

EXHIBIT 16-A

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**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of California-American Water Company (U210W) for Authorization to Increase its Revenues for Water Service by \$25,999,900 or 10.60% in the year 2021, by \$9,752,500 or 3.59% in the year 2022, and by \$10,754,500 or 3.82% in the year 2023.

Application 19-07-_____
(Filed July 1, 2019)

**DIRECT TESTIMONY OF GARRY HOFER
(FINAL APPLICATION)**

*** * * PUBLIC VERSION * * ***

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Dated: July 1, 2019

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IX. AMI plan for Central Division and Ventura

A. Overview

Q143. What is the purpose of this portion of your testimony?

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1 A143. The purpose of this portion of my testimony is to present the revised California American
2 Water AMI plan (“AMI Plan”). As shown in Attachment C, this plan consists of a (a)
3 proposed project schedule, (b) a pilot summary document, and (c) a proposed cost
4 estimate. California American Water is proposing to implement a two-way AMI system
5 in two California American Water service territories: Ventura County and Central
6 Division. These territories encompass approximately 62,000 residential, commercial, and
7 industrial retail water customers.

8
9 California American Water originally sought the commission’s support of an AMI
10 program in the company’s 2018-2020 general rate case. The Commission did not approve
11 funding for this program. The Commission commented that California American Water
12 should finish the in-flight AMI pilots in Ventura and Monterey, compile lessons learned,
13 and submit an updated proposal. I am pleased to share that California American Water
14 has completed these activities, as is evident in our attachments to this rate case. Our AMI
15 pilots were successful in that they helped our staff gain valuable experience and expertise
16 related to AMI and demonstrated that AMI produces customer, societal, and operational
17 benefits. As water conservation becomes a way of life in California, we seek the support
18 of the Commission in deploying AMI, beginning with California American Water’s
19 Ventura District and Central Division.

20
21 As water costs increase, customers need more timely information related to their water
22 use and potential leaks to manage their water bills and reduce water waste. AMI
23 technology provides this information nearly real-time, which is a level of service that
24 could never be achieved with manual meter reading. Although AMI is an emerging
25 technology, numerous municipalities across California have AMI programs underway,
26 including San Diego, San Francisco, Sacramento, Eastern Municipal Water District,
27 Moulton Niguel Water District, Alameda, and others. California American Water seeks to
28 provide our customers with information and tools to manage bill size, reduce water

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1 waste, and promote conservation – and AMI is a direct enabler of these objectives.

2
3 California American Water is proposing this AMI deployment to enhance customer
4 service and improve operational efficiency. AMI will provide customers with proactive
5 leak alerts and assist customers in managing their bill cost. AMI will also improve
6 California American Water’s operational efficiency. As our society becomes more astute
7 with technology, we believe that customers will continue to seek more information about
8 their water usage and AMI offers the ability to provide the requested information more
9 efficiently. California American Water’s proposed AMI deployments build on California
10 American Water’s experience conducting an AMI pilot involving approximately 1,300
11 customer meters/meter interface units (MIUs) in one portion of its service territory in
12 Ventura and 200 customer meters/MIUs in another portion of its Monterey Central
13 Division service territory. These pilots are described in greater detail below. To fund the
14 AMI Plan California American Water is proposing the capital and O&M costs associated
15 with the implementation, operation, and maintenance of the AMI system be included as
16 part of its current general rate case before the Commission.

17
18 Q144. What is AMI?

19 A144. AMI stands for advanced metering infrastructure. AMI is not a single technology, but
20 rather an integration of many technologies that provides an intelligent connection
21 between customers and the water utility. The components of a typical AMI system
22 consist of; (i) a smart meter with a digital register, (ii) a communication device connected
23 to or part of the meter, (iii) various data collection transceivers, (iv) headend software,
24 which serves as the meter control system, and (v) an enterprise level software platform
25 used for Meter Data Management. A key function of AMI is nearly real-time, two-way
26 communication between utilities and their meters. The two most dominant
27 communication technologies used across vendor platforms are an RF based technology
28 and a cellular based technology. AMI Meter Data Management systems can

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1 accommodate both types of technologies and are vendor agnostic. California American
2 Water is committed to selecting the best technology for the given application and
3 providing the most value to our customers.
4

5 Q145. What information are you presenting today, as part of your testimony, in support of this
6 AMI plan?

7 A145. I address California American Water's goals and intentions in implementing the AMI
8 Plan. This includes describing the costs and benefits of the AMI system to California
9 American Water customers and employees, and the nexus between AMI and state water
10 policy objectives. I will also describe our experience deploying and maintaining AMI
11 metering systems by way of California American Water's completed AMI pilots in its
12 Ventura and Central Division service territories. The lessons learned from the pilots have
13 provided valuable input into the current proposal across the two service territories.
14

15 Q146. In the most general terms, why is California American water proposing to implement the
16 AMI Plan?

17 A146. California American Water is committed to providing reliable and high-quality water
18 distribution and delivery service to our customers in ways that protect the state's water
19 resources and reflect California American Water's environmental stewardship. Our
20 customers expect California American Water will provide not only accurate and timely
21 metering, billing, and customer care services, but increasingly customers expect that we
22 will provide them with the tools and insights to manage their use of water efficiently,
23 effectively, and in an environmentally conscientious way.
24

25 Q147. How can AMI help California American Water achieve these outcomes?

26 A147. Whereas manual meter reading or mobile automated meter reading ("AMR") provides
27 one meter read per month, AMI provides up to 24 reads on a daily basis, enabling rapid
28 leak detection and customer notification. Manual meter reading and AMR give a utility

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1 and its customers limited ability to investigate or troubleshoot high bills, as only one
2 meter read is available; with AMI, hourly data can be used to pinpoint consumption
3 anomalies throughout the entire billing period.
4

5 AMI is a technology that enables the automated collection, transmittal, collating and
6 storage of California American Water’s meter reads from its water meters. It involves
7 gathering data from the water meter and securely transmitting this information – with
8 high levels of reliability and frequency – for a variety of end-use applications. Data
9 privacy and security is maintained throughout the AMI system to ensure customer
10 privacy and data integrity at all times. In turn, this detailed consumption data assists
11 California American Water in identifying leaks and notifying customers, identifying and
12 acting on backflow issues, and troubleshooting high bill complaints.
13

14 Once implemented, the AMI system will enable California American Water to provide
15 more granular consumption information and profiles (compared to once-per-month meter
16 reads), perform diagnostics on water usage, gather and process signals/alerts concerning
17 high water usage (including leak conditions), and communicate this information to
18 customers through tools such as web portals, phone calls, text messages, emails, etc.
19 Additionally, California American Water will be able to use AMI data and corresponding
20 alarms to identify backflow risks and address potential theft, which results in improved
21 water quality across the system and a more equitable distribution of costs.
22

23 Q148. Where specifically is California American Water proposing to implement AMI?

24 A148. California American Water is proposing to implement AMI in the Ventura District and
25 the Central Division. In total, we envision AMI deployment to approximately 62,000
26 existing water customer premises.
27

28 Q149. Why were these service areas chosen as prudent for AMI implementation?

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1 A149. The Ventura District and Central Division were selected for the initial AMI program for
2 several reasons. Both executed successful pilots where they gained real-world experience
3 with installing and operating an AMI system. Additionally, as discussed in the Direct
4 Testimony of Mr. Christopher Cook at Section IV.B, the Central Division will uniquely
5 benefit from early leak detection and notification. Leak adjustments provided to Central
6 Division customers amounted to over \$2 in 2018, which is the largest value across all of
7 California American Water’s districts. AMI technology enables California American
8 Water and its customers to more rapidly identify and troubleshoot leaks by analyzing
9 hourly consumption data on a daily basis to identify anomalies such as continuous and
10 abnormal usage. All customers would benefit from this technology, but based on the rate
11 structure in the Central Division, customers with leaks in this district will find the
12 greatest value in AMI.

13
14 Q150. How many customers from each service territory would receive AMI meters?

15 A150. Barring any infrastructure challenges, and not including any customers that opt out, all
16 permanently metered connections in Ventura and Central Division will be equipped with
17 AMI technology.

Service Area	Total Customers for AMI
Ventura	21,177
Central Division	41,340

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24 Many of California American Water’s meters are already compatible with AMI
25 technology and will only require a meter interface unit (MIU) as an attachment to the
26 existing meter. Meters that are not compatible with an MIU will be replaced.

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1 Q151. Explain why San Diego, Los Angeles, Larkfield, and Sacramento customers are not part
2 of the AMI Plan.

