Technology Notes:

Cell-tel AMI, MDMS, C2 systems.

Policy Notes:

In June 2007, the Legislature enacted Public Act 07 242, An Act Concerning Electricity and Energy Efficiency (Act). Section 98 of the Act required CL&P to submit a plan to deploy an advanced metering system. In a filing dated July 2, 2007, CL&P submitted a plan (Revised Meter Plan) in compliance.

Proceeding Notes:

AMI

Cost Recovery Notes:

Discussed socializing the cost of AMI for customers, mandating that Cell-Tel AMI meters use TOU

Qualitative Benefit Notes:

Greatest cited benefit was compliance with state orders. Quantified benefits grouped generally into O&M, capital avoidance,, energy reduction, peak-load reduction, value end-use customers place on reliability, environmental (reduced CO2 emissions)

Other Notes:

Technical meetings helped CL&P determine how to comply with the Energy Efficiency Act.

Decision and Outcome Notes:

Denied

DOMAIN 1	14%	Capital & Financial
DOMAIN 2	76%	Operational
DOMAIN 3	10%	Customer & Other

Utility / Holding Company

analysis

Consolidated Edison	ConEd					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$8.0	Restructured	2015	• • •	✓	✓	

Consolidated Edison (ConEd) began an AMI pilot project in 2010. ConEd proposed a system-wide rollout of 3.6M advanced electric meters, in addition to 1.2M gas meters, in their 2015 rate case. In June 2015, the commission approved the rate case with the stipulation that ConEd form an AMI collaborative and write an AMI business case. Once the business case was produced in October 2015, the commission further requested a customer engagement plan in addition to an updated CBA which reflects a new statewide template. An updated BCA framework was filed in August 2016.

Notable Resources:

AMI Business Plan: <https://e9radar.link/70g>

Review Notes:

Cost-Benefit Methodology Notes:

6-year project life (start by installing IT, deploy 4.7M meters over five years), uses 20 year NPV, \$2016, 6.91% WACC discount rate. Did not include the remaining unrecovered cost of existing meters, which were seen as 'sunk costs.' AMI team worked with internal business groups and consultants to conduct CBA, research other utilities, hold a benefit discovery process, evaluate data projects, finalize key benefits and validate the results.

Technology Notes:

Selected through RFP process, includes MMS, MAMS

Policy Notes:

REV encourages AMI-enabled functionalities, but no specific AMI policies exist

Proceeding Notes:
Rate Case

Stakeholder Engagement Notes:

The Joint Proposal suggested an AMI collaborative group to address questions about privacy, third-party access to meter data, integration of DER, personal ownership of meters, and more. This group established benefit discovery workshops and drafted the AMI Business Plan.

Cost Recovery Notes:

Rolled into 2015 and 2017 Rate Cases

Qualitative Benefit Notes:

Benefits listed throughout. Describes customer benefits (customer empowerment, enhanced service, environmental benefits), statewide REV benefits, service delivery improvements. Another section describes quantified cost reduction benefits, customer and company benefits, customer service and operations benefits.

Other Notes:

ConEd studied six peer utilities of similar size, scope and urban topology to learn benchmarking points. ConEd also hired Nexant consultant to conduct a TVP analysis.

Decision and Outcome Notes:

AMI rollout approved in original rate case order, required formation of AMI Collab and Business Plan. Approval of Business Plan requested Customer Engagement Plan, use of the statewide BCA template, implementation of the Green Button Connect My Data program, the development of pilot programs and opt-out policies, and privacy documents via stipulation.

DOMAIN 1	27%	Capital & Financial
DOMAIN 2	73%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Consumers Energy	CMS					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI	Meters
\$4.4	Integrated	2011	• • •	✓	?	

In 2007, Consumers Energy began creating the Balanced Energy Initiative as a 20-year energy planning vision. AMI was cited as a foundational technology for other smart grid applications and technologies. The company conducted its design phase from 2007-2008, followed by two early deployment programs in 2008-2009. The company's Smart Grid/AMI program was first proposed in a January 2010 rate case. In November 2010, the Michigan commission denied full AMI deployment, adopted eleven policy recommendations by staff, and encouraged Consumers to reapply in their next rate case. The policy recommendations included issues with cost recovery, pilot programs, and cost/benefit analyses. In June 2011, Consumers filed a new rate case which included implementation of Phase 2 of the Smart Grid/AMI project: full replacement of the company's 1.8M gas and electric meters and communication modules between from 2012-2019. The business case estimated \$38M in net benefits. The commission approved the request in June 2012. In June 2013, the Michigan PSC approved a separate Consumer

Energy rate case which contained an opt-out program.

Notable Resources:

Article: <https://e9radar.link/ofyc>

Review Notes:

Cost-Benefit Methodology Notes:

Implemented a Phase 1 pilot to test AMI vendors, Phase 2 represented implementation plan, Phase 3 & 4 implemented final meter deployment and (6,500 meters) and other technology. CBA presented over 25 years (2007-2032), separated out capital costs and electric/gas costs and benefits. Deployment was completed in 2017.

Technology Notes:

1.8M AMI gas and electric meters, MDMS

Proceeding Notes:

Rate Case

Stakeholder Engagement Notes:

Utilized a settlement agreement to settle disputed cost recovery

Cost Recovery Notes:

Inclusion in base rates. An audit of actual SG expenditures for 2011 showed that Consumers spent \$19.2M less than projected, which lowered the NPV of the project to \$34.5M.

Qualitative Benefit Notes:

Reduce energy usage through dynamic pricing programs, reduction of operating cost, billing accuracy, on-demand reading, service outage detection, theft detection, meter accuracy, AMI to serve as a platform for future smart grid capabilities

Other Notes:

Consumers applied for a SGIG but was not selected.

Decision and Outcome Notes:

After initial denial, approved June 2012

DOMAIN 1	4%	Capital & Financial
DOMAIN 2	27%	Operational
DOMAIN 3	69%	Customer & Other

Utility / Holding Company

analysis

Dayton Power & Light Co		AES Corporation						Detailed
\$B	Class	Year	ben/cost/net			app./deny/sett/pend		AMI
\$0.7	Restructured	2018	•	•	•	✓	✓	Meters
In DP&L's third Electric Security Plan, the commission directed the company to file a comprehensive Distribution Infrastructure Modernization Plan (DMP). In December 2018, DP&L filed its DMP, which was framed around enhancing customer benefits. The DMP included AMI deployment in addition to other grid modernization upgrades.								

Review Notes:

Cost-Benefit Methodology Notes:

Gross benefits and costs presented in 20-year nominal and net present value (nominal values included in this report). DP&L also included overall net benefits (\$1.6B) and a benefit cost ratio (2.9).

Technology Notes:

Communications infrastructure, MDMS, CIS, meter asset management system

Policy Notes:

The Dayton Power and Light company filed its DMP pursuant to its Amended stipulation and Recommendation approved by PUCO (16-395-ELSSO), as well as the commission's PowerForward Roadmap.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

This proposal is the result of a settlement agreement in another docket and the stakeholder process PowerForward.

Cost Recovery Notes:

Smart grid rider

Qualitative Benefit Notes:

DP&L outlined many facets of qualitative benefits.

Other Notes:

Opt-out included in application

Decision and Outcome Notes:

Decision pending

DOMAIN 1	2%	Capital & Financial
DOMAIN 2	8%	Operational
DOMAIN 3	91%	Customer & Other

Utility / Holding Company

analysis

DTE Electric Company DTE					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$5.1	Integrated	2012	• •	✓	?

Following a 2008 AMI pilot project, in 2010, Detroit Edison Electric Co (DTE) was awarded \$84M in SGIG funds (\$168M total project value) to deploy a network of 660,000 smart meters. DTE continued to expand its pilot program in its 2010 rate case, which approved AMI spending and requested a business case in future proceedings. In April 2012, the Court of Appeals ruled in favor of parties that filed appeals against the final order, ruling that inadequate AMI benefit evidence was presented. The commission reopened the case in September 2012, and after presentation of additional evidence, cost recovery for the pilot program was awarded in October 2013. DTE thereafter pursued AMI gradually; by late 2015, DTE had installed over 2.2M electric meters (approximately 50% of its territory), and in its 2016 rate case requested the final replacement of 938,000

meters over two years. The rate case was approved in December 2015. DTE filed an additional request in February 2016 to upgrade technology prior to AMI deployment, and in its 2019 rate case requested a provision to upgrade AMI communications from 3G to 4G.

Notable Resources:

EEL: <https://e9radar.link/j6z>

\$83.8M grant: <https://e9radar.link/5hv>

Review Notes:

Cost-Benefit Methodology Notes:

Originally suggested 30-year life; used 22-year life in CBA. No net benefits given, described as present value revenue requirement. CBA included gas and electric costs/benefits, in addition to LLC benefits (load research). CBAs through cases mirrored each other. Completed deployment in 2016.

Technology Notes:

938,000 AMI meters and communications infrastructure

Proceeding Notes:

Rate case

Cost Recovery Notes:

Requested through several rate cases

Qualitative Benefit Notes:

Meter reading, energy theft reduction, bill accuracy, staff safety, remote connect/disconnect, outage efficiency, power quality

Other Notes:

In 2011, 21 anti-smart meter resolutions were passed by local Michigan municipalities. DTE's opt-out program was approved in May 2013.

Decision and Outcome Notes:

Approved in December 2015

DOMAIN 1	5%	Capital & Financial
DOMAIN 2	90%	Operational
DOMAIN 3	5%	Customer & Other

Utility / Holding Company

analysis

Duke Energy Carolinas Duke		Detailed			
\$B	Class	Year	ben/cost/net	app/deny/sett/pend	AMI Meters
\$4.9	Integrated	2016	•	✓	?
In its 2014 Smart Grid Technology Plan (SGTP), DEC proposed a \$102M AMI deployment to build off of its 2013 SGIG AMI project. In its 2016 SGTP, DEC claimed that 252,000 AMI meters were installed and that the company was evaluating full deployment over a five-year period or annual deployment of 150,000 meters. The commission approved the proposal with conditions for information on full deployment, a 20-year cost-benefit analysis, and subsequent filing of rate design pilots. The commission later noted that deployment began prior to the submission of a CBA. Subsequently, in a 2017 rate case					

filing, DEC requested a regulatory asset for AMI. In April 2017, Duke Energy, DEC's holding company, released its ten-year Power / Forward Carolinas grid modernization initiative, which includes full smart meter deployment. DEC's 2020-2022 Grid Improvement Plan, included in its 2020 rate case, cites AMI as "a foundational investment that enables further programs, such as rate design and peak-shaving."

Review Notes:

Cost-Benefit Methodology Notes:
15-year meter life, 2-year replacement of 1.32M meters. Proposed in SGTP and then in commission ordered inclusion of the cost to replace meters at end of life. Original costs in the 2016 SGTP were \$289M alongside \$27.3M in operations/meter reading reductions.

Technology Notes:
Limited info, includes AMI technology and new billing technology, supporting IT, two-way communication network, bundled into smart grid technologies

Policy Notes:
NC commission requires SGTPs as part of the IRP process.

Proceeding Notes:
Bundled

Stakeholder Engagement Notes:
SGTPs were designed to serve as stakeholder info; when Duke Energy and Progress Energy merged in 2012 convened stakeholder group on grid mod; also formed a A Grid Modernization Oversight Committee, engaging in other Grid Improvement Stakeholder committees

Cost Recovery Notes:
In June 2018 the NCUC rejected DEC's Power/Forward Grid Mod initiative but approved cost recovery of AMI meters. In this case, Duke's CBAs were criticized again.

Qualitative Benefit Notes:
Primary benefits are reduction in meter reading resources/costs in addition to enhanced basic services for customers, new choice, control and flexibility in energy usage, billing, and program offerings

Other Notes:
The deployment plan and various cost/benefit estimates vary between dockets; plans appear to be inconsistent

Decision and Outcome Notes:
Approved through approval of cost recovery in the Power/Forward docket

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company				analysis		
Duke Energy Carolinas		Duke		Detailed		
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters	

\$1.8

Integrated

2016

• •

✓

520,261

In 2013, Duke Energy was awarded a SGIG to deploy AMI in its North and South Carolina territories. Upon its first official AMI cost deferral filing in 2016, DEC had deployed 95,000 meters and committed to deploying 490,000 more in a two-year period. DEC noted that it had 'already begun' full deployment. A 2016 cost recovery filing requested deferral of \$45M of AMI costs, and noted that deployment was nearly complete. In DEC's 2018 rate case, DEC was allowed to recover \$15M in May 2019.

Review Notes:

Cost-Benefit Methodology Notes:

DEC deployed AMI technology by zones, first strategically placing FAN equipment in deployment zones, began as early as 2014 and was projected to continue into 2020. Did not present a rate case or request commission approval. Benefits/costs were estimated out of a CBA format. Meter life not discussed, but rates were amortized for 15 years.

Technology Notes:

590,000 AMI meters, FAN, computer hardware.

Proceeding Notes:

Rate case

Cost Recovery Notes:

Requested to recover meters installed before Dec. 31, 2018 in their 2018 rate case, and a few future meters in the next rate case. Included book value of old meters.

Qualitative Benefit Notes:

Transition to a standard technology, increased data visibility, energy theft abatement, role as a 'foundational investment,' more information during outages, controlled due dates, faster reconnection, new rate designs, enhanced communication, enablement of other programs like Prepaid Advantage Pilot program.

Other Notes:

Rider MRM, an opt-out program, was approved in a separate docket.

Decision and Outcome Notes:

Approved through deferral of costs and rate case recovery; no specific application

DOMAIN 1	47%	Capital & Financial
DOMAIN 2	53%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Duquesne Light Co Duquesne Light					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$0.9	Restructured	2012	•	✓	501,594

Duquesne Light Co. proposed an initial smart meter procurement plan in 2009 which requested a grace period through 2012 to conduct smart meter research and utilize their AMR system. Duquesne filed several research updates, and in July 2010 filed their first CBA for AMI deployment. In August 2015, Duquesne filed an additional docket to request

approval for major changes to its plan to add outage communication and voltage monitoring capabilities. Duquesne filed a modification to their plan in 2015 for implementation of an enhanced outage communication and voltage monitoring capabilities.

Review Notes:

Cost-Benefit Methodology Notes:

Phases to implement communications technology: study of distribution, advanced outage capabilities, and finally distribution monitoring. CBA does not include costs 'beyond the meter' including HAN and related devices and systems. Also notes that many benefits were already captured by AMR installation in 1996. 7-year deployment schedule (2014 -2020), does not quantify benefits, Plan developed in phases, changed cost estimates throughout (outage communication and voltage monitoring added \$22-44M). The Final Plan divided out two main components: the FOCUS Project, which upgraded billing systems and MDMS to enable Tou, RT, and CPP rates; and the AMI project. The final budget was \$238M.