3 A151. San Diego and Los Angeles were included in California American Water’s original AMI
4 plan. Based on D.18-12-021, however California American Water is now proposing a
5 more gradual roll-out of AMI, starting with districts that completed successful AMI pilots
6 (Ventura and the Central Division). Based on the Central Division’s tiered rate structure,
7 these customers will also see the most significant benefit from early leak detection. As
8 Larkfield and Sacramento completed large metering projects in the last few years, they
9 were not included in the early stages of California American Water’s AMI plan.

10

11 Q152. Are all of California American Water’s water meters compatible with AMI solutions?

12 A152. No. To be compatible with AMI solutions, water meters require a compatible register
13 with a plug that can be connected to the MIU.

14

15 Q153. Are water meter change outs included in the AMI Plan?

16 A153. Yes. California American Water sought to minimize meter change-out costs; however, as
17 part of the AMI program, we are proposing to replace some meters as a part of the
18 transition to AMI. For the purposes of this program, California American Water has
19 defined five different groups of meters.

20

21 1) *Large Meters* – Meters sized 3” and above will not be replaced through
22 the AMI program, but will be retrofitted to receive a new, AMI-
23 compatible register.

24 2) *Length of Service (LOS) / Scheduled* – Meters that would have been
25 replaced before or during the AMI program as a part of the regular meter
26 replacement schedule.

27 3) *Accelerated* – Meters that will be nearing the end of their useful life
28 during the deployment period. In order to avoid multiple field visits in a

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1 short timeframe, California American Water proposes to accelerate the
2 replacement of meters within two years of end of life during AMI
3 deployment.

- 4 4) *AMI Compatible* – Meters not proposed for replacement that already
5 contain an MIU-compatible plug.
- 6 5) *AMI Incompatible* – Meters proposed for replacement because they are
7 integrated, meaning the register cannot be replaced, or contain wires that
8 must be spliced to receive a new register.

9
10 Q154. Why is only one group of meters considered for a register retrofit rather than full meter
11 replacement?

12 A154. Non-integrated meters are capable of receiving a new, AMI-compatible register;
13 however, the cost of a register is nearly that of a full small or medium sized meter (< 3”).
14 Because of this near cost parity of the two devices, when the meter’s useful life ends
15 before that of the new register, it would result in a significant stranded investment. For
16 this reason, only meters sized 3” and above are considered for register retrofit.

17
18 Q155. How many meters fall into each category?

19 A155. The following table summarizes the population of each meter group in Ventura and the
20 Central Division, respectively.

21
22

	Ventura	Central Division
(1) Large Meters	157	164
(2) LOS / Scheduled	4,924	10,202
(3) Accelerated	2,533	2,185
(4) AMI Compatible	5,642	9,703
(5) AMI Incompatible	7,921	19,086

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Q156. From a project cost perspective, how are these different meter groups treated?

A156. 1) *Large Meters* – The register and MIU costs are attributed towards the AMI program.

2) *Length of Service (LOS) / Scheduled* – The costs of the meter replacements for meters that reach their LOS during the deployment period are not counted in the AMI proposal, as their replacement costs are already budgeted for. Only the incremental cost of the MIUs for these meters is attributed to the AMI program.

3) *Accelerated* – The costs of the meter replacements for meters that reach their LOS within two years of deployment are counted in the AMI proposal as their replacement costs would not be budgeted until the next capital planning cycle. The incremental cost of the MIUs for these meters is also attributed to the AMI program.

4) *AMI Compatible* – Because these meters already contain a compatible register, only the incremental cost of the MIUs for these meters is attributed to the AMI program.

5) *AMI Incompatible* – Because these meters are being replaced for the purpose of compatibility with this AMI program and were not planned to be replaced as part of the normal meter replacement schedule, the full meter, register, and MIU costs are attributed to the AMI program.

Q157. Please summarize the water meter replacement requirements that are part of the AMI deployment?

A157. Based on a detailed analysis of the meter types and ages within Ventura and Central Division, the following AMI installation types will be necessary.

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	Meter, Register and MIU	Register and MIU	MIU Only
Ventura	10,454	157	10,566
Central Division	21,271	164	19,905

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6 Q158. What is California American Water’s schedule for implementing the AMI Plan?

7 A158. California American Water’s current proposal, based on current information, is to
8 implement AMI over the two-year period spanning calendar years 2022 and 2023. In
9 2022, the primary proposed activities would include vendor selection, business process
10 design, system integration, external stakeholder outreach, field deployment planning, and
11 beginning the build-out of the AMI network. In 2023, the proposed schedule would
12 include continued AMI network build-out; Ventura’s target completion date is January
13 and Central Division’s target completion date is October. Additional time was allotted for
14 the AMI network build-out in Central Division, given Central Division’s larger
15 geographic size, high customer count, and the need to secure access to more locations for
16 the AMI network devices. The proposal assumes that permits in both locations will be
17 obtained in a timely manner.

18
19 As proposed, meter replacement and MIU installation would begin in Ventura in January
20 of 2023 and last for six months. In the Central Division, meter replacement and MIU
21 installation is proposed to begin in April and last for nine months. Again, additional time
22 was allotted for the Central Division given the additional customers in that district as
23 compared to Ventura. All field deployment work will be supported by a comprehensive
24 customer outreach/education campaign including website content, pre/post-installation
25 mailers, and other customer communications to explain the benefits of AMI to customers
26 and encourage enrollment in the portal.

27
28 Q159. Why is California American Water proposing this AMI implementation schedule?

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1 A159. The proposed AMI implementation schedule was developed based on current information
2 and in a manner that balanced deployment efficiency, benefits realization, and impacts to
3 on-going operations during deployment. Field deployment is scheduled to begin in
4 Ventura with a dedicated workforce installing MIUs and meters in a geographically
5 contiguous manner to maintain high levels of productivity by reducing drive times.
6 Ventura was selected to start before the Central Division based on their pilot being larger
7 in scale and the ability to build-out their network more quickly. The Central Division
8 begins three months later to provide additional time to build-out the AMI network and
9 apply any best practices / lessons learned from Ventura to the larger and more complex
10 Central Division. Central Division field deployment will also be performed by a
11 dedicated team working in a geographically contiguous manner. In order to maximize
12 the benefits of AMI and minimize the impact to normal operations as a result of operating
13 in a hybrid mode (e.g. part of the system is AMI, part of the system is non-AMI), a very
14 focused and shorter duration project is planned. Another factor that may allow California
15 American Water to execute this project within a shorter time period is that we anticipate
16 utilizing a fully functional meter data management system (MDMS) and a customer
17 portal solution (in place by 2022); thus reducing the system development and integration
18 time required for this project.

19
20 **B. The Benefits of AMI**

21 Q160. Please explain how AMI metering information will benefit the California American
22 Water customer.

23 A160. AMI is another example of how technology can produce a wide range of benefits. AMI
24 will improve safety, meter reading accuracy, and will enable more proactive and
25 progressive customer service. AMI offers many benefits to California American Water's
26 customers including continuous/high usage alerts, improved high bill troubleshooting,
27 lower meter reading costs, better identification of water quality incidents, and access to
28 detailed water usage data for voluntary or mandatory conservation efforts. In sum, our

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1 investments in AMI technologies enable us to work smarter, improve water efficiency,
2 and better serve our customers.

3
4 Q161. Please explain how AMI metering information will assist customers in the area of excess
5 use and leak detection.

6 A161. AMI records water usage at hourly increments and sends this data to the utility where it is
7 validated for completeness and accuracy. On a daily basis, California American Water
8 will run analytics on consumption data to identify anomalies and proactively notify
9 customers of continuous consumption. The water consumption data is also utilized to
10 generate customer bills on a monthly basis and is sent to a portal where customers can
11 view their historical usage in a user-friendly tool with only a one-day lag (e.g. yesterday’s
12 data is available today).

13
14 By providing customers with more granular data, customers can see usage patterns that
15 they were not aware of or were undetectable without AMI (e.g. a spike in consumption
16 from 2am – 4am every third day for irrigation; continuous flow through the meter that
17 may be a leak within the home, irrigation system or pool/hot tub). Customers can then
18 elect to reduce consumption and manage their bill costs.

19
20 These benefits have been realized at other California water utilities through both pilot and
21 fully integrated AMI programs. During an AMI pilot in 2014, East Bay Municipal Water
22 District realized an average of 15% customer-side water savings through portal-driven
23 leak repair. The City of Sacramento implemented water AMI in 2009 and, in an analysis
24 of their 2010-2011 system performance, identified over 1,000 leaks. After verifying 75%
25 via field visits, the utility estimated customer-side savings of “approximately 12.6 gallons
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1 per capita per day.”³

2
3 Q162. Can California American Water help customers create alerts for these potential excess
4 use and leak conditions?

5 A162. California American Water’s AMI plan includes the tools and resources to perform
6 analytics on usage data on a daily basis to identify continuous usage or excess usage
7 events. When these events are identified, California American Water will send a
8 notification to customers via text, phone call, or email if they have enrolled in this
9 service.

10
11 Q163. Please explain how AMI metering information will assist in the area of backflow and
12 theft detection?

13 A163. The hourly consumption data received via AMI provides California American Water
14 more granularity in water use, which assists the utility in identifying potential backflow
15 and theft. Backflow can be identified in two ways depending on the AMI vendor
16 selected: (1) via a specific backflow alarm if water travels backwards through a meter, or
17 (2) via negative consumption between hourly interval reads. Both methods are successful
18 at identifying potential backflow events and will provide California American Water with
19 more knowledge of where backflow events happen across the system.

20
21 Theft is identified via AMI alarms that indicate if an MIU has been tampered with, had
22 its wires cut, or suddenly begins reporting zero consumption. These alarms will assist
23 California American Water in quickly identifying and addressing theft.

24
25 Q164. Can California American Water create alerts for these potential backflow and theft
26 detection and enable action to address these issues?

27
28 ³ Berger, M. A., Hans, L., Piscopo, K., & Sohn, M. D. (2016). Exploring the Energy Benefits of
Advanced Water Metering. *Ernest Orlando Lawrence Berkeley National Laboratory*, at p. 17-19.

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1 A164. Yes. If desired, California American Water could create additional backflow and theft
2 detection alerts. These alerts will be evaluated as part of the AMI vendor selection
3 process, and California American Water will create additional rules and alerts if the
4 selected vendor's tools are insufficient in this capacity. Based on backflow and theft
5 alerts, California American Water could automate creation of service orders that would
6 be dispatched to field personnel for investigation and resolution.

7
8 Q165. Will the web portal be the only means for customers to check their metering and billing
9 data?

10 A165. The web portal will be the primary tool for customers to view their detailed interval
11 metering data. The web portal will also be optimized for mobile devices such as iPhones,
12 iPads, and Androids. Customer Service Representatives will also have this data available
13 and can verbally summarize consumption patterns to customers on the phone.
14 Furthermore, for customers who are unable to access the customer portal, Customer
15 Service Representatives can export, print, and mail consumption data to a customer
16 directly. Customers will also continue to receive a water bill that will contain their
17 summary level usage and billing information as is the case today.

18
19 Q166. What are the other benefits associated with AMI implementation?

20 A166. AMI implementation can enable customers and California American Water to customize
21 bill dates, assist customers in meeting water budgets, and provide tools for customers to
22 be efficient with water use. Furthermore, automation of the highly-manual, error prone,
23 and hazardous work of meter reading can improve safety for California American Water
24 employees. At a societal level, automating meter reading activities will reduce vehicle
25 miles driven, resulting in safer roads and fewer greenhouse gas emissions.

26
27 Q167. How can AMI improve safety for its employees?
28

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1 A167. By using AMI technology for monthly meter reading as well as out-of-cycle meter reads
2 (e.g. move in / move outs), California American Water field personnel will significantly
3 reduce the number of vehicle miles driven thus reducing the likelihood of vehicle
4 accidents. Also, by limiting the number of times an employee needs to enter a
5 customer’s property, it reduces the potential for physical injuries such as animal bites,
6 slip/falls, repetitive motion, etc.

7
8 Q168. Will customers experience any savings?

9 A168. Yes; notably, customers will realize savings through the detection and notification of
10 potential leaks. Customers will receive a notification through the customer portal
11 functionalities if AMI data reflects continuous consumption. The ability to recognize
12 potential leaks in near-real time, rather than up to thirty days after the fact, allows
13 California American Water customers to address the leak and save both money and
14 water.

15
16 Figures 1-2 demonstrate two examples of high bills in the Ventura District.

17
18
19 **Total Water Use Comparison (in 100 gallons)**

- 20 • Current billing period 2018: 740.52 CGL
- 21 • Same billing period 2017: 22.44 CGL

22 **Billed Use Graph (100 gallons)**

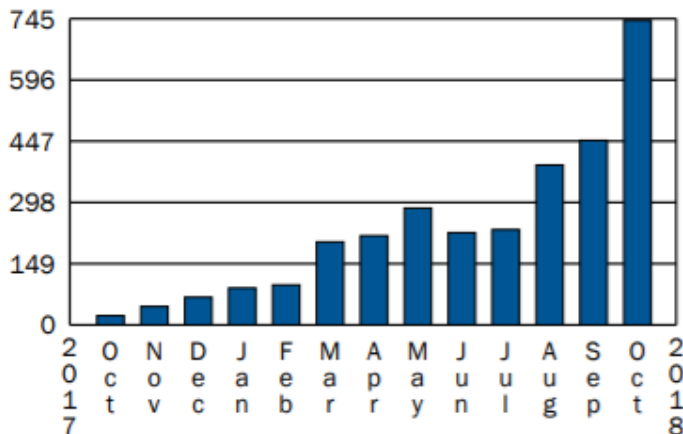


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Figure 1: Bill A – Ventura Oct. 2018

Total Water Use Comparison (in 100 gallons)

- Current billing period 2019: 249.00 CGL
- Same billing period 2018: 82.28 CGL

Billed Use Graph (100 gallons)

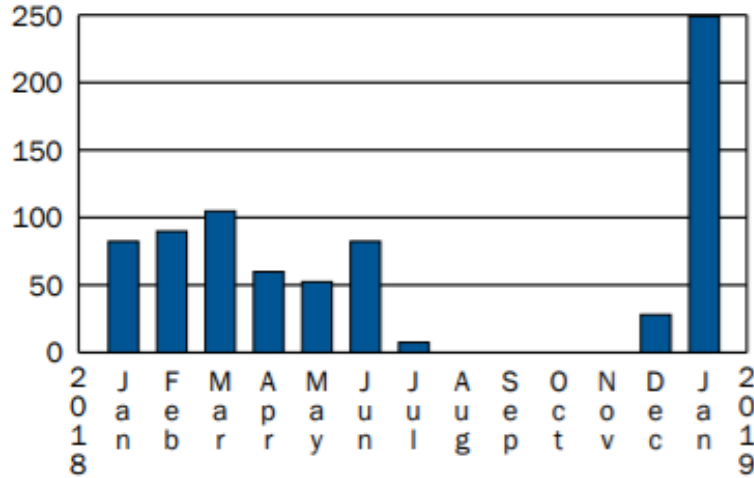


Figure 2: Bill B – Ventura Jan. 2019

Figures 3-5 demonstrate three examples of high bills in the Central Division.

Total Water Use Comparison (in 100 gallons)

- Current billing period 2018: 1,395.76 CGL
- Same billing period 2017: 22.44 CGL

Billed Use Graph (100 gallons)

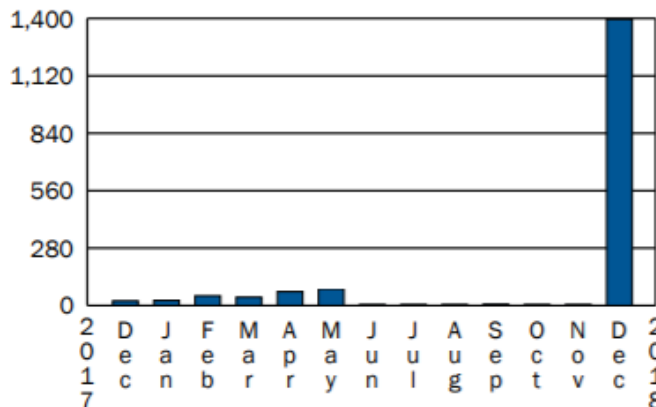


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Figure 3: Bill C – Monterey Dec. 2018

Total Water Use Comparison (in 100 gallons)

- Current billing period 2018: 533.00 CGL
- Same billing period 2017: 102.00 CGL

Billed Use Graph (100 gallons)

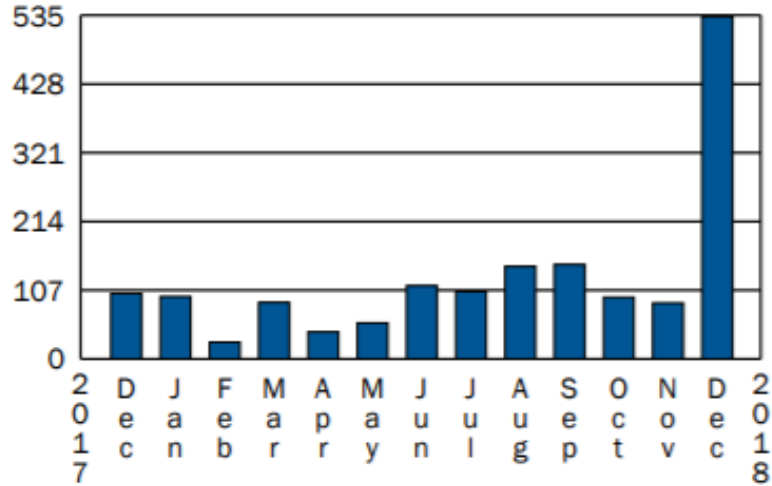


Figure 4: Bill D - Monterey Dec. 2018

Total Water Use Comparison (in 100 gallons)