Technology Notes:

600,000 AMR to AMI meters. Itron meters with Zigbee technology, communications network, MDMS (MDMS), replacement of back office systems, head-end data collection system, LAN, WAN

Policy Notes:

Required by Act 129 and Implementation order

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

Incorporated stakeholder comment throughout plan development

Cost Recovery Notes:

Recovered through a "Smart Meter Charge," also requested recovery of its initial costs to create the plan

Qualitative Benefit Notes:

Leveraging remote disconnect/reconnect, automation of manual tasks, energy efficiency and demand response capabilities, upgrade of minimum capabilities, divides outage communication and voltage monitoring benefits into economic, reliability and power quality, and safety.

Decision and Outcome Notes:

Approved

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

El Paso Electric Co	El Paso Electric					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI	Meters

\$0.6

Integrated

2018

•

✓

0

El Paso Electric Co. proposed AMI in its 2018 IRP. The IRP emphasizes the need for AMI to implement TOU and dynamic pricing structures in addition to other customer programs. The IRP was not subject to commission approval.

Notable Resources:

Presentation: <https://e9radar.link/gjc>

2018 IRP draft: <https://e9radar.link/aec>

2018 Annual Report: <https://e9radar.link/hmrz>

SGIG: <https://e9radar.link/q6h8>

Review Notes:

Cost-Benefit Methodology Notes:

10-year deployment across different customer segments

Technology Notes:

390,000 meters

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

The 2019 company Update notes that EPE met with local leaders to discuss AMI

Cost Recovery Notes:

Noted incorporation into rates; also demonstrated how AMI would enable dynamic rate and TOU offers.

Qualitative Benefit Notes:

Enabling the maximum availability of pricing options, Service order Reductions (Disconnects & Reconnects), Energy Diversion (Theft) Reduction, Outage Management, Demand Control

Other Notes:

In 2010, EPE received a \$1M SGIG for a Distribution Automation project. This did not include smart meters.

Decision and Outcome Notes:

IRP filings are informational only, and the commission did not issue a decision. AMI deployment proceeded.

DOMAIN 1

Capital & Financial

DOMAIN 2

Operational

DOMAIN 3

Customer & Other

Utility / Holding Company

analysis

Empire District Electric Co Liberty Utilities

Detailed

\$B Class Year ben/cost/net app/deny/sett/pend AMI
Meters

\$0.5

Integrated

2019

✓

In 2019, Liberty-Empire wrote in its triennial IRP that after years of evaluating AMI, it would begin to deploy smart meters in 2020. The AMI initiative is part of Liberty-Empire's five-year capital plan and is coordinated with the Liberty Utilities corporate-wide rollout of AMI.

Notable Resources:

Report: <https://e9radar.link/f05>

Review Notes:

Cost-Benefit Methodology Notes:

173,000 AMI (residential and commercial), deployment over 2020-2021 (12-15 months of network and meter deployment). Stages of deployment integrate with billing, time-varying rate implementation, demand response, outage management, and other back office system plans.

Technology Notes:

Electro-mechanical meters replaced with AMI, ADMS, new customer billing system, communications network, OMS upgrades

Policy Notes:

In Docket No. EO-2019-0066, the commission issued an order 2018 establishing 23 special issues for Liberty-Empire to analyze in its 2019 triennial Integrated Resource Plan, including AMI implementation.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Three publicly-accessible stakeholder meetings held in the primary IRP docket before release

Cost Recovery Notes:

Unknown

Qualitative Benefit Notes:

Consumer choice, price signal cost reduction, Facilitates time variant pricing, enabled informed management of distribution grid, DER connection, may support CVR, provides customers with useful data, support measurement of DSM program effects; operational improvements, outage management, customer care, advanced billing

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Duke Energy Florida Duke						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$4.5	Integrated	2017		✓	✓	77,429

In August 2017, Duke Energy Florida filed a second revised settlement agreement to address adjustments in its base rates and several new programs. The second settlement agreement included brief information about AMI deployment at a cost of \$336M. As

settled, upon completion of AMI meter deployment, Duke will introduce a residential Time of Use rate. Details relating to AMI were limited.

Review Notes:

Cost-Benefit Methodology Notes:

AMI life of 15 years. Deployment timeline not clarified.

Technology Notes:

AMR replacement with AMI

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Worked with various stakeholder to develop the initial proposed settlement as a form of petition

Cost Recovery Notes:

Transferred net book value of mobile meter reading assets and commercial Silver Springs Network (SSN) meters to regulatory asset, new AMI permitted a depreciable life of 15 years. Will recover SSN meters through the energy conservation cost recovery clause through base rates Jan. 2018

Qualitative Benefit Notes:

Bill reduction, enablement of TOU rates, access to energy use information, usage alerts, outage notifications, customized billing options.

Other Notes:

Opt-out discussed via an opt-out specific tariff filing in Docket No. 20180088-EI. Indues TOU rate design.

Decision and Outcome Notes:

Approved Nov. 2017

DOMAIN 1 Capital & Financial

DOMAIN 2 Operational


DOMAIN 3 Customer & Other

Utility / Holding Company

analysis

Green Mountain Power Corp		Green Mountain Power				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$0.6	Restructured	2010	• •	✓		265,682

In September 2008, the Vermont Public Service Board approved a stipulation between Central Vermont Public Service Corp. (CVPS merged with Green Mountain Power, or GMP, in 2012), committing CVPS to AMI implementation "as fast as it reasonable could." CVPS filed an AMI Plan within its SmartPower Plan in April 2009 and noted plans to collaborate with GMP for networking capabilities. CVPS' application was approved in August 2010. GMP filed its own AMI Implementation Plan in December 2010 which included the supporting business case, measurement and verification plan, qualitative description of benefits, and communications plan. The plan was approved in July 2011,



when GMP began implementing AMI throughout its entire service territory. GMP partnered with other Vermont utilities to submit an application for SGIG funds; GMP's share of the grant was \$19.2M, of which GMP allocated \$11M for AMI deployment. The SGIG award provided funding for approximately 50% of the project costs. The estimated net cost to GMP for AMI was \$10.6M with the remaining approximately \$8M to be used to implement grid automation and customer information system projects. GMP's overall Smart Grid efforts are comprised of three separate projects: AMI; grid automation; and CIS overhaul.

Notable Resources:

Final Order: <https://e9radar.link/sqny>

2017 M&V Report: <https://e9radar.link/bd2a0>

Review Notes:

Cost-Benefit Methodology Notes:

The costs and benefits modeled over a 20-year useful life of the system, with expected completion in April 2013. The project's cash flow showed a NPV of \$500,000 at a 7.1% discount rate.

Technology Notes:

96,000 meters replaced, communications network and master station (MDMS and web services). Capabilities include voltage recording, outage management and distribution system monitoring and control.

Policy Notes:

CVPS was urged to implement AMI rapidly; GMP filed a plan one year after CVPS, and the two collaborated on network build-out prior to merging.

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

Vermont PUC hosted workshops with Central Vermont Public Service Corporation's (CVPS), Vermont Energy Investment Corporation, and Vermonters for a Clean Environment.

Cost Recovery Notes:

GMP recovered all incremental costs identified in its business case that quantifiable benefits will be realized and applied to reduce costs.

Qualitative Benefit Notes:

The quantifiable benefits included in the NPV calculation are primarily based on operational savings. GMP notes that additional benefits are likely to accrue with full deployment of the AMI system, implementation of new rate designs, and the use of In-Home Displays (IHDs) and Home-Area Network (HAN).

Other Notes:

GMP filed a revision to its plan in August 2011 to add an opt-out program to its AMI plan. GMP also filed AMI plan updates annually, including Business Case revisions. Of note, GMP's FY 2017 revisions show total AMI costs of \$105 million while the 2011 order approved total expenditure of \$21 million.

Decision and Outcome Notes:

Approved in July 2011.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Hawaii Electric Light Company HEI					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters

\$0.4	Integrated	2018		✓	
See Hawaiian Electric for details.					
<i>Notable Resources:</i>					
-:					

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Indianapolis Power & Light AES Corporation					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters

\$1.4	Integrated	2019	• • •	✓	105,134
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Indianapolis Power & Light (IPL) deployed 10,000 meters, a MDMS, communications system, and web portal as part of its SGIG project in 2010-2013. In May 2019, IPL included a full meter replacement project in its 2020 Transmission, Distribution and Storage System Improvements Charges (TDSIC) plan. IPL noted that its AMR failure rate would rise in 2019, and that the replacement of AMR with AMI mitigated the risk of failures while improving the distribution system.

Notable Resources:
SGIG:

Review Notes:

Cost-Benefit Methodology Notes:

Discusses both a 3-year and 5-year deployment schedule starting in 2020, did not submit a formal CBA/business case; calculated net benefits of deployment in TDSIC but did not give a timeline. \$17.6 million net benefits in the accelerated plan. \$55.9M capital expenditures.

Technology Notes:

Replace 350,000 residential/small commercial AMR with AMI.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Mentions asset management stakeholder discussion prior to docket

Cost Recovery Notes:

Recovered through an AMI Rider

Qualitative Benefit Notes:

Engineering and distribution system operational benefits, distribution outages benefits, avoidance of AMI-related meter failure costs and risks, reduced field trips for AMR meters and disconnect/reconnect purposes, customer care benefits, improved public and employee safety, reliability benefits

Other Notes:

Shows different costs in the TDSIC and rate case; estimated \$93.6M capX in testimony over three years but \$55.9M in TDSIC plan. Opt-out development required by final order.

DOMAIN 1	66%	Capital & Financial
DOMAIN 2	34%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Indiana Michigan Power	American Electric Power				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$1.4	Integrated	2019	•	✓	11,176

In 2009, Indiana Michigan Power Co. (I&M) launched a 10,000 meter pilot project. In May 2019, I&M included a provision for AMI deployment in its 2020 rate case. I&M noted that 35% of its AMR meters would reach the end of their design life by the proposed start of AMI deployment, and that AMI will provide visibility into its distribution grid and reliability.

Notable Resources:

Review Notes:

Cost-Benefit Methodology Notes:

Three year deployment, 2020-2022, costs shown through 2022. Total cost of \$93.6M. End-life 15 years.

Technology Notes:

AMR to AMI. AMI meters, communications network, customer information/engagement systems, MDMS.

Proceeding Notes:

Rate Case

Stakeholder Engagement Notes:

In IRP processes; not explicitly in the AMI case

Cost Recovery Notes:

AMI Rider. Did not explicitly state recovery of AMR meters.

Qualitative Benefit Notes:

Improved reliability, public safety, mitigating tampering and theft, employee safety, meter accuracy, remote reconnection. Other section for customer experience improvements, and future VVO and grid sensor integration.

Other Notes:
Included an opt-out program and rider with application

DOMAIN 1 Capital & Financial
DOMAIN 2 Operational
DOMAIN 3 Customer & Other

Utility / Holding Company

analysis

Indiana Michigan Power Co	American Electric Power				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$0.3	Integrated	2019	•	✓	

In Indiana Michigan Power Co. (I&M)'s 2020 rate case, I&M applied to deploy AMI across its Michigan service territory over a two-year period from 2019 through 2020. I&M cited AMI as a foundational technology to enable the incorporation of DERS at scale, and noted that the application was filed at a time of declining cost and enhanced functionality of AMI technology.

Notable Resources:

Review Notes:

Cost-Benefit Methodology Notes:

Two-year deployment. Estimated capital cost of the AMI Project in Michigan is \$24.9 million.

Technology Notes:

AMR to AMI; I&M plans to systematically replace 17,000 AMR meters, 12% of their total meters in Michigan, as a pilot for full deployment in 2020.

Proceeding Notes:

Rate Case

Cost Recovery Notes:

AMI investment covered through rate case revenue requirement

Qualitative Benefit Notes:

Improved reliability, public safety, mitigate tampering and theft, improved meter accuracy, remote reconnection, environmental, impact. Separate section for customer experience benefits.

Other Notes:

Opt-out provisions were considered in Docket No. U-20137. I&M in Indiana also filed for AMI the same year.

DOMAIN 1 Capital & Financial
DOMAIN 2 Operational
DOMAIN 3 Customer & Other

Interstate Power and Light		Alliant					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend			AMI Meters

\$1.6	Integrated	2017	• •	✓			
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Interstate Power and Light (IPL) began evaluating AMI in 2009, and incorporated deployment into its strategic planning in 2017. IPL's initial plan was to deploy AMI from 2018-2019, but the company decided to accelerate deployment to begin in 2017 due to meter replacement needs. IPL filed full AMI deployment plans with the commission in its 2017 opt-out tariff request, and requested cost recovery for the project in its 2019 rate case. IP&L cited AMI as an enabling technology; key to addressing customer preferences and grid modernization strategy. By March 2019, IPL had installed 470,000 residential and small commercial electric meters and approximately 30,000 commercial and industrial electric meters.

Notable Resources:

Review Notes:

Cost-Benefit Methodology Notes:

15-year analysis period. Includes both Capital and O&M for hard and soft benefits/costs

Technology Notes:

Prior to beginning deployment of AMI meters, IPL had 374,861 analog electric meters in service. From 2010 until its deployment of AMI, IPL purchased only digital meters. Prior to beginning deployment of AMI meters, IPL had 95,231 non-AMI digital electric meters in-service.

Proceeding Notes:

Bundled

Cost Recovery Notes:

IPL is projecting that the AMI Project will cost \$160.2 million when completed. The projected cost includes \$4.7 million in contingency funding. The total cost of the AMI Project could be less than \$160.2 million if some of the forecasted costs or risks don't materialize.

Qualitative Benefit Notes:

IPL engaged an engineering and consulting firm for the CBA, which addressed both "hard" benefits and "soft" benefits. Hard benefits are ones that result in a measurable decrease in costs as a result of AMI implementation. Benefits that are intangible such as improved customer service or faster outage restoration are considered soft benefits.

Several qualitative benefits beyond those identified in the B&V analysis including; automatic outage notification; reduced vehicle emissions as a result of reductions in manual processes that required vehicle travel; deployment of the FlexNet system also positions IPL to take advantage of other Sensus products that are available.

Other Notes:

Opt-out included.

DOMAIN 2 97% Operational
DOMAIN 3 0% Customer & Other

Utility / Holding Company

analysis

Kansas City Power & Light Co		Evergy					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI		Meters
\$0.8	Integrated	2015	• •	✓			236,744

KCP&L first deployed 14,000 meters as part of its SGIG demonstration project in June 2011. In 2014, KCP&L included AMI in its 2015 rate case, which proposed the inclusion of AMI costs in its base rates. No other AMI deployment dockets were cited. The company described AMI as a necessary infrastructure upgrade that enables demand-management programs. In KCP&L's Missouri-filed 2015 IRP, the parent company confirmed 100% deployment in KCP&L by 2016 as part of its demand-side resource plan.

Notable Resources:

Expansion Article: <https://e9radar.link/1g84>

SGIG: <https://e9radar.link/a57v>

Review Notes:

Cost-Benefit Methodology Notes:

Pilot in 2010, completed in phases by county, reached 50% deployment in 2015, aspired to reach 100% by 2016, proposed in rate case; costs are scattered throughout rate papers, no benefits provided. Costs and benefits provided in 2015 dollars, from various rate papers in 2015 rate case Application. No business case provided.

Technology Notes:

AMR to AMI, distribution and outage management system, energy management system, MDMS, customer billing system. company notes that participation in Southwest Power Pool's Day 2 market necessitated technology advancements

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Engaged stakeholders through a Navigant demand-side study, completed in the MO IRP case

Cost Recovery Notes:

AMR amortization was a contentious issue, agreed to amortize over a ten-year period

Qualitative Benefit Notes:

Not well described; mostly describes AMI as enabling other technology. Outage management, meter reading reduction, integration of modern customer desires

Other Notes:

In 2010, KCP&L in Missouri deployed 14,000 AMI meters as part of its Smart Grid Pilot project. In Docket No. 19-GIME-012-GIE, the Kansas commission ruled that opt-out programs are not required from KCP&L and other utilities.

Decision and Outcome Notes:

Approved

DOMAIN 1	0%	Capital & Financial
DOMAIN 2	100%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Kansas City Power & Light Co		Energy	Detailed		
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$1.0	Integrated	2015		✓	284,417

Kansas City Power & Light Co. (KCP&L) was awarded a DOE grant (\$19M of the \$40M cost) to support its Smart Grid Demonstration Project in 2015. In April 2015, KCP&L and KCP&L Greater Missouri Operations Co. filed a joint IRP which included an AMI deployment plan. The IRP described AMI as an infrastructure improvement that enables other key technology and software. As of 2015, 50% of AMI was deployed through KCP&L Kansas and Missouri territories, and the companies cited plans to finish deployment by 2020. The IRP was approved in December 2015.

Notable Resources:

Reference: <https://e9radar.link/cffu>

Review Notes:

Cost-Benefit Methodology Notes:

Completed AMI Metro project 2014-2016, installed MDMS 2016, CIS in 2017, reached rural populations 2018-2020

Technology Notes:

AMI head end, MDMS, DMS, Distribution SCADA, DNA, Outage Management, and DERM, Distribution Control and Data Acquisition

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

KCP&L hired Navigant Consulting to conduct a DSM Resource Potential Study, and they engaged a broad range of stakeholders to review and comment on study methodologies and findings

Qualitative Benefit Notes:

Not well described; mostly describes AMI as enabling other technology. Also notes that this is a necessary infrastructure upgrade

Other Notes:

One year prior to the AMI proposal, in June 2014, KCP&L approved DSM programs that mentioned meter capabilities but not installation (Docket No. EO-2014-0095)

Decision and Outcome Notes:

Approved

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Kansas Gas & Electric Co		Evergy			Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$1.0	Integrated	2014		✓	288,656
See Westar Energy for details.					

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Kentucky Utilities		PPL					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters		
\$1.5	Integrated	2018		✓ ✓	2,509		

As part of Kentucky Utilities (KU) and Louisville Gas & Electric (LG&E)'s joint 2014 DSM-EE program, each company deployed 5,000 AMS meters as a voluntary pilot program. Following the pilot, LG&E independently proposed AMS deployment as part of its November 2016 rate case. In April 2017, LG&E and KU signed a stipulation in the rate case which withdrew the AMS CPCN; established an AMS collaborative; and approved the joint DA project. Criticism of the AMS program questioned the benefit calculations, analysis periods and customer engagement projections. The stipulation was formally accepted in June 2017. In 2018, KU and LG&E jointly proposed full AMS deployment to replace 531,000 electric meters at a cost of \$146M. In August 2018, the commission denied the application, citing concerns about the existing meters obsolescence and the net benefits that might result in "wasteful duplication."

Notable Resources:

Order: <https://e9radar.link/86a04>

Application: <https://e9radar.link/a192f>

Review Notes:

Cost-Benefit Methodology Notes:

AMS Cost Benefit Summary 2018-2040 (which includes AMS deployment in KU's Virginia service territory); 20 year service life and a depreciable 15 year life. NPV 6.32% discount rate - combined data for LG&E and KU. The NPV benefit of deploying AMS compared to continuing to use the existing metering infrastructure is \$28.5 million through 2040, with net nominal benefits of \$483 million over the same period.

Technology Notes:

AMI, MDMS, Meter Operations Center, integration with the Companies' Meter Asset Management system

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

Engaged intervenors from previous rate cases in collaborative discussions and repeatedly

noted intentions to communicate with stakeholders throughout implementation

Cost Recovery Notes:

Noted in application an intention to file for recovery in future rate case; stated that AMS would "have a relatively modest bill impact."

Qualitative Benefit Notes:

The AMS meters will have two-way communication capabilities typical of smart meters, which will communicate usage and other relevant data at regular intervals, but will also be able to receive information from the companies, such as software upgrades and requests to provide meter readings in real time.

Other Notes:

A large driver of savings from AMS is \$402.3 million (current/nominal dollars) for the recovery of non-technical losses. Non-technical losses are energy a utility produces but is not metered or billed and is not lost due to losses one would expect in any electrical system, e.g., line losses resulting from electrical resistance in transmission and distribution lines. Most non-technical losses result from theft of service, which is much easier to detect using smart meters, but they can also result from meter configuration errors or meter malfunctioning.

Decision and Outcome Notes:

In August 2018, the commission denied the application stating that they did not demonstrate the current meters are obsolete or that the benefits of the proposal outweigh the costs.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Long Island Power Authority PSEG					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$3.6	Other	2016	• • •	✓	63,546

In 2010, Long Island Power Authority (LIPA) began installing a Smart Energy Corridor which was funded in part through a SGIG. The corridor project included smart meters, monitoring equipment, and DA. In 2014, LIPA proposed to deploy 25,000 AMI meters in its annual Utility 2.0 filing. In its 2017 Utility 2.0 Update, LIPA instituted a formal, long-term phased approach to AMI. CBAs were proposed in both the 2017 and 2018 cases. In its 2019 Update, LIPA proposed to replace 250,000 meters per year through 2022.

Notable Resources:

Pilot: <https://e9radar.link/y3r>

SGIG: <https://e9radar.link/1ojf>

Review Notes:

Cost-Benefit Methodology Notes:

LIPA initiated several pilot project deployments and considered different deployment strategies before proposing a longer-term AMI deployment schedule in 2014, broken down into 5 initiatives. Installation between 2015-2018. In 2019, full-scale deployment in annual phases. of 25,000 meters. BCA conducted in 2018 used societal cost test, utility

cost test, and rate impact measure test.

Technology Notes:

210,000 AMI with two-way 900 MHz synchronous frequency hopping mesh communication, technology, MDMS

Policy Notes:

No AMI requirements or policies, but the REV strategy is supported by AMI deployment

Proceeding Notes:

Bundled with long-term planning and rate case

Stakeholder Engagement Notes:

In the 2015 Utility 2.0 Update, LIPA notes that it held more than 25 informational meetings with DPS Staff on aspects of AMI. A financial model was submitted to staff in May 2015

Cost Recovery Notes:

commission recommended inclusion in the 2016 rate case. In 2019, noted developing rate pilots for TOU and EV rates

Qualitative Benefit Notes:

Platform for REV, operational efficiency, enhanced customer service. Theft detection, outage calls, fewer complaints, GIS accuracy, meter testing, vehicles, fuel and emissions, meter accuracy, capacity and energy, and many more.

Other Notes:

Following the phases and approvals of the AMI plans is difficult and scattered between cases

Decision and Outcome Notes:

The DPS commented at different stages of deployment, but due to the structure of LIPA, sent recommendations to the LIPA board to make final decisions. Final decisions were not posted in the docket, but AMI deployment proceeded.

DOMAIN 1	6%	Capital & Financial
DOMAIN 2	94%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Entergy Louisiana Entergy						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$3.7	Integrated	2016	• • •	✓	✓	11,684

Entergy Louisiana filed a petition for a full, three-year deployment of an AMS system and accompanying technology in November 2016. The application was approved in August 2017.

Review Notes:

Cost-Benefit Methodology Notes:

Phased deployment from 2018-2022, 15-year useful life, 3-year deployment, costs in 2016

PV dollars (nominal also available)

Technology Notes:

981,000 electric meters and 98,000 gas communications meters, communications network, related supporting systems (MDMS, updated outage management system), new DMS

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

stipulation agreement formed

Cost Recovery Notes:

Proposed two charges for gas and electric operations called "AMS Customer Charge," enacted three months after IT infrastructure was put in place, to be reevaluated annually until the completion of the project and creation of Final AMS Customer Charge

Qualitative Benefit Notes:

Outage management, billing accuracy, reduced call center volume, verification of information online, cost saving esp. for distributed generation customers, distribution system optimization and monitoring, system reliability, and future benefits such as asset failure identification, flexible billing and payment options,

Other Notes:

Proposed an opt-out option in its cost recovery

Decision and Outcome Notes:

Approved via uncontested stipulation agreement

DOMAIN 1	1%	Capital & Financial
DOMAIN 2	97%	Operational
DOMAIN 3	1%	Customer & Other

Utility / Holding Company

analysis

Louisville Gas & Electric PPL					Detailed	
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters	
\$1.1	Integrated	2018	• • •	✓ ✓	4,493	

See Kentucky Utilities for details.

Notable Resources:

Application: <https://e9radar.link/a192f>

Order: <https://e9radar.link/86a04>

Review Notes:

DOMAIN 1	0%	Capital & Financial
DOMAIN 2	84%	Operational
DOMAIN 3	16%	Customer & Other

Massachusetts Electric National Grid

Detailed

\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
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\$2.3	Restructured	2015	• • •	✓	15,467
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In compliance with Section 85 of the Green Communities Act, Massachusetts Electric (dba National Grid) filed for a smart grid pilot program in December 2011 which contained smart meters. In August 2015, National Grid filed their Grid Modernization Plan (GMP), which included investments in AMI, SCADA, advanced distribution automation, and voltage management. In May 2018, the DPU issued an order denying the AMI portion of National Grid, Unitil, and Eversource's plans, though grid-facing improvements were approved. DPU cited concerns with unrealistic benefit predictions, but expressed openness to AMI with further study. Other stakeholders noted that Massachusetts EDCs already have automated meter reading devices, which eliminated meter-reading benefits (typically a large portion of AMI benefits), in addition to concerns about TVR benefits and billing capabilities.

Review Notes:

Cost-Benefit Methodology Notes:

15-year CBA analysis, 10-year GMP and costs w/ a 5-year short term implementation plan (STIP) and 5 years of investments. NG proposed four scenarios for consideration, with costs ranging from \$74-369M: AMI-focused plan, grid-focused scenario w/ 30% AMI deployment or 70% opt-in AMI, or opt-in AMI with expanded pilot. Full excel sheets of CBA for each scenario are available; uses MA-specific template w/out description of tests used. Includes bundled benefits including EV integration and VVR. Costs redacted. Balanced plan shows benefit-cost ratio of 0.90; AMI-focused plan 1.02

Technology Notes:

National Grid had 1.3M electric meters in service in MA, of which 1M were AMR meters. Only a portion of meters were interval, time of use and demand meters. Plan included communications, distribution control systems, feeder monitors, and other associated infrastructure (e.g. load control switches, smart thermostats, etc.)

Policy Notes:

D.P.U. 12-76-C requires the electric distribution companies to submit a business case in support of the short term implementation plan (STIP) portion of their GMPs. Template provided.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

National Grid participated in the Department's working group before application and engaged in an extensive stakeholder engagement process. DPU's May 2018 order called for additional stakeholder meetings.

Cost Recovery Notes:

Included revenue-neutral changes to rate design: TVR proposal (w/ billing system upgrades) and a four-tiered customer charges. DPU later approved a short-term targeted recovery mechanism, the Grid Modernization Factor, for pre-authorized (non-AMI) investments.

Qualitative Benefit Notes:

AMI-specific: Improved meter accuracy, detection of theft, easier on/off service, inactive

use mitigation, avoided capital (value of the current meter replacement), incremental CVR/VVO savings, improved ISO settlement process, and incremental outage management savings.

Decision and Outcome Notes:

DPU rejected the customer-facing (AMI) portions of the companies' investments but approved the grid-facing portions (voltage reduction, distribution automation; \$82M for National Grid). The order notes that all three utilities have already deployed similar meters, and that issues including access to customer data, billing limitations (esp. for TVR), weak business cases, and uncertainty of customer participation drove their decision.

DOMAIN 1	45%	Capital & Financial
DOMAIN 2	52%	Operational
DOMAIN 3	3%	Customer & Other

Utility / Holding Company

analysis

Maui Electric HEI					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$0.4	Integrated	2018		✓	30

See Hawaiian Electric for details.

Notable Resources:

General link; replace/remove: <https://e9radar.link/hfj>

Phase I Approval: <https://e9radar.link/61m>

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Metropolitan Edison Co FirstEnergy					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$0.8	Restructured	2014	•	✓ ✓	326,410

The Pennsylvania FirstEnergy companies (Metropolitan Edison Co., Pennsylvania Electric Co., and Pennsylvania Power company [Penn Power]) filed their smart meter implementation plan (SMIP) jointly in August 2009. This plan created described company actions for the commission-approved 30-month grace period. During the grace period in 2010, FirstEnergy deployed limited AMI, DA, VVO, and direct load control devices in the MetEd territory through a SGIG. In January 2013, the FirstEnergy companies proposed a smart meter deployment plan, which included an assessment period which studied an initial deployment in the Penn Power service territory and full deployment over three years. The plan also added plans to deploy AMI in West Penn Power territory, which was recently acquired by FirstEnergy. The plan was approved in March 2014, but was quickly followed by a petition from the FirstEnergy companies to accelerate the deployment

timeline by one year. The commission accepted the accelerated plan in June 2014. Debate around cost recovery and annual tariff adjustments continued in several dockets after the approval of the deployment plan.

Notable Resources:

SGIG: <https://e9radar.link/pmw3>

Review Notes:

Cost-Benefit Methodology Notes:

20 year life cycle costs, total cost of \$1.3B, potential savings over life cycle of \$417M (primarily in meter reading and meter service categories). Costs shifted during accelerated plan proposal but did not increase overall. Deployment in 3 phases: a post-grace period (fulfillment of new service applications and early adopters), solution validation stage (2013-2017 construct network infrastructure, 60,000 meters, evaluated in Penn Power's territory, lessons observed), and full deployment stage (2017-2019 to install 98.5%; remaining meters through 2022).

Technology Notes:

2.1M meters. Buildout of LAN, utilization of HAN and WAN.