- Current billing period 2019: 18.00 CGL
- Same billing period 2018: 45.62 CGL

Billed Use Graph (100 gallons)

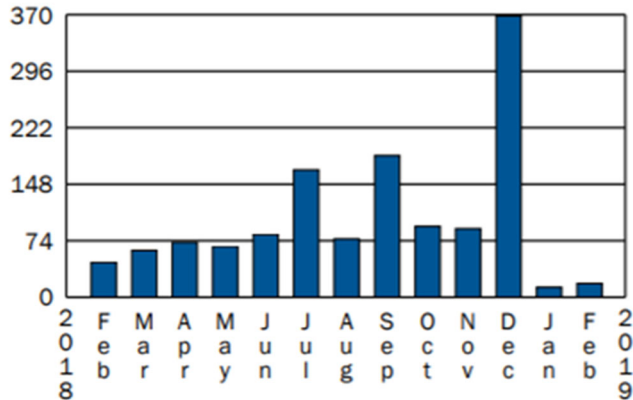


Figure 52: Bill E - Monterey Feb. 2019

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- 1 • High Bill A reflects total current charges of \$603.28, with 740 units of
2 water used in the September 14 – October 11 billing period.
- 3 • High Bill B reflects total current charges of \$452.64, with 249 units of
4 water used in the December 12 – January 10 billing period.
- 5 • High Bill C reflects total current charges of \$12,608.40, with 1,396 units
6 of water used in the November 15 – December 14 billing period.
- 7 • High Bill D reflects total current charges of \$4,113.74, with 533 units of
8 water used in the November 02 – December 04 billing period.
- 9 • High Bill E reflects total current charges of \$49.75, with 18 units of water
10 used in the January 03 – February 01 billing period. A total prior balance
11 from the last bill reflected \$2,430.05, for a total amount due of \$2,479.80.

12
13 These five examples demonstrate the persistent customer issue and risk of financial
14 duress that arises from high bills due to undetected leaks compounding throughout the
15 billing period. AMI data and alerts can mitigate these risks by detecting continuous
16 consumption earlier, enabling customers to address potential leaks swiftly, reducing total
17 leak consumption and resulting in real customer savings.

18 19 **C. AMI and California Water Policy**

20 Q169. How does AMI relate to the State’s approach to the Water/Energy Nexus?

21 A169. The state is invested in opportunities that impact the conservation of both water and
22 energy resources. The Commission previously opened rulemaking (“R.”) 13-12-011 “to
23 explore the relationship between water use and energy use and how policies in one sector
24 impact the other sector.”⁴ A principal goal of that proceeding was to “promote the
25 intersection of water management and conservation, and energy management and
26 conservation.”⁵ Water consumption is inherently tied to energy use through the several

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⁴ D.17-12-010, p.2.

⁵ D.17-12-010, p.6.

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1 mechanisms required to pump, treat, manage, and distribute water resources. Reduction
2 of water use through enabling customer-driven conservation, compliance with
3 conservation mandates, and leak reduction means less energy is expended. The
4 Commission also analyzed the nexus of water, energy, and communications and analyzed
5 ways that water utilities, using communications technologies, could assist in the water
6 and energy optimization process.⁶ For example, recognizing the potential to address non-
7 revenue water losses, the Commission remarked in proceeding R.13-12-011 that “More
8 data developed through more widespread advanced metering infrastructure will help the
9 utility to determine where that water gets lost.”⁷ The implementation of AMI therefore
10 works towards the State and Commission’s goals with respect to the water/energy nexus.

11
12 AMI deployment is central to California American Water’s ability to promote
13 conservation efforts, identify and resolve leaks, and enable customers to manage their
14 personal water consumption. As part of the Ventura pilot program, California American
15 Water worked with Valor Water Analytics to explore the dual efficiencies of water and
16 energy savings as realized through leak detection. Valor analyzed 188 leaks detected
17 throughout the Ventura pilot (using data through January 2018) and quantified aggregate
18 water savings of 3,508,520 gallons. Additionally, detection and resolution of these water
19 leaks also resulted in energy savings of 7,052 kWh from avoided pumping and
20 distribution costs.

21
22 Q170. How do Assembly Bill 1668 and Senate Bill 606 affect the need for AMI?

23 A170. These two water conservation bills were accepted by the Governor and filed with the
24 Secretary of State on May 31, 2018. Every public and private urban water supplier that
25 directly or indirectly provides water for municipal purposes must prepare and adopt an

26 _____
⁶ D.16-12-047, p.16.

27 ⁷ D.16-12-047, p.22; *see also* p.81, Finding of Fact 11 (“AMI reduces water leakage by providing real
28 time information on water use to customers and system operators, reduce costs for meter reading,
provides timely information about backwash incidents that may affect water quality, and improves system
management.”).

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1 urban water management plan and an urban water shortage contingency analysis that will
2 need to be updated every five years, beginning on December 31st, 2020. Mandatory
3 standards include a per capita allowance of 55 gallons per day, decreasing to 52.5 gallons
4 in 2025 and 50 gallons in 2030.

5
6 California American Water understands how valuable water is as a resource and,
7 especially in the context of per capita water allowances, seeks to enable customers to
8 detect and address leaks rapidly. In 2018 alone, California American Water granted
9 approximately 2,500 leak adjustments in Ventura and the Central Division. By detecting
10 these leaks earlier, California American Water can contribute to active water
11 conservation strategies while reducing nonrevenue water.

12
13 Assembly Bill 1668 and Senate Bill 606 rest on this premise of active conservation. By
14 providing actionable, near real-time data and analytics, AMI empowers both the utility
15 and the customer to meet the letter and intent of these bills in a way that could not be
16 achieved with monthly meter reads.

17
18 Q171. Are there other, more general standards that California American Water has considered?

19 A171. Yes. California American Water recognizes the importance assigned by the Commission
20 as part of a general rate case to consider a utility's operations and costs and to find that
21 utilities are providing services at just and reasonable rates. Capital investments for
22 improved services related to metering, billing, and customer care should be evaluated in
23 this context. Because of the importance California American Water places on high
24 standards of service and reasonable rates for its customers, we have provided carefully
25 considered estimations of the implementation and support costs associated with this AMI
26 plan.

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D. AMI Technology

1
2 Q172. Please explain the system components associated with the proposed AMI investment.

3 A172. There are three primary components to an AMI system:

- 4
- 5 1) Meter Interface Units (MIUs) are the devices that are connected to the
6 meter at the customer premises that transmit meter data to a
7 telecommunications network.
 - 8 2) The telecommunications network gathers and securely transmits the meter
9 data to the utility throughout the day (typically in 4 or 6-hour batches).
 - 10 3) The utility's back-office systems receive, validate, and organize the meter
11 data for various business and customer-facing functions such as billing,
12 analytics, and portal presentation. Typical AMI back-office systems
13 include the AMI head-end, meter data management system, analytics
14 software, and the customer portal.
- 15

16 Q173. How does this network operate?

17 A173. The AMI network is an integrated solution typically utilizing several layers of
18 communications to operate. Meters with MIUs are located at the customer premises and
19 wirelessly connect to collectors. These collectors form what is sometimes referred to as a
20 field area network (FAN) and aggregate communications to end devices located in their
21 coverage area. Collectors then make use of a backhaul network to connect to a head-end
22 system.

23
24 Typically the MIU will collect readings from the meter itself hourly. Every four to six
25 hours, these readings will be transmitted through the AMI network. This "store and send"
26 approach is used in part to conserve the MIU's battery life. Networks also typically
27 support on-demand reads and other features. Depending on the meter and the AMI
28 network, there may be support for meter-initiated communications for functionalities

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1 such as reverse flow, dry pipe, or the triggering of a leak detection algorithm.

2
3 Q174. Would California American Water own and operate this network?

4 A174. Understanding that technology can quickly change, it appears – based on current
5 information - that the most cost-effective approach is for California American Water to
6 have a vendor own and operate the AMI network. With this type of arrangement, an AMI
7 vendor would install and maintain data collectors, then charge California American
8 Water a nominal fee per meter per year. Based on discussions with AMI vendors, we
9 estimate this fee would be approximately \$2 per endpoint per year.

10
11 Q175. Has California American Water reached out to any electric and gas utilities that are co-
12 located in your service territory?