Policy Notes:

Mandated by legislative (Act 129) and commission directives.

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

SMIP team held stakeholder meetings, held an additional meeting to consider the internal and external education and communications plan. Also participated in the web portal working group. PUC and companies organized public hearings and created a stipulation agreement to solve cost recovery issues

Cost Recovery Notes:

Each company implemented its over smart meter technologies charge rider, SMT-C, in separate dockets, approved June-August 2010. Agreed to use a reconcilable adjustment clause, not rolled into base rates. Companies neglected to show cost savings in August 2015 tariff filings, which resulted in suspension of tariffs and renewed debate about cost calculations and methodology. A stipulation solved the debate.

Qualitative Benefit Notes:

Discusses cost savings but not explicit benefits. Cites a review prepared by the Smart Grid Consumer Collaborative which includes studied benefits

Decision and Outcome Notes:

The deployment plan was first approved in March 2014; accelerated plan was approved in August 2014. Cost recovery was a recurring issue, settled in stipulation in April 2015.

DOMAIN 1

Capital & Financial

DOMAIN 2

Operational

DOMAIN 3

Customer & Other

Utility / Holding Company

analysis

Minnesota Power Inc Allete

Detailed

\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
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\$0.7	Integrated	2010	✓		67,631
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Minnesota Power began to evaluate AMI technology in 2007. In 2010-2014, the company expanded upon a 2008 pilot by deploying AMI endpoints and infrastructure. A \$1.5M SGIG helped fund \$1M of the \$5.4M project. Following the 2010 expansion, Minnesota Power provided information on the gradual deployment of AMI in commission-mandated smart grid reports and rate cases. An outage management system was integrated into the AMI system in 2011, and communications infrastructure was fully functional by 2019. A MDMS system was also installed in 2019. Purchase and deployment of AMI was estimated to continue through 2023, and the project was largely funded through Minnesota Power's depreciation budgets. In December 2019, Minnesota Power requested a reconnection pilot program in order to waive reconnection fees for certain residential customers with AMI meters. At the time, 60% of Minnesota Power's residential customers had AMI technology.

Notable Resources:

SGIG: <https://e9radar.link/gf3j>

Presentation: <https://e9radar.link/erky>

Review Notes:

Cost-Benefit Methodology Notes:

Gradual replacement of AMI through depreciation of old meters, incorporated through rate cases.

Technology Notes:

AMR to AMI, MDMS, OMS, and communications systems in phases

Proceeding Notes:

Rate Case

Cost Recovery Notes:

Recovered through capital addition/depreciation riders

Qualitative Benefit Notes:

A foundational technology for further smart grid initiatives and customer experience; accurate meter reading; customer portal support; detection of overheating

Other Notes:

Cited incremental savings in dual fuel reduction, load research, reduction of required annual capital, and O&M savings

Decision and Outcome Notes:

Incrementally approved via rate cases and SGIG

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Entergy Mississippi Entergy

Detailed

\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI
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\$1.3

Integrated

2016

• • •

✓

✓

68

Meters

In November 2016, Entergy Mississippi proposed system-wide AMI deployment. In May 2017, the commission approved Entergy's application. The commission's order accepted and adopted a May 2017 Joint stipulation between the company and commission Staff, holding the company responsible for updating its Formula Rate Plan through September 2019.

Review Notes:

Cost-Benefit Methodology Notes:

Costs and benefits reported in nominal and net present value over a 15 year period. Benefits are divided into operational benefits and other benefits, and then other benefits to customers (i.e. increased billing accuracy) are not included in the BCA. Notably, the more-detailed version of the BCA is listed as confidential, but a summary table provides important information.

Technology Notes:

Entergy Mississippi requested a CPCN to deploy AMI, a communications network, MDMS, an Outage Management System, and a Distribution Management System.

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

PUC Staff and Entergy entered into a stipulation in this proceeding.

Cost Recovery Notes:

Entergy requested a CPCN to be incorporated into rates in a future rate case.

Qualitative Benefit Notes:

Entergy outlined many non-quantified benefits, including: improved outage management benefits; billing accuracy; a potential decrease in calls to the call center; safer field operations; cost savings for customers who install self-generation equipment; and the options for additional distribution system optimization and monitoring.

Other Notes:

Entergy proposed an opt-out option for residential customers only.

Decision and Outcome Notes:

The commission issued an order approving the AMI deployment. The "key" benefit that the order mentions is the ability to accurately identify outage locations. Adopted stipulation.

DOMAIN 1	0%	Capital & Financial
DOMAIN 2	100%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Mississippi Power Co Southern Company

Detailed

\$B Class Year ben/cost/net app/deny/sett/pend AMI

\$0.9						Meters
Integrated	2016	•	•	✓	✓	20

In 2009, Mississippi Power submitted its initial request to deploy AMI across its territory - approximately 189,000 meters. No commission action was taken in this case for several years. In April 2016, Mississippi Power filed a supplemental petition to replace its AMR with AMI. The updated analysis revealed \$3.6B in net savings over a seventeen-year period. In May 2018, the commission issued an order approving the supplemental petition as modified by a stipulation.

Review Notes:

Cost-Benefit Methodology Notes:

2-year capital investments during deployment period. Quantitative benefits were listed in annual savings, but not all of them included quantitative savings (including Meter Reading Savings). Estimated 15-year life.

Technology Notes:

AMR to AMI, replacement of semi-manual outage notification system.

Proceeding Notes:

AMI

Qualitative Benefit Notes:

Mississippi Power states that the AMI technology platform that would reduce Mississippi Power's meter-reading costs, improve customer satisfaction, enhance energy efficiency and demand-side capabilities, and provide safety benefits to employees.

Decision and Outcome Notes:

The commission approved the stipulation that was issued by Mississippi Power and Staff. This stipulation included annual revenue requirements from 2018-2022 with net O&M expenses.

DOMAIN 1	40%	Capital & Financial
DOMAIN 2	12,501%	Operational
DOMAIN 3	374%	Customer & Other

Utility / Holding Company

analysis

KCP&L Greater Missouri Operations Co.		Evergy				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI	Meters
\$0.8	Integrated	2015		✓		193,027

See Kansas City Power & Light Co. for details.

Notable Resources:

-:

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Narragansett Electric National Grid					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters

\$1.0	Restructured	2017	• •	✓	257
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In November 2017, Narragansett Electric (National Grid) proposed a Power Sector Transformation Plan (PSTP) and an associated rate case which outlined several grid-related investment plans. The PSTP included AMF deployment. In June 2018, parties submitted a settlement agreement in the PSTP proceeding. The AMI portion of the PSTP settlement agreement included a requirement for National Grid to file a revised business case, including a cost benefit analysis, data governance plan, and a detailed customer engagement plan. The settlement also requires the cost benefit analysis to incorporate the cost/benefit framework filed in May 2017 in the electric distribution system investigation docket. The commission approved the settlement in June 2018, which acknowledged that AMI is a foundational part of grid modernization, though it didn't explicitly authorize deployment. In compliance with the settlement, starting in 2018, National Grid engaged in several stakeholder processes to develop a new AMI business case and implementation plan. In National Grid's 2018/2019 Annual Report, the company committed to filing an updated request for AMF approval and business case in 2020.

Notable Resources:

AMF presentation:

2018/2019 Annual Report:

Review Notes:

Cost-Benefit Methodology Notes:

Initial CBA proposed four scenarios, with varying opt-in participation and savings results. 20-year NPV. Opt-out with high savings resulted in highest B/C ratio of 1.27; deployment with New York service territories resulted in >1 B/C ratios. Used the societal cost test. The settlement agreement in the PSTP proceeding included many requirements for a revised business case for AMI.

Technology Notes:

AMR to AMI gas and electric meters, communications equipment, MDMS

Policy Notes:

The AMF framework approved in the Power Sector Transformation Plan proceeding is meant to underpin future AMF proposals. There is also a cost benefit analysis framework that the commission adopted in November 2017.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Settlement process emphasized the creation of a stakeholder engagement process

Cost Recovery Notes:

Considered separately in a rate case; will be re-considered when AMI is re-proposed

Qualitative Benefit Notes:

Enhanced energy management capability; enablement of third-party programs and offerings; customer service enhancements; and savings on electric vehicle charging costs; grid benefits, including volt-var optimization; avoided O&M costs; storm outage management; and revenue benefits. National Grid also noted broader benefits including:

societal benefits; enabling distributed energy; enabling future coordination; and enabling innovative rate design options.

Decision and Outcome Notes:

The commission did not deny the company's request for AMI outright, but instead requested additional information and stakeholder engagement. The commission expressed support for the grid projects overall.

DOMAIN 1	0%	Capital & Financial
DOMAIN 2	42%	Operational
DOMAIN 3	58%	Customer & Other

Utility / Holding Company

analysis

Nevada Power	MidAmerican					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters	
\$2.1	Integrated	2010	• •	✓	918,964	

In 2006, the Nevada commission directed Nevada Power to study costs and benefits of the Southern California Edison residential smart metering programs in order to implement smart meters into its service territory. The commission also expressed support for NVE's SGIG application in 2009, which included provisions for both Nevada Power company and Sierra Pacific Power company (sister companies of NVE). In March 2010, NVE filed its Triennial IRP for 2010-2029. Within the IRP, the Advanced Service Delivery initiative included AMI rollout, initially estimated to cost \$301M for both companies. Nevada Power's cost was offset to \$95.4M due to its \$110.3M share of the \$138M SGIG grant given to NVE.

Notable Resources:

PUC Website: <https://e9radar.link/0j3t>

Application Summary: <https://e9radar.link/68e>

Review Notes:

Cost-Benefit Methodology Notes:

20-year projected lifecycle, 2-year deployment (2010-2012), 35-year life also modeled. NVE created three scenarios for its DSM: base, low and high portfolios. Proposed four phases, which note validation of the ASD business case along the way. Business case included only operational savings. Benefits for Nevada Power were estimated at \$286M in a 20-year timeframe. Notably, 61% of cost-savings were estimated to come from workforce reductions (meter reading, billing, etc.).

Technology Notes:

1.5M electric and gas meters (1.3M for electric meters), a Home-Area Network, AMI deployment, MDMS, an Energy Management System, DRMS which allows messaging to in-home displays and programmable controllable thermostats via the new AMI system.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

NVE established DSM Collaborative, which provided insight to the 2010 Triennial Demand Side Plan. NVE also notes an extensive, two-year process of planning/integration for its DSM plan, includes stakeholder engagement map for DSM.

Qualitative Benefit Notes:

Broken into economic (operational, demand response, EMS), environmental, reliability and power quality, energy security, and societal benefits. Contains estimated 2010 baselines and metrics for measurement. commission Staff notes that AMI benefits often grouped broadly into customer, operational, and price responsive demand benefits.

Other Notes:

Nevada Energy (NVE) developed the first smart meter-specific cyber security plan that was accepted and approved by the DOE through a technical review panel. NVE's triennial IRP set smart meters as the utility's standard metering option for all classes of customers.

Decision and Outcome Notes:

Approved in July 2010

DOMAIN 1	50%	Capital & Financial
DOMAIN 2	50%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

New York State Electric & Gas Iberdrola					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$1.2	Restructured	2019	• • •	✓	

In December 2016, New York State Electric & Gas Corporation (NYSEG) and Rochester Gas and Electric Corporation (RG&E) jointly proposed an AMI deployment plan, petitioning for 1.8M meters deployed over four years (2018-2021), including meter deployment in a REV demonstration project. In March 2017, the commission put a temporary hold on case action in order to address severe weather impacts in the state. In May 2019, the companies opened a joint 2020 rate case that included recovery of its electric and gas AMI investment in addition to an updated business case. The commission determined that the 2016 AMI docket was duplicative, and closed the case in order to consider the updated rate case proposal. For all four businesses (gas and electric for NYSEG and RG&E), the companies estimated a cost of \$549.2M and benefits of \$829.9M.

Review Notes:

Cost-Benefit Methodology Notes:

4-year deployment, calculated 20-year NPV in 2019 \$, expected 20-year life. BCA societal test used as primary reference, though SCT was used in settlement. Costs and benefits analyzed from different AMI programs: Time-varying pricing, behavioral conservation, AMI-outage management system integration, and CVR/VVO. Incorporated pre-deployment costs from 2017-2018 by adjusting for 2019 inflation.

Technology Notes:

Head-end system for data collection, MDMS, telecommunications network, enterprise analytics platform, upgrade of SAP CCS to Customer Relationship Management & Billing

Policy Notes:

No NY-specific AMI requirements, but REV encourages AMI

Proceeding Notes:

Rate Case

Stakeholder Engagement Notes:

Consisted of seven activities: Initial DSIP workshop, outreach to solar developers, outreach to Energy Smart Community team, outreach to public officials, outreach to large customers, participation in Supplemental DSIP Stakeholder Engagement Process, and less formal stakeholder engagements.

Cost Recovery Notes:

Dynamic rate options to be evaluated in Energy Smart Community project, including TOU, CPP, TOU-CPP, Day-type variable pricing, and real-time pricing

Qualitative Benefit Notes:

Less theft of service, meter inaccuracy, write-offs and consumption on inactive meters. Also details objectives and how AMI enables them, including creation of customer value, animating markets, enhanced fuel diversity, reduced emissions, and system reliability and efficiency,

Other Notes:

The Companies note that 12,000 meters will be included in the Energy Smart Community Project, which will serve as a REV Demonstration project

Decision and Outcome Notes:

The AMI proposal docket was closed in June 2019 because the AMI proposal was superseded by companies' AMI proposal in pending 2020 rate cases

DOMAIN 1	0%	Capital & Financial
DOMAIN 2	82%	Operational
DOMAIN 3	18%	Customer & Other

Utility / Holding Company

analysis

Niagara Mohawk Power National Grid		Detailed		
\$B	Class	Year	ben/cost/net	app./deny/sett/pend
				AMI Meters
\$2.2	Restructured	2019	• •	✓ 3,337

Niagara Mohawk (dba National Grid) first described plans to deploy AMI in its 2016 Distribution Implementation System Platform plan. In 2017, National Grid deployed limited AMI as part of a REV demonstration project, and in its 2017 rate case, National Grid filed an updated AMI business case with a proposal for full deployment of 1.7M meters. After a lengthy stipulation process, National Grid agreed with staff that its AMI plan was not ready for consideration and agreed to resubmit its business plan. The commission approved this notion in March 2018 and required more stakeholder engagement. In September 2019, National Grid filed a supplemental filing which updated its AMI cost and benefit projections, lowering cost and adding new benefit categories.

Review Notes:

Cost-Benefit Methodology Notes:

Installation of 1.7M electric and 640K gas ERTs. 5.5-year deployment, starting in 2021, business case follows commission BCA framework; uses societal, utility cost, and rate impact measure tests. The four savings scenarios revealed benefits ranging from \$584M to \$984M. Joint proposal (rejected) moved start year back 2 years to align with AMR

replacement schedule, and shortened implementation time from 5 to 4years.