13 A175. Yes, California American Water has reached out to a variety of stakeholders in pursuit of
14 our AMI goals. For example, we have participated in recent Commission-sponsored
15 workshops on water meter reading, and the nexus between California water and energy
16 policy goals. We have also been working with AMI solution and equipment vendors and
17 have been discussing and reviewing water metering opportunities and plans with several
18 electric and gas utilities operating in our service areas. After lengthy and detailed
19 discussions with the co-located electric and gas utilities within our service territory, it has
20 been determined that it is not feasible for California American Water to utilize an existing
21 AMI network as the energy companies have not developed a commercial offering for
22 sharing their networks, nor have they indicated any plans to do so in the near-term.

23
24 Q176. How often does the proposed technology communicate consumption data?

25 A176. While each AMI technology provider has different recommended data communication
26 frequencies, it is typical for AMI systems to transmit consumption data back to the utility
27 at least once per day, including batches of hourly interval data. Many AMI vendors relay
28 data more frequently than once per day. With either design, the customer, operational,

EXHIBIT 16-A

1 and societal benefits of AMI would be achieved. Additionally, with AMI, California
2 American Water could directly ping a meter to address emergent billing issues or
3 customer inquiries.
4

5 Q177. What evidence do you have regarding the reliability or expected life of the proposed
6 technology?

7 A177. AMI vendors typically provide a twenty-year warranty on MIUs and a ten-year warranty
8 on network devices. These are commonly accepted useful lives across the water industry
9 and these terms have been accepted by the numerous water utilities that have deployed
10 AMI in recent years.
11

12 Tadiran Batteries has studied the longevity of MIUs, originally used for AMR
13 technologies, in evidence of a twenty-year life.^{8,9} Additionally, a vendor whitepaper
14 discusses the implications of output power and transmission frequency on endpoint
15 battery life.¹⁰ These studies of existing systems support the accepted industry standard
16 for battery life.
17

18 A notable exception is that cellular network vendors typically do not support a 20-year
19 network life. Initial discussions with carriers involved 10-year horizons. While they felt
20 15 might be achievable, no carrier would commit to a 20-year life in budgetary pricing.
21

22 **E. California American Water's AMI Pilot Experience**

23 Q178. Please describe California American Water's experience in conducting its AMI pilot in
24 its Ventura service district.
25

26 _____
27 ⁸ Sternau, C. (2009). Aclara AMR systems still operating after 25 years. *Utilimetrics*.

28 ⁹ Jacobs, S. (2004). Utility Meter Operating 20 Years on Original Lithium Battery. *Metering International*, (3).

¹⁰ Bhakta, S. (2004). Battery Life in Water Communication Moduels. *Itron, Inc.*

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1 A178. After several discussions with SDG&E to pilot AMI in San Diego and the presentation of
2 such a proposal to the Commission, it was decided to move forward with a collaboration
3 with SoCalGas in Ventura because California American Water at the time was not
4 meeting water reduction targets in its Ventura district.

5
6 The Ventura pilot discussions started mid-2016 with the final meter installations
7 completed on December 7, 2016. There were 1,288 customers: 1,199 of which were
8 residential and 89 of which were commercial. Approximately 11 customers chose to opt
9 out of the program.

10
11 As part of this AMI pilot program, California American Water contracted with the
12 following vendors: Aclara (MIUs), Fathom (Meter Data Management System), Smart
13 Energy Water (formerly Smart Utility Systems – customer portal), and Valor (meter data
14 analytics). Meters up to 2” in size selected for the AMI pilot were replaced with new,
15 Nicor-connected meters. Meters 3” and above in size received a register replacement or
16 were re-wired to accept the AMI meter transmission unit.

17
18 Q179. When was the pilot in Ventura completed?

19 A179. November 11, 2018.

20
21 Q180. Please describe California American Water’s experience in conducting its Monterey AMI
22 pilot in the Central Division?

23 A180. Discussions on the Monterey AMI pilot concept started in late 2013 to provide customers
24 with a tool to monitor their water usage and receive prompt leak alerts. An AMI pilot was
25 particularly important in the Central Division due to the steeply inclining conservation
26 rate structure and the resulting number of high bill complaints received when leaks
27 occurred on a customer’s property. To minimize costs and facilitate implementation, a
28 partnership with Pacific Gas and Electric (PG&E), utilizing their existing data collection

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1 units (DCUs), was initiated. For purposes of this pilot, PG&E’s gas AMI network was
2 used, which is built on hardware and software from Aclara Technologies. New meters
3 with Nicor connectors and Aclara meter transmission units were installed by California
4 American Water, and third-party billing integrator, GSW Fathom, was chosen to provide
5 the customer interface/portal. After much discussion, planning and testing, the project
6 officially launched in February of 2015, with 175 residential and 20 commercial
7 customers participating in the pilot.

8
9 Q181. When was the Monterey AMI pilot in the Central Division completed?

10 A181. December 31, 2018.

11
12 Q182. Please describe the information provided to customers who participated in the pilots.

13 A182. Through the customer portals in both Ventura and the Central Division, customers
14 received access to their daily / weekly water consumption, potential leak notifications,
15 and threshold notifications.

16
17 Ventura customers received visualization comparing their pilot usage with their monthly
18 2013 usage (pre-drought). Central Division customers received visualization of their
19 current usage compared with others and their daily / weekly usage trends.

20
21 Q183. What are some of the lessons learned from these pilots?

22 A183. California American Water learned valuable lessons via the AMI pilots across customer
23 service, customer opt in/out, field operations, office operations, and technology. These
24 lessons include:

25
26 **Customer Service:**

27
28 a. Customers who received leak alerts via the AMI pilot found this

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technology valuable. Timely leak alerts should be a top priority for full AMI deployment.

- b. Customers placed great value in receiving leak detection notifications; thus, California American Water needs to offer options on communication method (e.g. text, email) and set the protocol for shutting off water if customer is not home depending on leak size.
- c. Customers benefit the most from AMI technology when they are enrolled in the portal and able to view their daily interval consumption. Robust outreach and ongoing communications will be required to maximize customer awareness and participation.

Customer Opt In/Out: One of the AMI pilots was designed as opt-in rather than opt-out, which reduced customer participation. With a full deployment, AMI will become the default meter reading technology, though customers will have the ability to opt-out. By defaulting customers to AMI, this will reduce barriers for customers and California American Water to realize the benefits of this technology. Concerns about microwave transmissions need to be addressed; if customers opted-out of being part of the pilot, they may also decide to opt-out of a full AMI deployment thus requiring California American Water to manually read meters going forward for billing purposes.

Field Operations: During field deployment, installation training for field technicians was very effective and should be replicated for full AMI deployment. This included direct training from the AMI system vendor.

Ancillary infrastructure repairs were at times required to support AMI deployment, including meter box and/or lid replacement. These costs are included in the cost estimates, and California American Water personnel will need to confirm that additional boxes/lids are in inventory and on trucks to support crews during installation.

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1 Approximately 10%-15% of meter pits required clean-out, which was a highly manual
2 and time-intensive process. This was planned for in California American Water's
3 deployment costs and timelines. During installation, field personnel had to double-enter
4 installation information as systems were not fully integrated. For mass deployment
5 software development work will be required to reduce redundant data entry in the field.

6
7 Greater AMI network redundancy will be required for full AMI deployment. Based on
8 the small sizes of pilots, the Company was capable of manually reading meters in the
9 event of a network issue or outage. As California American Water deploys AMI across
10 Ventura and the Central Division, more data collectors will be necessary to provide
11 redundancy and protect the system against outages.

12
13 **Office Operations:** Following deployment, AMI processes were heavily dependent on
14 manual intervention. Much of the pilot relied on manual report review and outbound
15 calling. The manually intensive nature of the AMI pilot was by design, as normal
16 operations were intentionally isolated from the pilot activities. With a full deployment,
17 the volume of events/alarms (leaks, backflow, theft) will require automated business rules
18 and automated customer notification that will enable more timely communication to
19 customers.

20
21 AMI will provide insight into events within the system that should be acted upon,
22 including leaks, theft, and backflow. These events happen today, but the Company does
23 not have many tools to identify when and where these events occur. With full scale AMI,
24 California American Water will be able to shift from less reactive to more proactive field
25 work.

26
27 **Technology:** For large-scale deployment AMI supporting systems need to be fully
28 integrated. This includes processes to: (1) enter AMI reads for billing in the customer

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1 information system, (2) view AMI interval consumption data, view electronic bills, and
2 make payments in a singular customer-facing portal, (3) automate outbound customer
3 notifications for leaks, and (4) generate service orders for significant AMI events,
4 including large leaks, theft, and backflow. One of the pilots faced delays in the customer
5 portal and mobile application, which is one of the reasons California American Water
6 suspects customer participation was low. In a full deployment, the Company would use
7 American Water’s customer portal (which is mobile optimized). As this portal already
8 exists and continues to be enhanced, it would help California American Water avoid
9 additional development costs and timeline delays.

10
11 California American Water will also need to update technical processes to look for a
12 billing read within the CPUC approved billing window. During the pilot, the system only
13 accepted a read on the exact billing date, which resulted in additional back-office work
14 for billing.

15
16 California American Water seeks to provide the best customer experience possible via the
17 AMI program; our successful pilots and the learnings from these pilots will be applied to
18 full deployment to realize these objectives.

19
20 Q184. Have any of the participating pilot customers been alerted to leaks or service issues?

21 A184. Yes. California American Water established a process through the AMI system to send a
22 message either by text or email, based on customer preference, if continuous usage was
23 detected for 24 hours. If no telephone contact was made, a letter was sent to notify them.
24 If the customer was unable to locate a leak, a field visit was ordered to confirm the
25 constant consumption reading. If movement on the meter was verified, a free water
26 conservation survey was offered to assist the customer with locating the problem.
27 The Ventura pilot program issued 600 internal leak alerts – for those leak alerts triggered
28 by a continuous consumption threshold of less than 1/100th of a gallon, no leak

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1 notification was issued to customers. 403 potential leak notifications were issued to
2 customers via phone call and/or letter. The system generated 384 leak alerts through the
3 Monterey pilot.
4

5 Q185. Why does California American Water believe these AMI pilots are important?

6 A185. California American Water understands that AMI represents a significant capital
7 investment and sought to mitigate uncertainties in implementation processes and financial
8 requirements by conducting AMI pilots. These pilots enabled California American Water
9 to better understand the challenges of building and maintaining an AMI system. Our
10 enhanced knowledge provides a foundation for strong deployment across both service
11 territories and is reflected through the statements in my testimony and the detail
12 presented in the AMI plan, including our detailed cost estimates.
13

14 Q186. Has California American Water solicited customer feedback as to whether they find the
15 AMI program and customer portal valuable?

16 A186. Yes. California American Water ran a customer portal satisfaction survey, garnering 33
17 participants in the Central Division and 20 participants in Ventura.
18

19 Q187. Please describe the nature of the Ventura customer responses.

20 A187. 11% of responders received a leak alert and 11% of responders received a threshold alert.
21 When asked to describe the actions taken as a result of the online usage portal: 22%
22 noticed a possible leak on their property based on the data provided and had it repaired,
23 44% reduced their daily / weekly water usage, with 56% describing no actions taken as a
24 result of the online usage portal.
25

26 One commercial/industrial customer reached out to California American Water to inform
27 us that they used the customer portal daily and are disappointed that it is no longer
28 available.

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1 Q188. Please describe the nature of the Monterey pilot customer responses.

2 A188. 30% of responders received a leak alert and 40% of responders received a threshold alert.
3 When asked to describe the actions taken as a result of the online usage portal: 20%
4 noticed a possible leak on their property based on the data provided and had it repaired,
5 60% reduced their daily / weekly water usage, 40% listed “other,” leaving only 10%
6 describing no actions taken as a result of the online usage portal.

7
8 Q189. Can you provide specific cost estimates that have been influenced through the Ventura
9 and Monterey pilot efforts?

10 A189. Our solution implementation cost estimates have been influenced by our pilot programs
11 in Ventura and Monterey in many ways. Our projections of field installation costs and
12 meter replacement requirements are tied to strengths and difficulties encountered through
13 pilot deployment. Additionally, we understand the importance of engaging in the request
14 for proposal (RFP) process to obtain the most competitive vendor bids. In this regard, our
15 cost estimates are based on past industry experience from West Monroe.

16
17 **F. AMI Customer Data and Privacy**

18 Q190. How will California American Water protect customer information that is collected as
19 part of the AMI system?

20 A190. Data security is a vital system requirement and California American Water takes the
21 responsibility of protecting its customers and customer data seriously. This was a key
22 element of our pilot work in both Ventura and the Central Division. In consideration of
23 full-scale deployment, there are two primary facets of data security and privacy to
24 address. We will work with the AMI vendor to ensure secure transmission of metering
25 data. Additionally, we will create and implement processes to limit data authorization to
26 rightful users.

27

28

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1 **G. AMI Cost Estimates**

2 Q191. How were the AMI costs estimated?

3 A191. West Monroe created a 20-year estimate with cumulative cost projections for both the
4 Ventura and Central Division service territories. This proposal was based on (1)
5 California American Water’s current operations, (2) lessons learned from the AMI pilots
6 in Ventura and the Central Division, and (3) industry standards and leading practices.

7
8 These are only cost estimates based on current information. As stated above, California
9 American Water is committed to selecting the best technology for the given application
10 and providing the most value to our customers. Cost estimates will be updated after
11 engaging in the request for proposal (RFP) process to ensure California American Water
12 receives competitive pricing. At that time, California American Water would confirm a
13 final network design and vendor selection.

14
15 Q192. What AMI network solutions were evaluated as a part of this proposal?

16 A192. Four AMI network solutions were evaluated:

- 17
18 Option 1 – Privately owned, high-site point to multi-point network (PtMP – High)
19 Option 2 – Privately owned, low-site point to multi-point network (PtMP – Low)
20 Option 3 – Vendor owned, low-site point to multi-point network (Vendor-Owned)
21 Option 4 – Leveraging an existing cellular network (Cellular)

22
23 Q193. Please explain the costs to implement and maintain the AMI System.

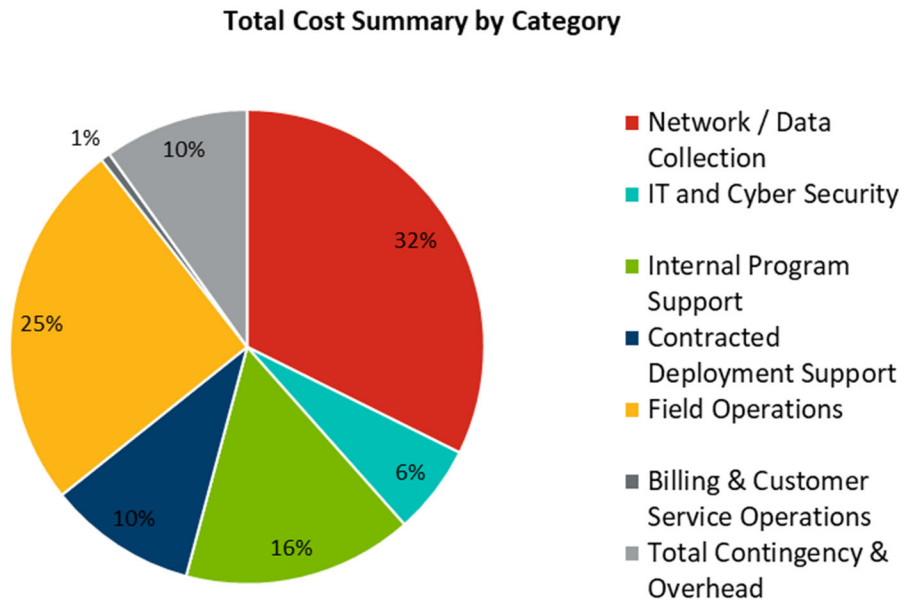
24 A193. California American Water’s AMI proposal is based on the current assumptions listed
25 within a proprietary model, as well as industry data and relevant benchmarks. Following
26 a Commission recommendation to proceed with AMI, California American Water will
27 issue a request for proposal (“RFP”) for AMI system and installation vendors across all
28

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1 four network designs. By engaging in the competitive bidding process rather than single-
2 sourcing vendors, the Company pursues the most cost-effective solutions.

3
4 The following analysis assumes Network Option (3): Vendor owned, low-site point to
5 multi-point network. Because this option was understood through financial modeling to
6 provide the greatest cumulative operational and customer benefits, it is California
7 American Water’s preferred solution; however, a final decision will rely on vendor
8 quotes obtained through the RFP process in order to ensure the most financially and
9 operationally effective solution is chosen.

10
11 Figure 6 shows that 32% of the costs associated with deploying AMI are network and
12 data collection costs. Field operation costs, such as endpoint hardware and installation,
13 account for approximately 25% of costs. The cumulative cost over a 20-year period for
14 implementing AMI technology amounts to \$41.12M.



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Figure 6: Estimated Costs for Vendor Owned AMI Network

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Item	20-Year Total (\$ in Millions)
Costs	
Network / Data Collection	\$(13.30)
IT and Cyber Security	\$(2.51)
Internal Program Support	\$(6.45)
Contracted Deployment Support	\$(4.16)
Field Operations	\$(10.36)
Billing & Customer Service Operations	\$(0.27)
Overhead & Contingency	\$(4.06)
Total Costs	\$(41.12)

Table 1: Estimated Costs for Vendor Owned AMI Network
The following graphs represent an estimated investment schedule.