Technology Notes:

AMR to AMI gas and electric meters, telecommunications, back-office IT, and products and services to empower customers to conserve energy.

Policy Notes:

No NY-specific AMI requirements, but REV encourages AMI

Proceeding Notes:

Rate Case

Stakeholder Engagement Notes:

The Joint Proposal directed an AMI collaborative process (4 months, 17 stakeholder groups, 8 meetings). Proposed to conduct stakeholder meetings for a customer engagement plan.

Cost Recovery Notes:

Requested to pilot the TVP rate approach, and incorporate an opt-out TVP tariff in its next rate case, along with rate increases annually

Qualitative Benefit Notes:

Customer benefits include: Enhanced customer energy management and reduced consumption, third-party programs and offerings, innovative rate design options, enablement of smart home devices, outage management, customer service enhancements. Utility benefits include: grid planning and load management, remote connect/disconnect, reduced meter investigations, outage reporting, VVO and CVR, theft detections. Societal benefits include emissions reduction.

Other Notes:

The September 2019 supplemental filing contains information on potential cross-jurisdiction AMI deployment in National Grid's Rhode Island and Massachusetts territories

Decision and Outcome Notes:

Removed from rate case pending adjustments: Staff requested a customer engagement plan, revision of costs (staff estimated that costs exceed benefits), creation of a stakeholder collaborative

DOMAIN 1	15%	Capital & Financial
DOMAIN 2	60%	Operational
DOMAIN 3	25%	Customer & Other

Utility / Holding Company

analysis

Northern States Power Xcel					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$3.3	Integrated	2019	• •	✓	

In May 2018, the Minnesota commission approved Northern States Power Co. (Xcel)'s 2017 Distribution Grid Modernization report, which contained a TOU pilot program with 17,500 AMI meters. In November 2018, Xcel filed its first Integrated Distribution Plan. The plan foreshadowed upcoming distribution system investments, including full AMI

deployment and FAN for \$450-\$600M as part of its Advanced Grid Intelligence and Security (AGIS) initiative. In November 2019, Xcel filed an updated Integrated Distribution Plan (IDP). The AGIS initiative was described to build upon the current ADMS implementation project through the deployment of 1.6M meters. Xcel stated that the AGIS initiative supported IDP directives outlined by the commission in July 2019. On the same day of its IDP submission, Xcel filed its 2020 rate case, which included cost recovery for AMI through 2022.

Notable Resources:

:-

Review Notes:

Cost-Benefit Methodology Notes:

Meter roll-out 2021-2024. CBA shown through 2035, includes NPV 2019 and discounted . Benefit/cost ratio of 0.83. Also shows AMI costs in rate case period, over 5 years and over 10 years to 2029. Evaluated baseline, high, and low benefit scenarios. Divided out costs/benefits by each investment category, including AMI.

Technology Notes:

AMR to AMI replacement, 1.6M meters, installation of ADMS (in service 2020) before meter deployment, followed by FAN, DA, and VVO

Policy Notes:

IDP planning objectives include opportunities for adoption of new distributed technologies and TOU-related goals. Xcel states that AMI enables IDP goals and achieving Staff's vision of a modern grid.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Cites stakeholder and commission engagement through other proceedings, esp. through the Staff Report on Grid Modernization

Cost Recovery Notes:

AGIS rider, only accounting for costs within the rate case timeframe

Qualitative Benefit Notes:

Improved customer choice and experience, enhanced distributed energy resource integration, environmental benefits of energy efficiency, improved safety of customers and employees, improved power quality.

Other Notes:

Opt-out and AMI billing changes to be filed in 2020

Decision and Outcome Notes:

Pending

DOMAIN 1	89%	Capital & Financial
DOMAIN 2	11%	Operational
DOMAIN 3	0%	Customer & Other

Ohio Edison First Energy							Detailed
\$B	Class	Year	ben/cost/net	app/deny/sett/pend			AMI Meters
\$1.4	Restructured	2016	• • •	✓ ✓			12

In August 2014, Ohio Edison company, The Cleveland Electric Illuminating company and The Toledo Edison company (collectively, FirstEnergy) filed their fourth Electric Security Plan entitled “Powering Ohio’s Progress,” which contained a commitment to file a grid modernization plan in 2016. In February 2016, FirstEnergy proposed a full deployment of AMI for its Ohio entities as a foundational part of a grid modernization proposal. While the initial application only included net present value for the full grid modernization program, the stipulation, which also resolved concerns with a parallel distribution modernization plan, provided more detailed info on costs and benefits. The stipulation was approved in July 2019.

Review Notes:

Cost-Benefit Methodology Notes:

The costs presented in the CBA were in nominal dollars, as presented in the stipulation. Net benefits were calculated as \$1,098M with a benefit-to-cost ratio of 2.6; NPV was also included as \$234M and 1.4 respectively. AMI costs and benefits clearly delineated between other programs within the stipulation, but was fully bundled within the initial application.

Technology Notes:

Manual meters to AMI

Policy Notes:

The commission’s PowerForward Roadmap was referenced many times in the stipulation and order as a foundational policy.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

This proposal was approved via a stakeholder stipulation and the PUC run stakeholder process PowerForward. The stipulation notes that, when appropriate, the Companies should utilize competitive procurement methods to acquire Grid Mod I assets.

Cost Recovery Notes:

First Energy is enabled to recover up to \$516 million in capital costs through a AMI/Modern Grid Rider (Rider AMI).

Qualitative Benefit Notes:

First Energy outlined qualitative benefits “such as the value of shorter outages, the value of time sensitive rates, and reductions in carbon emissions”. First Energy also stressed that AMI was foundational to all of the other grid modernization programs.

Decision and Outcome Notes:

In July 2019 (9 months after the filing of the stipulation and three and a half years after the initial application), the commission approved the stipulation, which included an 100% AMI deployment.

DOMAIN 1	0%	Capital & Financial
DOMAIN 2	100%	Operational

Utility / Holding Company

analysis

Oklahoma Gas & Electric OGE		Detailed				
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI	Meters
\$1.9	Integrated	2010	•	✓	✓	793,937

Oklahoma Gas & Electric Co. (OG&E) began investigating smart grid technologies in 2007. Following a demonstration project, OG&E requested approval of an expanded smart grid program in Norman, OK in a 2008 rate case. In 2009, OG&E received a \$130M SGIG to develop an integrated smart grid in Oklahoma and Arkansas, which included the installation 800,000 smart meters. In 2010, "to fully take advantage of the DOE funding," OG&E requested commission approval for full deployment of smart grid technology, including AMI, and cost recovery over three years. AMI was cited as a foundational technology to implement DR and other smart grid technologies in later phases. Project costs were estimated at \$360M. OG&E requested additional cost recovery in 2013.

Notable Resources:

SGIG: <https://e9radar.link/7xz6>

Article: <https://e9radar.link/z9fn>

Review Notes:

Cost-Benefit Methodology Notes:

2010-2012 deployment. Benefits stated over 15 years. Costs presented in rate case/cost recovery terms. Phase I included the Normal project, Phase II covered smart meter deployment, Phase III included demand automation

Technology Notes:

800,000 meters, communications network, distribution management, circuit upgrades, testing and enablement of DR.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Settlement process modified cost recovery

Cost Recovery Notes:

In addition to SGIG, requested two regular assets; O&M (\$5.6) and stranded assets (\$32.3M). Later added a web portal regulatory asset.

Qualitative Benefit Notes:

Categories included operational (meter reading, field services, outages, storm response, improved accuracy, reduced trips, reduced theft), efficiency (meter reading, reduced service calls, reduced demand)

Other Notes:

Comprehensive case documents are not readily available through the Oklahoma commission

Decision and Outcome Notes:

Approved in June 2010 through a settlement agreement, which included customer education requirements

DOMAIN 1	0%	Capital & Financial
DOMAIN 2	100%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Orange & Rockland Utilities ConEd						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$0.5	Restructured	2016	• • •	✓	✓	44,202

In November 2014, O&R filed a rate case which included Phase One of O&R's AMI program and associated recovery of \$23.7M. Phase One included a 5-year installation of 116,000 electric and 91,000 gas AMI meters. O&R noted that Phase Two would deploy AMI to the remainder of its territory. The approval of this case in October 2015 included the provision to create an AMI Business Plan and BCA, and noted that the outcome of O&R's Distributed System Implementation Plan (DSIP), which included the company's AMI plans, may impact commission approval for full deployment. The AMI Business Plan, filed in June 2016 in both the rate case and DSIP, added MDMSS and modified the implementation timeline from 5 to 4 years. In July 2017, O&R filed a revised BCA which reported net benefits of \$15.6M. In November 2017, the commission approved the updated AMI proposal.

Notable Resources:

Press release: <https://e9radar.link/0gjq>

Company website: <https://e9radar.link/lpfm>

Review Notes:

Cost-Benefit Methodology Notes:

Phase One deployed 116,000 electric and 91,000 gas meters; Phase Two deployed 113,000 electric and 45,000 gas meters. Benefits calculated over 20 years, presented in 2016 NPV.

Technology Notes:

AMI meters, communication meters, head-end system, MDMS, meter asset management system, NWA.

Policy Notes:

No NY-specific AMI requirements, but REV encourages AMI

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

Created settlement for the rate case (Phase One), engaged in workshops

Cost Recovery Notes:

Incorporation into base rates

Qualitative Benefit Notes:

Goals/benefits included operational efficiency and performance (meter reading, call center, accuracy, etc.), enhanced customer service (convenience, speed, quality, outage detection), enabled customer engagement (digital customer experience portal), laying a foundation for REV, and reduced GHG

Other Notes:
Included an opt-out tariff

Decision and Outcome Notes:
Approved in two phases; full deployment approved in standalone AMI case.

DOMAIN 1	13%	Capital & Financial
DOMAIN 2	78%	Operational
DOMAIN 3	9%	Customer & Other

Utility / Holding Company

analysis

PacifiCorp	Berkshire Hathaway				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$1.3	Integrated	2016		✓	47

Pacific Power (PacifiCorp) began developing an AMI business case in 2014. In the PUC's order approving PacifiCorp's 2015 annual smart grid report, the commission requested that the company continue to provide updates on AMI project development. In August 2016, PacifiCorp filed a confidential business case analysis for AMI deployment in its annual smart meter report. The report provided an AMI deployment strategy, cost saving categories, functionalities, and other details. In December 2016, the commission approved the smart grid report and required PacifiCorp to provide an "Oregon AMI Roadmap" with costs, cost savings, reconnection times, analysis of data, and other provisions. PacifiCorp included these items in the 2017 annual smart grid report, and this report was accepted in February 2018.

Review Notes:

Cost-Benefit Methodology Notes:
3-year project began with IT installation and integration, training, meter installation. 2016-2019. No quantitative costs or benefit values were provided, but qualitative benefits were described.

Technology Notes:
590,000 AMI meters, MDMS, head-end systems, FAN, WAN, HAN, customer usage website

Proceeding Notes:
Bundled

Stakeholder Engagement Notes:
Held a public meeting with commission staff to address the 2016 report

Qualitative Benefit Notes:
Reduced operations and maintenance costs, a platform for future smart grid applications, increased worker safety, reduced emissions, improved bill accuracy and response time for connections, outage and restoration notifications, fewer meter visits, aid in future rate design, and increased data for efficient management of the network.

Decision and Outcome Notes:
The PUC accepted the report in 2016 with requests for more information; the 2017 update was deemed satisfactory.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Pennsylvania Electric Co		First Energy				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$0.9	Restructured	2014		✓	✓	513,043

See Metropolitan Edison Co. for details.

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

PPL Electric Utilities		PPL				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$1.9	Restructured	2014	•	✓	?	

In response to the commission's order to develop a smart meter technology plan, in August 2009 PPL Electric Utilities filed a Smart Meter Technology Plan which included pilot programs and attested that its current system was compliant with commission standards. After several months of consideration, the commission denied the request for exemption and ordered PPL to file a full Smart Meter Plan by December 2012. PPL delayed the application of their updated Smart Meter Plan until June 2014, at which time it proposed to implement a new mesh network, AMI meters, MDMSS, and a variety of other technologies. In September 2015, the commission approved PPL's application with a few modifications, including the provision that PPL track and quantify system benefits.

Review Notes:

Cost-Benefit Methodology Notes:

Project life of 6 years starting in 2015, meter deployment from 2017-2021. Beginning with 'solution validation phase' in 2016-2017 to deploy 50,000 meters and evaluate. Full operation in 2022.

Technology Notes:

AMR to 1.2M AMI meters. Replace its power line carrier technology with a radio frequency mesh metering system, which requires replacement of meters, IT, and head-end systems. Also included MDMS, customer portal, network operating center, and meter asset management system.

Policy Notes:

Compliance with Act 129. Regulators responded to PPL's initial filing with direction for accelerated, full AMI rollout, stating the the current proposal did not adequately comply.

Proceeding Notes:
AMI

Stakeholder Engagement Notes:
PPL conducted multiple meetings to provide stakeholders with updates of pilot programs and other matters. In addition to annual updates, PPL's approved communication strategy stated that it intended to engage more with stakeholders. The commission affirmed that PPL should integrate stakeholders into its communication planning process and privacy policy creation.

Cost Recovery Notes:
Modified version of its Smart Meter Rider, but also noted that due to difficulties in quantifying benefits, savings would be calculated in future rate cases.

Qualitative Benefit Notes:
Reduction in customer visits, remote connect/disconnect, increased power quality, disruption detection, outage location, reduced energy theft, enhanced customer service.

Decision and Outcome Notes:
Approved with conditions to include stakeholders in privacy and communication development, in addition to tracking of system benefits

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Pennsylvania Power Co First Energy						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$0.3	Restructured	2014		✓	✓	167,639
See Metropolitan Edison Co. for details.						

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

PECO Energy Exelon						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$2.2	Restructured	2013	• • •	✓	✓	?

In August 2009, PECO Energy requested commission approval for its Smart Meter Plan to deploy 600,000 smart meters and its accompanying cost recovery surcharge mechanism. The original cost of AMI deployment was estimated at \$215-225M depending

on certain costs. During the pendency of the application, PECO was awarded a \$200M SGIG. PECO divided its Smart Meter Plan into three requests, each with their own petition and settlement agreement: a technology procurement and testing phase, development of dynamic pricing, and universal deployment of AMI. PECO's initial request in August 2009 was for its technology procurement phase and deployment of 100,000 smart meters. PECO filed a request for its dynamic pricing plan in October 2010, and in January 2013, PECO filed a formal request to deploy 1.2M smart meters to the rest of its service territory. Net benefits of universal deployment were estimated at \$59.7M. In August 2013, the commission approved the universal meter deployment portion of the plan.