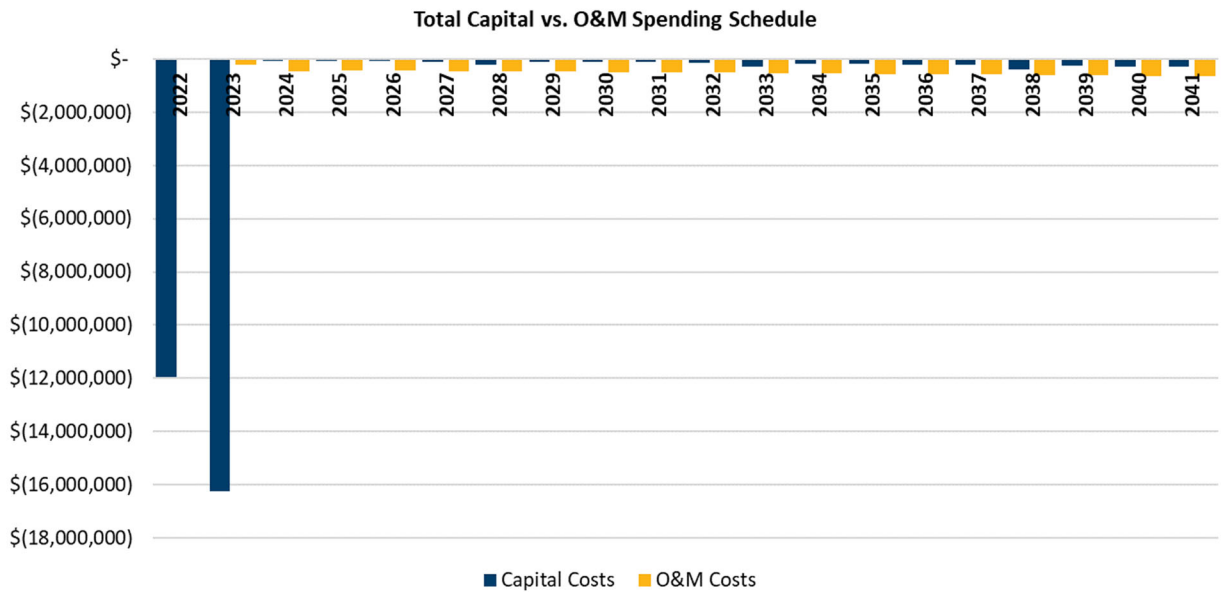


Figure 7: Capital and O&M Investment Schedule for Vendor Owned AMI Network

Using current assumptions, Figure 7 shows approximately \$28.17M of the \$41.12M AMI program costs will be incurred during the two years of deployment. A peak in costs will

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1 be seen in year 1, when California American Water will build the AMI fixed network,
2 and year 2, when California American Water will procure and install all AMI endpoints.

3
4 **H. Achieving Conservation and Customer Satisfaction Goals - AMI Compared**
5 **To AMR**

6 Q194. How do AMI and AMR compare with respect to meeting conservation standards and
7 customer expectations?

8 A194. In D.18-12-021, the CPUC suggested that the Company evaluate the comparative
9 feasibility of automated meter reading (“AMR”) versus AMI. Using the data access and
10 customer benefits provided by AMI as a baseline, California American Water considered
11 what it would take to get the same benefits from AMR and the associated costs.

12
13 Drive-by AMR technology uses mobile radio frequency collectors to obtain meter reads.
14 With drive-by AMR, utility personnel drive a truck equipped with a mobile collector in
15 the regions where AMR is deployed. Drive-by AMR, however, does not offer ongoing,
16 real-time data collection, and therefore cannot detect continuous consumption in the same
17 way that AMI can. Drive-by AMR provides meter reads monthly, as often as routes are
18 driven, providing no more granularity than manual meter reading. The Commission has
19 recognized that “AMR misses the opportunity for prompt identification and
20 communication of high water use and leaks that AMI offers.”¹¹ As such, in the event AMI
21 deployment is not approved by the Commission for the Ventura and Monterey districts,
22 to obtain the same data and customer benefits offered by AMI, California American
23 Water would need to drive all AMR routes daily to obtain reads. This is the only way to
24 provide a similar level of data access and customer benefits as compared to AMI, which
25 is necessary to meet upcoming conservation standards.

26
27 Q195. What would be the costs associated with a daily AMR program?

28 _____
¹¹ D.16-12-026, p.62.

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1 A195. A daily AMR program would have similar costs to an AMI program, with the exception
2 of network build-out activities and costs. Daily AMR would require California American
3 Water to replace meters and registers in a similar fashion to AMI and equip every meter
4 with an AMR radio endpoint. Additional personnel, vehicles, and mobile collectors
5 would be required so AMR meters could be read on a daily basis. This program would
6 require 43 vehicles driving to collect meter reads full time, producing a significant
7 increase in greenhouse gas emissions that is in conflict with California American Water’s
8 commitment to environmental stewardship and the State of California’s emission
9 reduction goals. Furthermore, this would exacerbate traffic congestion and increase the
10 risk of accidents on the road. The cumulative cost over a 20-year period for implementing
11 daily AMR amounts to \$165.77M, as shown in Figure 8.



21 Figure 8: Cumulative Costs of Daily AMR

22

23

24 **I. AMI Savings**

25 Q196. Please explain the savings realized by implementing the AMI system versus a daily AMR
26 system.

27 A196. With an AMI program, California American Water could proactively identify and alert
28 customers of continuous or high flow, enable more accurate analysis of consumption and

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1 system pressure, increase employee and community safety by reducing miles driven and
2 customer premises entry, and enable bill date customization.

3 The ability to avoid the operational challenges of daily AMR, improve customer service,
4 and provide proactive leak detection is what led California American Water to explore
5 the implementation of AMI in its system.

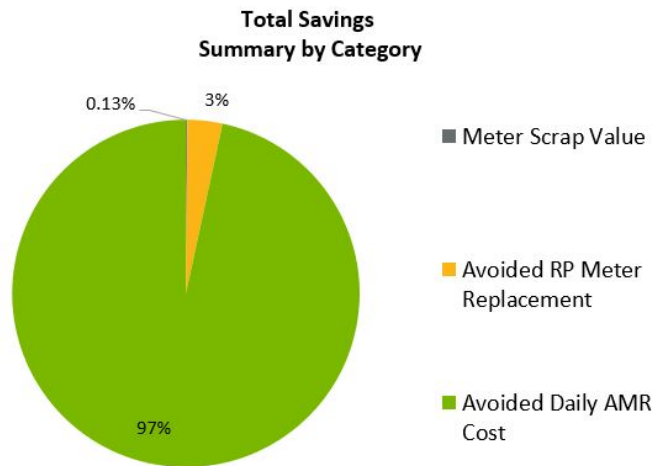
6 Savings are attributed to three primary functions:

7 (1) *Meter Scrap Value* – Scrap value obtained from recycling the brass derived from
8 replaced meter bodies.

9 (2) *Avoided RP Meter Replacement* – Many of the meters being replaced as part of the
10 AMI program would have been replaced due to LOS within the next 2-10 years. Because
11 these will be budgeted as part of the AMI program, the hardware and labor expenses
12 required for the existing meter replacement budget in future rate cases will decrease.

13 (3) *Avoided Daily AMR Cost* – Avoided hardware and labor expenses as *would be*
14 required for the deployment and steady-state operations of a full-scale, daily AMR
15 solution to obtain a similar level of data access and customer benefits.

16 Figure 9 shows that 97% of savings associated with AMI deployment are attributed to the
17 avoided financial and operational inefficiencies of a full-scale, daily AMR program.



26 Figure 9: Estimated Savings for Vendor Owned AMI Network

27

28 The cumulative savings over a 20-year period for implementing AMI technology amount

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1 to \$171.58M and are broken out in Table 2.

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Item	20-Year Total (\$ in Millions)
Savings	
Meter Scrap Value	\$0.22
Avoided RP Meter Replacement	\$5.59
Avoided Daily AMR Cost	\$165.77
Total Savings	\$171.58

9 Table 2: Estimated Savings for Vendor Owned AMI Network

10 In addition to the direct financial savings quantified in this analysis, AMI will provide
11 numerous benefits to customers that could not be provided with manual meter reading or
12 AMR, as described in section IX-B. “The Benefits of AMI.”

13
14 Q197. Please explain the net costs and savings realized by implementing the AMI System.