Review Notes:

Cost-Benefit Methodology Notes:

Full meter deployment from 2013-2014, benefits calculated over 9 years (\$ 2018). Smart meter project completed in two phases: Phase I in the 30-month grace period established by the commission to select technology vendors, implement MDMS/IT/communication network, and develop education plan (2009-2012); Phase II to cover universal deployment. Prepared a CBA for two deployment scenarios: ending in 2014 or 2019; accelerated schedule was preferred.

Technology Notes:

AMI, MDMS, communications network

Policy Notes:

Compliance with Act 129

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

In PECO's initial petition noted it would initiate a collaborative process to design dynamic pricing and customer acceptance process. Created a settlement agreement for each phase of the project, including specification of stakeholder meeting times and subject areas. The commission also directed PECO to work with the Electronic Data Exchange Working Group.

Cost Recovery Notes:

Implemented a Smart Meter Cost Recovery Surcharge, effective January 2011

Qualitative Benefit Notes:

Early termination of current AMR fees and lower implementation costs with rapid deployment, operational deployments (remote connection), reduce uncollectible expenses, societal benefits (reduced energy consumption by remotely disconnecting difficult meters).

Decision and Outcome Notes:

Approved through several different stakeholder processes

DOMAIN 1	72%	Capital & Financial
DOMAIN 2	16%	Operational
DOMAIN 3	13%	Customer & Other

Public Service Company of Colorado (PSCo)		Xcel					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend			AMI Meters

\$2.7	Integrated	2016	• • •	✓	✓		12,374
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PSCo first became involved with the smart grid in 2008 through a Smart Grid City pilot. In 2016, PSCo proposed its "Our Energy Future" plan which emphasizes an intelligent, interactive grid. Later that year, PSCo filed an application for its Advanced Grid Intelligence and Security (AGIS) initiative, which included integrated Volt-VAR Optimization, Field Area Network, and the installation of 1.5M advanced meters over 2016-2021. PSCo later asked to delay AMI deployment to 2019.

Notable Resources:

Press Release: <https://e9radar.link/ncjf>

Review Notes:

Cost-Benefit Methodology Notes:

5-year AMI deployment (2016-2021), Meters begin installation in 2018. First CBA on a 5-year horizon, second on a 20-year horizon. 20-year analysis, 2016 NPV dollars. Benefits and costs considered from the customer's perspective. Total project costs estimated to be \$562M over 5 years, and the final order increased this amount to \$612M.

Technology Notes:

1.5M customers, AMR to AMI, inclusion of VVO and FAN

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Unopposed settlement agreement reached with parties.

Cost Recovery Notes:

Recovery deferred to next general rate case

Qualitative Benefit Notes:

Reduction of energy theft, remote disconnection of inactive services, improved choice, enhanced DER integration, environmental benefits of energy efficiency, improved safety, improvements in power quality

Other Notes:

Implementation was postponed to 2020. Noted the future development of an opt-out program.

Decision and Outcome Notes:

Settlement agreement; All three parts approved

DOMAIN 1	12%	Capital & Financial
DOMAIN 2	84%	Operational
DOMAIN 3	4%	Customer & Other

Utility / Holding Company

analysis

Duke Energy Indiana		Duke					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend			

						AMI Meters
\$2.7	Integrated	2015	• •	✓	✓	271,688

The IURC initially denied Duke Energy Indiana's proposal for AMI deployment within its 2014 transmission, distribution and storage system plan (T&D plan), proposed in August 2014. The commission stated that the plan did not provide sufficient detail. Duke filed a second version of its T&D plan in December 2015. Duke reached a settlement agreement for its plan in March 2016, which included its commitment to deploy smart meters. The commission approved the settlement in June 2016. In July 2017, Duke filed an application for an opt-out program, which the commission approved.

Review Notes:

Cost-Benefit Methodology Notes:

4.5 year phased AMI deployment, 20 year NPV. Certain cost details are redacted from the record. TDSIC AMI evaluated at \$113M NPV

Technology Notes:

Replacement of electric meters with AMI, deployment of a communication network, and expansion of Duke Energy's enterprise back office systems.

Proceeding Notes:

Bundled

Cost Recovery Notes:

Recovery deferred to next general rate case (2019)

Qualitative Benefit Notes:

More efficient outage restoration, quicker response for move ins and outs, granular usage data, improved meter reading accuracy, enhanced ability to identify outage location (Schneider Workplan).

Other Notes:

Implementation is expected to commence in 2019

Decision and Outcome Notes:

Duke's initial AMI proposal was rejected in May 2015; the commission noted a lack of specific plans and details. Updated proposal was approved through a settlement process in June 2016.

DOMAIN 1	4%	Capital & Financial
DOMAIN 2	76%	Operational
DOMAIN 3	20%	Customer & Other

Utility / Holding Company

analysis

Public Service Company of New Hampshire		Eversource		Detailed	
\$B	Class	Year	ben/cost/net	app/deny/sett/pend	AMI Meters
\$1.0	Restructured	2015		✓	
In response to legislation directing an investigation of grid modernization, Public Service Co. of New Hampshire (Eversource) filed plans which included a petition for AMI					

deployment. In September 2019, after several years of commission-run stakeholder processes, commission staff issued a recommendation for an AMI opt-in policy. Staff noted that they do not see the need for full AMI as a foundational technology for the state's grid modernization goals.

Review Notes:

Cost-Benefit Methodology Notes:

Staff recommended that a full cost benefit analysis of Advanced Metering Functionality be explored in order to before considering AMI deployment at a full scale.

Technology Notes:

The staff recommendation considered AMR, Enhanced AMR (w/ HAN), Enhanced AMR (w/ fixed network) and Full AMI.

Policy Notes:

In Staff's proposed AMF policy, Staff noted that at this time interval metering should meet the needs of the broader grid modernization goals.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

The commission opened investigation (spurred by HB 614) in 2015. A two year stakeholder conversation took place, which culminated in a Staff recommendation for Grid Modernization, which is under review as of October 2019.

Qualitative Benefit Notes:

Staff's Grid Modernization recommendation included customer and grid facing benefits.

Other Notes:

The main docket exploring AMI was a full exploration of grid modernization in order to create a foundational policy framework.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Public Service Company of New Mexico		PNM Resources		Detailed	
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$1.0	Integrated	2016		✓	0
In February 2016, PNM proposed an AMI installation project. PNM described manual meter deficiencies and a series of failed tests. In March 2018, the application was recommended for denial, citing a lack of several components: energy efficiency considerations, public participation process, public benefit (esp. financial savings), evaluation of alternatives, options for health-concerned customers, proximity to other rate-increases, and other categories. In May 2017, PNM filed a request in the same docket for allowance to issue a new RFP to update its cost-benefit analysis, which updated the cost of the project to \$95.1M.					

Review Notes:

Cost-Benefit Methodology Notes:

2-year installation, 20-year life (2020-2039). Costs in 2016 \$NPV. Lacks quantification of benefits; primarily discusses avoided costs and revenue recovery mechanism. Proposed a field test of 5000 meters in year 1, and then the deployment of the total 531,000 meters. The bundled CBA was presented as a revenue requirement for year-by-year.

Technology Notes:

531,000 meters, two-way communications network, MDMS, data collection system

Policy Notes:

commission required AMI White Papers in 2006, which PNM cited throughout their application

Proceeding Notes:

Bundled

Cost Recovery Notes:

Seeks regulatory assets undepreciated investment for retired meters (estimated investment of \$33M), severance costs to be incurred in reduced staff, and recovery for education costs

Qualitative Benefit Notes:

Online web portal, ability to choose bill date, ability to start/stop service quicker, elimination of need to estimate bills due to property access/weather issues, increased security and privacy, less human error, alters if meters are tampered, enhanced emergency response, additional energy efficiency.

Other Notes:

PNM also references their early white paper, featured in Docket No. 06-00391-UT, which states other qualitative benefits of AMI and discusses the status of meters in 2006.

Decision and Outcome Notes:

Denial; uncertainty around necessity, benefits, etc.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Public Service Co of Oklahoma		American Electric Power		Detailed	
\$B	Class	Year	ben/cost/net	app/deny/sett/pend	AMI Meters
\$1.5	Integrated	2013	• •	✓ ✓	549,206

In 2010, PSO began deploying AMI at residential and business locations as part of their gridSMART® program. This program also included DA, VVO, in-home devices and a customer web portal. In November 2013, Public Service company of Oklahoma (PSO) filed its 2014 rate case, which included the costs of a full AMI deployment program. The three-year deployment was estimated to cost \$148.4M through the end of 2016. Projected savings in labor, vehicles, and overheads in the first year totaled \$11M. AMI was described as a foundational investment for voluntary consumer programs to reduce

energy usage and for future grid investments (esp. DA and VVO). PSO agreed in a June 2014 joint stipulation to provide Home Energy Reports for any requesting customer with an AMI meter.

Notable Resources:

Stipulation: <https://e9radar.link/5fl>

Review Notes:

Cost-Benefit Methodology Notes:

3-year deployment (2014-2016), deployed AMI to 14,500 customers in 2011, studied benefits, and deployed 17,000 more (estimated \$13.2M capital investment during the test year). Phased approach to grid technology included deploying AMI first, followed by DA and VVO in future phases. Costs described through deployment testimony (\$132.9M capital and \$15.5M O&M) and in revenue requirement terms (\$51.1M over three years) and savings of \$5.1M from O&M. Also cited \$11M estimated savings in the first year.

Technology Notes:

522,000 meters, customer portal

Proceeding Notes:

Rate Case

Stakeholder Engagement Notes:

Created a settlement/stipulation agreement

Cost Recovery Notes:

AMI Tariff to remain in effect until the first base rate case subsequent to the full implementation of AMI. Regulatory asset for amortization (9.6% depreciation rate)

Qualitative Benefit Notes:

Customer benefits including remote connect/disconnect, power outage detection, remote reading, temperature alarms, impact of advanced consumer tariffs on energy consumption/peak demand/energy costs, improved customer service (from web platform), reliability, better understanding of customer response

Decision and Outcome Notes:

Approved through settlement agreement, which included a provision to provide Home Energy Reports for any requesting customer

DOMAIN 1	0%	Capital & Financial
DOMAIN 2	100%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Public Service Electric & Gas (PSEG) PSEG

Detailed

\$B	Class	Year	ben/cost/net	app/deny/sett/pend	AMI Meters
\$3.7	Restructured	2018	• • •	✓	15,062

In September 2018, PSE&G submitted its six-year, \$4B Clean Energy Future plan, which included an "Energy Cloud" program to install 2.2M smart meters. The Energy Cloud tranche estimated \$800M for the smart meter investment, and \$1.7B in benefits (net benefits of \$937M) over 20 years. PSE&G submitted its application despite the

moratorium on AMI development set by the BPU in August 2017, and the company stated several reasons the moratorium should be lifted. The Energy Cloud program was described as a foundational component of the company's transition towards a smart utility.

Notable Resources:
News Release: <https://e9radar.link/k11u>

Review Notes:

Cost-Benefit Methodology Notes:
5-year deployment (2019-2024), program defined by releases that deploy AMI followed by an Intelligent Energy Service Platform (iESP) and 22 foundational capabilities ("use cases") to maximize the program. Cost details in CBA presented in nominal 2018 dollars, benefits estimated over 18 years (cited as "nearly 20," from 2019-2037), PV values also available. Business case cites 2.3M electric meters and narrative/testimony cites 2.2M meters.

Technology Notes:
2.2M meters, development of an iESP

Proceeding Notes:
AMI

Stakeholder Engagement Notes:
Created a communication strategy to engage stakeholders

Cost Recovery Notes:
Incorporation into semi-annual base rate adjustment filings

Qualitative Benefit Notes:
Remote connect/disconnect, data accuracy, customer service improvements, reduced workloads and truck rolls, environmental benefits (estimated 2,761 tons fewer CO2 from truck rolls), enablement of other technologies, realization of the Smart City

Other Notes:
Petition included an opt-out program

DOMAIN 1	49%	Capital & Financial
DOMAIN 2	51%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company					analysis
Puget Sound Energy PSE					Detailed
\$B	Class	Year	ben/cost/net	app/deny/sett/pend	AMI Meters
\$2.2	Integrated	2018	•	✓	5,125
Puget Sound Energy (PSE) completed its installation of 1.5M AMR meters in 2000. PSE began replacing its AMR platform with AMI in 2016 as part of its six-year Meter Upgrade Project, and its 2016 Smart Grid Technology Report cited the formation of an AMI strategy and business case. The project included replacement of 1.1M electric and 800,000 gas meters, to be completed in 2023. PSE stated that the project mitigated the risk of aging infrastructure and provided a framework for grid modernization. In October					

2018, PSE submitted a petition for an opt-out tariff, which was approved in January 2019.

Notable Resources:

-:

Review Notes:

Cost-Benefit Methodology Notes:

2016-2023 project timeline. Began some meter component/MDMS installations in 2016, MDMS project integration in 2017, deployed other key network components in 2018, initiated large-scale meter exchange Q2 2018.

Technology Notes:

1.1M electric meters, MDMS precursor, DMS and SCADA upgrades proposed at the same time

Policy Notes:

Filed Smart Grid Technology Report pursuant commission requirement; commission issued smart meter policy statement

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Commission and PSE created an agreement in the opt-out case to file AMI reports every six months to the commission, starting in January 2020

Qualitative Benefit Notes:

Described in three categories: dependability (accuracy, outage and restoration, automation for distribution grid), efficiency (data to be used to enhance energy efficiency offerings, foundation to implement DR and dynamic rates) and safety (crew safety, remote disconnect/connect).

Other Notes:

Did not request commission permission for meter deployment, but requested tariff revision for opt-out in 2018.

Decision and Outcome Notes:

Smart Grid Reports are informational only. PSE continued with AMI deployment.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Rochester Gas & Electric Corp		Iberdrola					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters		
\$0.6	Restructured	2016		✓			
See NYSEG for details.							

Notable Resources:

AMI Workpapers: <https://e9radar.link/nya>

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Sierra Pacific Power Co MidAmerican					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$0.7	Integrated	2010		✓	343,053
See Nevada Power for details.					

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

South Carolina Electric & Gas Dominion					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$2.3	Integrated	2019		✓	17,784

In July 2019, South Carolina Electric & Gas (Dominion) filed a petition seeking an accounting order to defer costs associated with AMI deployment. The accounting order request explained Dominion's plan to deploy 760,000 AMI meters for a cost of \$98M. Dominion also requested that \$59M of existing meter value be placed in an unrecovered plant regulatory asset, to be recovered under basic rates. In August 2019, the commission approved the request and directed Dominion to file a customer education plan and an opt-out tariff which included a provision for a medical waiver for opt-out fees. Dominion reiterated its plans for AMI in its 2020 IRP, filed in February 2020.