15 A197. The cumulative cash flow over a 20-year period of implementing AMI totals to
16 \$130.46M. The following graph represents estimated costs and savings over the next 20
17 years.

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Figure 10: Estimated Annual Costs and Savings for Vendor Owned AMI Network

Figure 11 displays the total cumulative cash flow, assuming all cost and savings are realized.

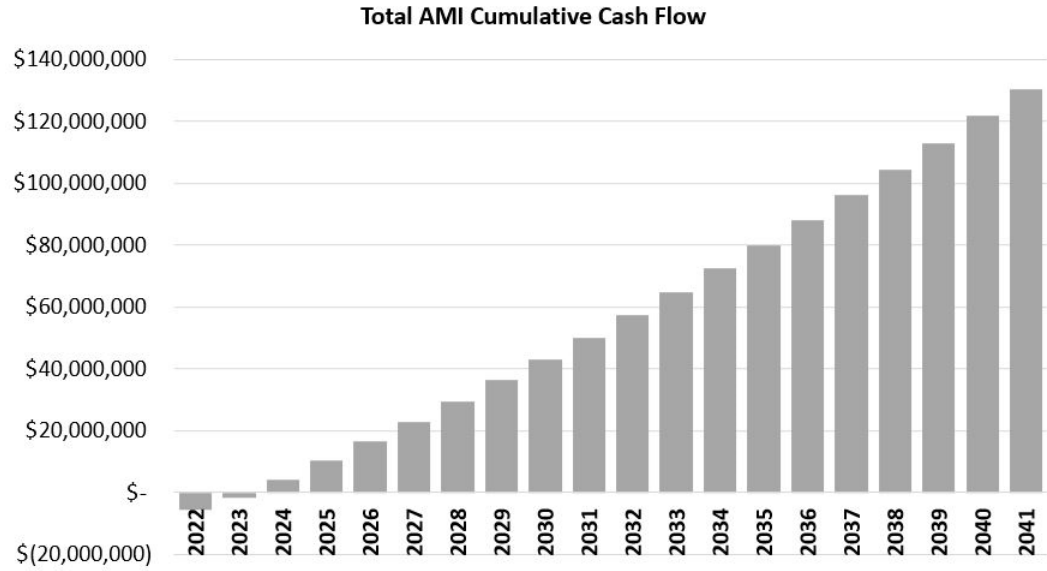


Figure 11: Cumulative Costs for Vendor Owned AMI Network

California American Water will see a payback period after year 2, whereas to get the same data and benefits of AMI it would have to deploy and operate a full-scale, daily AMR program at a cost \$165.77M, as seen in Figure 8. Additionally, several intangible

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1 benefits exist with the deployment of an AMI program, which will not exist if California
2 American Water continues with manual or automated meter reading.

3
4 **J. AMI Implementation Process**

5 Q198. Will customers be permitted to opt out of the proposed AMI?

6 A198. Yes. Based on our experiences piloting AMI in Ventura and Monterey, as well as
7 observing the experiences of other California utilities' AMI opt-out programs, California
8 American Water recognizes that some customers will not want this technology and the
9 benefits it enables. As the Commission is aware, opt-out provisions often lead to
10 increased operating complexities and associated costs. I discuss our proposed opt-out
11 program below.

12
13 **X. OTHER SPECIAL REQUESTS**

14 **A. Special Request No. 15 - Proposed Operational Tariff Modifications**

15 Q199. Please provide an overview of the proposed operational tariff modifications.

16 A199. The proposed operational tariff modifications discussed below are intended to improve
17 the customer experience by clarifying responsibilities between the customer and Utility
18 and by reducing inequities between customers. Specifically, the proposals below are
19 designed to address areas of the Company's tariffs that have repeatedly caused customer
20 confusion or complaints.

21
22 **1. AMR/AMI Opt-Out Program**

23 Q200. What is California American Water's request with respect to implementing an
24 AMR/AMI Opt-Out Program?

25 A200. California American Water is requesting authorization to implement an opt-out program
26 (1) to allow customers who do not wish to have an AMR or AMI meter to opt out of
27 installation of an AMI meter or have their AMR/AMI meter replaced, and (2) to allow
28 California American Water to recover opt-out costs from the opt-out customers. The

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1 Commission previously recognized that it was appropriate for California’s regulated
2 energy utilities to provide an opt-out option and to recover costs associated with
3 providing an opt-out option from the opt-out customers.¹² California American Water is
4 requesting similar treatment.
5

6 Q201. Why does California American Water propose an AMR/AMI Opt-Out Program now?

7 A201. California American Water has received multiple requests from customers to opt out of
8 AMR/AMI meters. In its Ventura District pilot, 13 of 1300 customers, or 1%, requested
9 not to receive an AMI meter. The opt-in process operated in the Monterey District pilot
10 added additional barriers to customers’ abilities to realize the benefits of AMI. Because
11 it was a voluntary process, there is not a comparable percentage available. Because we
12 are requesting a full AMI deployment in the Ventura District and the Central Division,
13 the time is ripe for implementing this program.
14

15 Q202. What is California American Water proposing for its AMR/AMI Opt-Out Program?

16 A202. California American Water would like to create a statewide program for customers to opt
17 out of a wirelessly communicating (automated) meter – either AMI or AMR.
18

19 Q203. What are the proposed fees and costs associated with the AMR/AMI Opt-Out Program?

20 A203. All charges and provisions of the customer’s standard tariff shall apply. Opt-out
21 customers will also be charged as follows:
22

23 Initial Fee: \$70.00

24 Monthly Charge: \$13.00/month
25

26 _____
27 ¹² D.14-12-078, *Decision Regarding SmartMeter Opt-Out Provisions*, December 18, 2014 (adopting fees
28 and changes for residential energy customers who do not wish to have a wireless smart meter); D.12-02-
014, *Decision Modifying Pacific Gas and Electric Company’s SmartMeter Program to Include an Opt-
Out Option*, February 1, 2012, (modifying PG&E’s SmartMeter Program to include an opt out provision
for customer who did not want a wireless smart meter).

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1 Q204. How were the initial fee and monthly charge determined?

2 A204. The charts below outline the assumptions and costs used to calculate the initial fee and
 3 monthly charge. The initial fee is intended to capture one-time costs associated with
 4 actually replacing the AMR/AMI meter. The monthly fee is intended to capture the
 5 ongoing additional costs associated with reading an analog meter, which is more
 6 laborious. A service order must be created, dispatched, and worked, which involves
 7 effort from the back office, as well as the field service technician, who must drive to the
 8 premise and manually read the meter. Cost considerations also include systems
 9 integration, meter selection, maintaining multiple systems to obtain reads, and revision of
 10 internal processes, all resulting from opt-outs.

Baseline Assumptions	
Total CAW Customers	176,301
Opt-Out Rate	0.20%
Total Opt-Out Customers	352.60
Average Meter Technician Hourly Cost with Burden	\$48.94

One-Time Costs	
Average Drive Time for Service Order (round trip)	26 min
Average Time at Customer Premise for Opt-Out Order	60 min
Total Opt-Out Service Order Time	86 min
Average Meter Technician Hourly Cost with Burden	\$48.94 per hr
Total Meter Technician Labor Cost	\$70.15
Proposed Initial Fee for Opt-Out Customers	\$70.00

Monthly Costs	
Expected Opt-Out Rate	0.20%
Expected Number of Opt-Out Customers	352.602
Number of Days Required to Read Opt-Out Meters	12 days
Number of Hours Required to Read Opt-Out Meters	96 hours
Number of Times Opt-Out Meters Read per Year	12
Total Annual Opt-Out Meter Reading Labor	1152 hours
Total Annual Opt-Out Meter Reading Labor Costs	\$56,379
Total Costs to Perform Opt-Out Meter Reading Per Year	\$56,379
Proposed Monthly Fee for Opt-Out Customers	\$13.00

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1 Q205. What additional terms is California American Water proposing with respect to fees for
2 the AMR/AMI Opt-Out Program?

3 A205. Additional terms regarding opt-out program fees are as follows:

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- Charges will apply following the metering equipment change from an automated meter to a non-transmitting meter. If an equipment change is not required, charges will apply following affirmative election of the opt-out option by the customer.
- The initial fee is only applicable if automated metering equipment is required to be removed from the customer premises.
- The initial fee and monthly charge shall be applied on a per-location, not per-meter basis.
- California American Water will perform a review of the costs associated with the AMR/AMI Opt-Out Program within two years of the effective date to determine if the fee amounts or any other provisions need to be modified.

Q206. What are the other proposed terms and conditions of the AMI/AMR Opt-Out Program?

A206. The full list of the proposed terms and conditions for the AMR/AMI Opt-Out Program are included in Attachment 5 to the Direct Testimony of Wes Owens.