Notable Resources:

FERC Smart Grid Penetration:

Review Notes:

Cost-Benefit Methodology Notes:

Timeline defined as "over several years." Replacement of gas and electric meters. Also noted \$3M in additional property taxes and \$31M to replace encoder receiver transmitters on gas AMR meters.

Technology Notes:

AMR to AMI, 760,000 meters. Other infrastructure/technology additions unclear.

Proceeding Notes:

AMI

Cost Recovery Notes:

Deferred to regulatory assets, to be recovered in a rate case

Qualitative Benefit Notes:

Enhanced efficiencies, including: shorter outage restoration response; reduction of truck rolls to read, disconnect/reconnect meters; lower contact center volume; enhanced employee and customer safety; theft detection; more efficient reporting after major storm events. Customers will benefit from the development of programs to take control of their data; interact with web-based energy usage analyzers; receive alerts based on energy usage; place customer service requests; and receive enhanced communications during outages. Additionally, the company expects AMI will enhance operations through precise system planning and grid optimization, predictive maintenance and rate modeling.

Other Notes:

In response to commission directive, Dominion filed an opt-out tariff for a one-time cost of \$168 and a monthly fee of \$15 for a non-AMI meter. Customers with medical waivers do not have to pay this fee.

Decision and Outcome Notes:

Approved in August 2019, with directive for opt-out and education plan.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Southern Indiana Gas & Elec Co	Centerpoint Energy				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters

\$0.5	Integrated	2017	• • •	✓ ✓	
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Southern Indiana Gas & Electric Co. (Vectren) proposed AMI deployment in its 2017 Transmission, Distribution, and Storage System Improvements Charges (TDSIC) plan. In September 2017, the Indiana commission approved a settlement agreement for the TDSIC which removed AMI recovery from the TDSIC plan and deferred a maximum recovery of \$39M to its next rate case. The commission and stakeholders did not oppose AMI deployment; cost recovery was the primary issue. Vectren's 2017 rate case was in process at the same time as the TDSIC, and did not include AMI recovery.

Review Notes:

Cost-Benefit Methodology Notes:

20-year CBA details are redacted except for taxes and a few other categories; 2017 NPV. AMI 'build period' from 2017-2019, other 20-year costs are associated with operations. AMI program alone expected \$70M in net benefits.

Technology Notes:

ADMS, SCADA,

Policy Notes:

SEA 560 (TDSIC legislation)

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Participation in a stipulation process. Stakeholders noted concern with AMI programs creating prepaid services, which requires stakeholder engagement

Cost Recovery Notes:

100% of depreciation associated with AMI project authorized for recovery in retail base rate case over 10 years, debt rate not to exceed \$12M for recovery, and cap of \$39M for deferral recovery

Qualitative Benefit Notes:

Meter reading, call center, outage management, distribution system engineering, load research, billing activities, field services, revenue protection activities, CVR, and the customer experience

Decision and Outcome Notes:

Approved via stipulation agreement; cost recovery deferral to a later rate case

DOMAIN 1	10%	Capital & Financial
DOMAIN 2	64%	Operational
DOMAIN 3	26%	Customer & Other

Utility / Holding Company

analysis

Tampa Electric Emera					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$2.0	Integrated	2016		✓	4,885

In 2003, Tampa Electric Co. implemented an AMR system across its territory. In November 2015, the company filed a tariff with the Florida commission to provide an optional AMI meter as part of its "Advanced Metering Program" for residential owners of PV systems. In 2017, Tampa Electric began to deploy approximately 800,000 electric AMI meters, with estimated functionality in 2021-2022. As the company deployed AMI, it installed back-end systems concurrently. In January 2019, Tampa Electric filed a petition for an opt-out tariff, and in April 2019 filed a petition to begin tracking AMI program asset depreciation.

Review Notes:

Cost-Benefit Methodology Notes:

Installed and activated in through a phase-in strategy. Employed an "innovative approach" to meter deployment by decoupling back-office integration work and meter deployment so that they occur concurrently. Proposed that "none of the AMI meters will become fully functional until the back-office and communication systems are complete... in January 2022."

Technology Notes:

750,000 AMI meters, head end, field network controllers, MDMS, billing and support systems

Proceeding Notes:

AMI

Cost Recovery Notes:

Followed the 'cradle-to-grave' accounting measures for AMR meters.

Qualitative Benefit Notes:

New customer programs, customer service tools, remote connect/disconnect, increase customer access to information regarding energy usage, advanced outage ability, online capabilities, tools to manage energy consumption.

Decision and Outcome Notes:

Approved via approval of depreciation requests

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Toledo Edison Company First Energy						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$0.4	Restructured	2016		✓ ✓	0	
See Ohio Edison for First Energy's joint application.						

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Union Electric Company Ameren						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$3.2	Integrated	2019	•	✓	0	

In its February 2019 rate case, Union Electric company (Ameren) filed its five-year capital investment plan; the Smart Energy Plan, the largest infrastructure plan in the history of the company. The plan included a system-wide 1.3M smart meter deployment through 2020-2025. In August 2019, Ameren requested an exemption from meter testing requirements in order to conserve resources for anticipated early 2020 AMI deployment.

Notable Resources:

Smart Energy Plan: <https://e9radar.link/tbx>

Review Notes:

Cost-Benefit Methodology Notes:

CBA not required. Costs for Smart Meter Program estimated at \$245M, although benefits not quantified. Began by deploying IT infrastructure in 2019, meters installed 2020.

Technology Notes:

AMR to 1.3M AMI meters, IT as a foundation

Policy Notes:

SB 564: requires a utility to submit a five-year capital investment plan setting out the general categories of planned capital expenditures intended to replace, modernize, and secure its infrastructure. The first year of that plan must include specific capital investments with a higher level of specificity. The utility is also required to allocate no more than 6% of the total investment to smart meter deployment, and to allocate at least 25% of planned expenditures to grid modernization projects.

Proceeding Notes:

Rate case

Cost Recovery Notes:

Inclusion in the 2019 rate case

Qualitative Benefit Notes:

Willis testimony notes that additional benefits of AMI not related to rate design include improved outage detection and notification, voltage monitoring capabilities, remote connections and disconnections of service, improved meter data integrity, revenue protection through detection of theft of service, and other benefits that may arise from the increased amount, quality, and timeliness of data gathered by the meters. (*not quantified \$)

Other Notes:

The benefit analysis showed that replacing AMR before their normal replacement would not be cost effective; implementation delayed to 2015

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Duke Energy Kentucky Duke						Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$0.3	Integrated	2016	• • •	✓ ✓		59,059

In April 2016, Duke Energy Kentucky proposed AMI through a metering upgrade program for its electric and combination customers, proposing to install electric AMI meters at an estimated cost of \$49M. Per a December 2016 stipulation, Duke committed to allowing its customers to have access to their own usage information through its web portal as part of the AMI project, as well as offering opt-out tariffs. The commission approved the stipulation and proposal in May 2017.

Notable Resources:

Order: <https://e9radar.link/c54ad>

CBA Testimony: <https://e9radar.link/33b19>

Review Notes:

Cost-Benefit Methodology Notes:

Net benefits of \$7.4M on a NPV basis over a 17-year study period. 15-year life of meters. Majority of deployment to take place over 2 years.

Technology Notes:

143,000 advanced meters, two-way communication network, and back office systems.

Proceeding Notes:
AMI

Stakeholder Engagement Notes:
December 2016 stipulation with Attorney General to resolve issues and establish a regulatory asset.

Cost Recovery Notes:
Duke sought approval of new depreciation rates for the new metering equipment, and to establish a regulatory asset for the retirement of its existing electric metering equipment, associated inventory, and inventory of existing gas modules. In the event a cost over-run, Duke will seek any cost recovery in a future rate case.

Qualitative Benefit Notes:
Duke Kentucky reports that they've been developing a suite of additional customer services they would provide to customers once the AMI Project is complete. Such services would allow customers to choose their bill due date, enroll in prepay metering, and provide outage notifications.

Other Notes:
In support of its application, Duke stated that it had ~65,000 meters located inside the customers' premises, and nearly 50,000 of those meters are electromechanical meters required a meter reader to enter the premises to obtain a manual reading.

Decision and Outcome Notes:
Approved May 2017 following a stipulation process.

DOMAIN 1	37%	Capital & Financial
DOMAIN 2	46%	Operational
DOMAIN 3	18%	Customer & Other

Utility / Holding Company

analysis

United Illuminating	Avangrid				Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$0.8	Restructured	2011		✓	230,870

In 2010, United Illuminating (UI) began deploying a hybrid AMR/AMI solution and mesh network. According to a review of 2014 Connecticut IRPs, the Department of Energy & Environmental Protection stated that as of January 2015, UI had replaced 161,000 of its 350,000 meters with AMI, with projected completion in 2020. UI's parent company at the time, UIL Holdings company, also committed to installing 210,000 AMI gas meters in its subsidiary territories by 2015. In UI's 2016 rate case, the company cited installation of grid technology that build off of AMI.

Notable Resources:
Draft IRP discussion: <https://e9radar.link/s4mb>
Article: <https://e9radar.link/c1t6>
Vendor Report: <https://e9radar.link/atb8>
2008 IRP: <https://e9radar.link/gzux>

Review Notes:

Cost-Benefit Methodology Notes:

UI began to deploy meters without apparent commission request in 2010-2020 in order to replace out-of-date AMR. Total of 350,000 meters

Technology Notes:

AMI meters were followed by DMS and grid analytics

Proceeding Notes:

Rate Case

Other Notes:

No apparent commission filings for UI. In UI rate cases, AMI was not specifically broken out, though the continued installation of the technology was cited.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Hawaiian Electric	HEI					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters
\$1.8	Integrated	2018	•	✓		

HECO's AMI proposal, which was included in the Phase One Grid Modernization Plan, was approved in March 2019. The approval was preceded by the denial of their Smart Grid Foundation Project in January 2017, in which the commission required HECO to develop a Grid Modernization Strategy (GMS) with stakeholder input. The commission advised HECO to consider grid investments separately, as part of a broader strategy which identifies technology priority, minimized risk, customer benefits, and DER/renewable energy integration. The GMS was approved in February 2018, and was followed by separate applications for the phases of technology deployment. HECO's Phase I application for AMI deployment was filed in June 2018 and included a telecommunications network and MDMS.

Review Notes:

Cost-Benefit Methodology Notes:

The costs for the program are reported over the 5-year phase 1 period. The breakdown of capital vs. O&M and AMI vs. other technologies was included in the testimony but was redacted. HECO did not include a traditional cost-benefit analysis, but rather adopted a cost-effectiveness framework in (GMS).

Technology Notes:

Phase I of the holistic GMS included: advanced meters, MDMS and an interoperable, scalable telecommunications network (including FAN).

Policy Notes:

The Phase 1 Grid Modernization Project was directly predicated on the commission-driven Grid Modernization Strategy. The strategy estimates it will cost \$205 million to update the energy networks of its companies over the next six years, and outlines a plan bring in

more renewable resources (both DER and grid sourced), while increasing reliability and customer choice.

Proceeding Notes:
Bundled

Stakeholder Engagement Notes:
Stakeholder process was robust. After denial of the Smart Grid Foundation Project, the commission required the development of the Grid Modernization Strategy, which was a foundation for the Phase 1 Grid Modernization Project.

Cost Recovery Notes:
HECO proposed a number of cost recovery mechanisms, including deferral, a allowance for funds used during construction, a Major Project Interim Recovery. For capital costs, HECO is requesting these interim cost recovery mechanisms until each HECO company's next rate case, where the stated intention is to rate base the capital costs.

Qualitative Benefit Notes:
Support distributed resource deployment (Smart Export, CGS+ and DR Portfolio); provide valuable operation data and control; enable customers to better manage their energy use; and provide a general foundational systems needed to advance future GMS goals.

Other Notes:
In various orders, the commission reinforced its statement that a modernized grid is the "backbone" necessary to advance the state's RPS goals, support integration of additional levels of renewables, encourage competition, empower consumers to make their own choices concerning the level and types of electric service they desire, and leverage customer-sited resources to assist in grid operation.

Decision and Outcome Notes:
In March 2019, the commission fully accepted the proposal, with the addition of cost recovery caps and reporting requirements.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Virginia Electric & Power Dominion		Detailed		
\$B	Class	Year	ben/cost/net	app./deny/sett/pend
\$7.5	Integrated	2019	• • •	✓ 381,483

Pursuant to 2018 legislation, in January 2018 Virginia Electric & Power (Dominion) filed a Grid Transformation Plan (GT) that included AMI deployment. Dominion's application did not include a complete cost benefit analysis; Dominion opted for excluding a traditional cost-benefit analysis due to the significant non-quantifiable benefits. In January 2019, the Virginia commission denied the application. In January 2019, Dominion filed a new grid modernization plan, budgeting \$594M for a variety of projects, including a 6-year, 2.1M smart meter installation plan. The plan will use the AMI head-end system already in place, retiring AMR head-end systems. Dominion cited AMI as a foundational investment for the rest of its GT. In December 2019, Dominion filed a separate application for the approval of

experimental TOU rates for 10,000 customers, which would rely on the implementation of AMI.

Notable Resources:

Dominion website: <http://bit.ly/31j26iv>

Utility Dive: <http://bit.ly/2KiEtRJ>

Energy News: <https://energynews.us/?p=1307796>

Seeking Alpha: <https://e9radar.link/mbfj>

Review Notes:

Cost-Benefit Methodology Notes:

Original GT did not contain CBA; second submission included CBA with 3-year Phase IB costs and 10-year GT Plan costs/asset life total benefits. 2019 \$ NPV. CBA was divided into three segments; AMI-enabled programs (voltage optimization, TOU, OMS, pre-pay, cyber security), transportation electrification, and grid improvements. A bundled CBA was also presented. AMI strategy included 6-year deployment with meter deployment concentrated in year 3.

Technology Notes:

Initial proposal for AMR to AMI transition, in addition to MDMS and other grid technologies. 2.1M meters and 3,100 network devices. At the time of the application, 80% of Dominion customers had AMR, 16% had smart meters and 4% had manually-read meters.

Policy Notes:

Dominion was required to propose a 10-year grid modernization plan from the Grid Transformation and Security Act.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Used external consultant to organize a series of stakeholder workshops in 2019. Also focused on customer engagement/feedback, and engaged in time-varying rates stakeholder process. Updated 2020 CBA included a cost line item for stakeholder engagement and customer education.

Cost Recovery Notes:

Committed to inclusion of AMI in base generation and services rates; will not file a rate adjustment clause petition.

Qualitative Benefit Notes:

Operational efficiencies, increased information and control, customer benefits in savings/convenience/information/reduced energy consumption, reduced greenhouse gases

Other Notes:

Opt-out included in the second application

Decision and Outcome Notes:

Initial denial due to high cost and undefined benefits.

DOMAIN 1	33%	Capital & Financial
DOMAIN 2	62%	Operational

Utility / Holding Company

analysis

Avista Corp	Avista					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend		AMI Meters

\$0.5

Integrated

2017

• • • ✓

In 2009, Avista implemented a SGIG-funded smart meter project in addition to a smart grid demonstration project which included the installation of 13,000 meters. In February 2016, Avista filed a rate case with a petition to approve its Washington AMI Project. Avista estimated a total project cost of \$215.2M with \$241.7M in benefits (PV). Avista further elaborated on its plans to integrate AMI into its systems in its September 2016 Smart Grid Technology Report. In December 2016, the commission rejected the AMI project, requested a different business case, noted a lack of stakeholder engagement, and recommended that Avista file a request for deferred accounting treatment. In May 2017, following commission advice, Avista filed a petition requesting deferred accounting treatment for legacy meters and AMI deployment. In September 2017, stakeholders helped form an amended petition which narrowed the scope of its requests and deferred full revenue requirement considerations to a future rate case. The amended petition was approved in September 2017.

Review Notes:

Cost-Benefit Methodology Notes:

The benefit cost analysis was presented lifecycle cash value and PV; numbers include the price/benefits of gas meters. Began planning phase of project in 2015, installation of system applications and system hardware in 2016, communications and meter installment 2017-2021. 15-year depreciation. Costs in present cash value.

Technology Notes:

253,000 electric meters and 155,000 gas meters, MDMS, FAN/WAN/HAN

Policy Notes:

Filed Smart Grid Technology Report pursuant commission requirement; commission issued smart meter policy statement

Proceeding Notes:

Rate Case

Stakeholder Engagement Notes:

Created communication plan which included stakeholder engagement. The commission's initial rejection suggested further stakeholder engagement.

Cost Recovery Notes:

Avista proposed deferred accounting treatment for its AMI program.

Qualitative Benefit Notes:

Value categories included meter reading, customer web portal, text alerts, remote connect/disconnect, reduced outage duration, CVR, net metering, monitoring and evaluation, remote diagnostics, accuracy, and comprehensive data

Decision and Outcome Notes:

Approved deferred accounting request in September 2017

DOMAIN 1	17%	Capital & Financial
DOMAIN 2	74%	Operational
DOMAIN 3	9%	Customer & Other

Utility / Holding Company

analysis

West Penn Power Company First Energy				Detailed	
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters

\$1.0	Restructured	2014		✓	387,973
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West Penn filed its smart meter implementation plan (SMIP) in August 2009. During the pendency of the SMIP proceeding, FirstEnergy and West Penn's corporate parent, Allegheny Energy, announced their intent to merge. West Penn's smart meter deployment was included in the FirstEnergy smart meter planning dockets (see Metropolitan Edison Co. for full details) as a result of a joint settlement in its original docket in June 2011. West Penn agreed to conduct an independent CBA, decelerate its deployment plan, review/revise its EE/DR plans, and consider cost recovery aspects independently from the other companies. Most of West Penn's planning development costs were approved for recovery in the initial docket, but an additional \$5.1M was approved through the FirstEnergy case.

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Western Massachusetts Electric Eversource				Detailed	
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters

	Restructured	2015		✓	
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See NSTAR Electric company for details.

Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Wheeling Power Co American Electric Power				Detailed	
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters

\$0.3	Integrated	2017		✓	115
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See Appalachian Power Co. for details.

Notable Resources:

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Review Notes:

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Wisconsin Electric Power WE Energies					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$2.8	Integrated	2018		✓	463,124

In January 2018, Wisconsin Electric Power Co (We Energies) filed a report with the Securities and Exchange commission which included the description of its Wisconsin AMI program. The program was estimated to cost \$200M over two years, and the company's interstate capital plan cited a budget of \$0.4B on automated meters from 2018-2022. In 2019, We Energies announced a partnership with a smart meter vendor in 2019 to deploy AMI to its 500,000 Wisconsin gas and electric customers.

Notable Resources:

Article: <https://e9radar.link/jnx>

Article: <https://e9radar.link/5pz0>

SEC Report: <https://e9radar.link/6lg3>

Review Notes:

Cost-Benefit Methodology Notes:
Informational filings only

Technology Notes:
Meters, communication networks, data management systems

Proceeding Notes:
AMI

Qualitative Benefit Notes:
Reduction of manual labor, remote connect/disconnect, outage management, revenue protection, theft protection, supports customer care initiative

Decision and Outcome Notes:
Announced AMI deployment in an informational report. AMI deployment proceeded.

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

Wisconsin Public Service WE Energies					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters

\$1.0

Integrated

2016

• •

✓

In 2003, Wisconsin Public Service Co. (WPS) deployed gas and electric AMR throughout its territory. In December 2016, WPS filed an application to replace its gas AMR meters with AMI. The application noted that although the company had no statutory requirement to file a request for electric meter replacement, some details on its electric meters were included. WPS also described a steadily increasing meter module failure rate. The application was approved in four months, in April 2017.

Notable Resources:

Website: <https://e9radar.link/g49>

AMR Article: <https://e9radar.link/n0hj>

Review Notes:

Cost-Benefit Methodology Notes:

Four year implementation (2017-2020), did not distinguish gas/electric benefits but broke out costs. Did not provide explicit business case but presented costs/benefits. Annual O&M costs were not expected to increase over current levels. WPS noted that the costs of the project are similar to the cost of its initial AMR deployment (2003 capital cost of \$52.4M to install 270,000 meters; 2016 capital cost of \$51.7M for 330,000 meters).

Technology Notes:

330,000 gas and 457,000 electric meters, head end systems, MDMS

Proceeding Notes:

AMI

Qualitative Benefit Notes:

Reduction of meter failure, availability of daily and hourly consumption data, improved meter data capture/storage/management, reduced back office efforts, reduced truck rolls, enhanced and reliable outage management, improved revenue protection, theft detection, standardization of the metering network across WEC Energy Group companies, singular sourcing for energy information

Other Notes:

WPS referred to its 2003 meter project as an AMI project, though the system utilized AMR technology.

Decision and Outcome Notes:

Application for gas meters approved in April 2017

DOMAIN 1	1%	Capital & Financial
DOMAIN 2	99%	Operational
DOMAIN 3	0%	Customer & Other

Utility / Holding Company

analysis

Westar Energy Evergy					Detailed
\$B	Class	Year	ben/cost/net	app/deny/sett/pend	AMI Meters
\$1.1	Integrated	2014		✓	318,830

In 2009, Westar and Kansas Gas & Electric company (together, Westar) received a \$19M grant from the SGIG to support a pilot project. In its 2015 rate case, Westar proposed two more phases of smart meter installments and requested recovery of undepreciated costs of the legacy analog meters. Recovery of the legacy meters was approved in September 2015.

Notable Resources:

Contract: <https://e9radar.link/bdri>

Completion Article: <https://e9radar.link/1g84>

Review Notes:

Cost-Benefit Methodology Notes:

Proposed SmartStar Lawrence as a kind of pilot program, replaced \$40M. 2015 rate case included a phase for 92,000 and 120,000 meters. Did not include a business case

Technology Notes:

AMI, MDMS, AMI headend, outage management system, customer online account platform

Proceeding Notes:

Bundled

Cost Recovery Notes:

Incorporated into 2015 rate case, analog meters placed into regulatory asset with no return allowed

Qualitative Benefit Notes:

Up-to-date energy information, reliability of service, support text notifications, reduction of customer bills, operational benefits (service orders), in-home devices, behind the meter products, outage information, enabling of time-based pricing, remote connect/disconnect

Other Notes:

In Docket No. 19-GIME-012-GIE, the Kansas commission ruled that opt-out programs are not required from Westar and other utilities.

Decision and Outcome Notes:

2015 rate case approved the expansion and recovery of undepreciated meters, which opened up Westar's ability to do full deployment

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Utility / Holding Company

analysis

NSTAR Electric Company		Eversource					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters		
\$2.9	Restructured	2015		✓			
In August 2015 Western Massachusetts Electric and NSTAR Electric Co. (Eversource) proposed an opt-in AMI program bundled with major technology upgrades and activation of TVR pricing. The model assumed a 5% opt-in participation rate. Grid-facing							

investments were approved in the May 2018 order, but the opt-in AMI program was rejected. The Eversource grid modernization plan was criticized by stakeholders and the DPU for rolling \$400M of its grid improvements into its rate case. Additionally, the commission cited concerns with the legacy AMR system, billing system capabilities, data-sharing plans, and ability to realize dynamic rate benefits.

Review Notes:

Cost-Benefit Methodology Notes:

15-year benefit-cost analysis, discusses smart grid investments over 10 years with 5 years of intense investment (Short-Term Implementation Plan). CBA modeled an opt-out approach and opt-in with 20% and 5% participation rates. AMI-specific costs were provided on a per-meter basis, but not for a system-side application.

Technology Notes:

Eversource to invest \$35.3M to enhance fiber and radio penetration across territory, expand existing MPLS network;; P. 115 begins to describe technology.

Policy Notes:

D.P.U. 12-76-C requires the electric distribution companies to submit a business case in support of the short term implementation plan (STIP) portion of their GMPs.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Held stakeholder meetings in April, 2015 to discuss outcomes and strategies for each Eversource objective (p. 150 of Application)

Cost Recovery Notes:

Eversource sought pre-authorization and targeted cost recovery. Exhibit EVERSOURCE-DPH-1, starting on p. 423. Year 1 revenue requirement estimated at \$63.4M

Qualitative Benefit Notes:

Lists general customer benefits on p. 34, other qualitative benefits listed p. 212; Predictive outage detection, adaptive protection/two way power flow, energy storage, and underground and overhead safety and resiliency investments

Other Notes:

Eversource notes that it will implement enhanced approaches to integrate DER due to favorable policy environment. The CBA tested the opt-out approach in addition to opt-in approach with 5 and 20% participation rates and found that Eversource achieves 80% of the benefits of TVR at a cost of 15% of full-scale AMI deployment.

Decision and Outcome Notes:

DPU separated case into grid modernization 'base commitment' into ratemaking and 'incremental' grid modernization plan. DPU approved grid-facing investments and no customer-facing investments (AMI).

DOMAIN 1	Capital & Financial
DOMAIN 2	Operational
DOMAIN 3	Customer & Other

Entergy Texas Entergy

Detailed

\$B Class Year ben/cost/net app./deny/sett/pend AMI
Meters

\$1.4

Integrated

2017

• • • ✓

In July 2017, Entergy Texas, Inc. (ETI) filed an application for an AMS, opt-out provision, an AMS surcharge tariff, and approval of its deployment plan. The application contained a customer engagement plan, data security considerations, and other key details. In October 2017, ETI filed an agreement resolving intervenor issues, including to consider joining Smart Meter Texas and data issues in a future case, reduction of the AMS surcharge by \$10M, allowance for customers to keep existing meters, investment in low-income programs, and exclusion of opt-out customer rate-case expenses from future cases. ETI agreed to defer issues around data management and privacy, the customer web-based portal, and membership to Smart Meter Texas (considered in an October 2018 docket).

Review Notes:

Cost-Benefit Methodology Notes:

3-year deployment schedule (2019-2021), 7-year useful life of meters (according to TX rule 5.130(k)(3)), 12-year surcharge life, NBV of \$27B for existing meters, benefits/costs provided in present value 2016 dollars. Full CBA not provided; operational costs/benefits are.

Technology Notes:

477,000 AMI meters, communications network, related and supporting system including MDMS, outage management system, and DMS

Policy Notes:

No requirement, but SB 1145 extended statutory support for AMI and encourages utilities that decide to deploy advanced metering to do so 'rapidly'

Proceeding Notes:

AMI

Stakeholder Engagement Notes:

Notes future stakeholder process for rate designs, also created stakeholder engagement to be implemented in Stage I prior to deployment.

Cost Recovery Notes:

Requested an AMS Service surcharge and opt-out option

Qualitative Benefit Notes:

Grid modernization, customer data access; reduction in energy consumption, peak capacity and unaccounted for energy

Other Notes:

Concerns around data access and membership with Smart Meter Texas were deferred to future case. Includes opt-out provisions in this case

Decision and Outcome Notes:

Approved within 5 months

DOMAIN 1 0% Capital & Financial

DOMAIN 2 100% Operational

Utility / Holding Company

analysis

Ameren Illinois Ameren					Detailed
\$B	Class	Year	ben/cost/net	app./deny/sett/pend	AMI Meters
\$1.5	Restructured	2012	• •	✓	702,956

Following implementation of Illinois' smart grid legislation, Ameren Illinois elected to become a participating utility in the state's electric infrastructure investment program. As a result, Ameren was ordered to invest \$625M into distribution over 10 years and file a Smart Grid AMI Deployment Plan with the commission. In August 2011, Ameren filed a mandatory evaluation report on its pilot program, and in March 2012, Ameren filed a 10-year Infrastructure Investment Program to the Smart Grid Advisory Council after review by the Smart Grid Advisory Council. Ameren's CBA estimated \$153M in net benefits over a 20-year analysis period (2021-2031). In May 2012, the commission ruled that the plan could not be determined as cost effective, and Ameren filed a revised plan and CBA in June. In December 2012, the commission approved the modifications, which included an accelerated schedule, less reliance on shared benefits from gas customers, modified cost accounting, and quantification of additional operational, customer, and societal benefits. In 2016, Ameren reopened its AMI docket to amend its deployment timeline to achieve 100% AMI deployment by the end of 2019 instead of the planned 62%.

Review Notes:

Cost-Benefit Methodology Notes:

10-year plan to achieve the 62% target; full implementation to take 15 years (modified later to achieve 100% by 2019). Cost details were redacted in original CBA; provided publicly in revised plan. 20-year benefit period. Divided installation into five stages: installing MDMS. AMI, billing analytics, present web portal and develop analytics, upgrade processes to support remote connect/disconnect, and support of dynamic pricing.

Technology Notes:

AMR to AMI. MDMS and HAN. Total deployment to include 1.3M electric and 850,000 gas meters. FAN and WAN

Policy Notes:

Ameren's application was largely driven by guidelines outlined in the Energy Infrastructure and Modernization Act and the voluntary infrastructure investment program.

Proceeding Notes:

Bundled

Stakeholder Engagement Notes:

Engaged with the Smart Grid Advisory Council and other commission-created groups

Cost Recovery Notes:

Recovery through performance based rates

Qualitative Benefit Notes:

Reliability improvement, enablement of distributed generation, new home services, and plug in electric vehicles, increased customer convenience, increased employee and public safety, job creation, and environmental benefits from reduced emissions.

Other Notes:

Bundled as a smart grid plan, but AMI benefits were described separately

Decision and Outcome Notes:
Initially rejected due to deficiency in CBA; modifications approved in December 2012.

DOMAIN 1	8%	Capital & Financial
DOMAIN 2	92%	Operational
DOMAIN 3	0%	Customer & Other



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