BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Application of Southern California Edison Company (U338E) for Authority to Increase Its Authorized Revenues for Electric Service In 2021, among other things, and to Reflect That Increase in Rates.	Application 19-08-013 (filed August 30, 2019)

DIRECT TESTIMONY OF JOHN D. WILSON ON BEHALF OF SMALL BUSINESS UTILITY ADVOCATES

Jennifer L. Weberski
Litigation Supervisor

Small Business Utility Advocates

548 Market Street, Suite 11200
San Francisco, CA 94104
Telephone: (703) 489-2924
Email: jennifer@utilityadvocates.org

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TABLE OF CONTENTS

TABLE OF EXHIBITS

Attachment RII-17	Track 3 SBUA-SCE-001-04.b-c
Attachment RII-18	Track 2 SBUA-SCE-001-11
Attachment RII-19	Track 3 SBUA-SCE-002-02
Attachment RII-20	Track 2 SBUA-SCE-002-01.a
Attachment RII-21	Track 2 SBUA-SCE-001-01
Attachment RII-22	Track 3 SBUA-SCE-003-08
Attachment RII-23	Track 3 SBUA-SCE-003-09
Attachment RII-24	Track 3 SBUA-SCE-003-10
Attachment RII-25	Track 3 SBUA-SCE-003-04
Attachment RII-26	Track 3 SBUA-SCE-003-01
Attachment RII-27	Track 3 SBUA-SCE-003-06
Attachment RII-28	Track 3 SBUA-SCE-003-07
Attachment RII-29	Track 3 SBUA-SCE-004-03
Attachment RII-30	Track 3 SBUA-SCE-004-07
Attachment RII-31	Track 3 SBUA-SCE-004-05
Attachment RII-32	Track 3 SBUA-SCE-004-04
Attachment RII-33	Track 3 SBUA-SCE-004-01
Attachment RII-34	Track 3 SBUA-SCE-004-02
Attachment RII-35	Track 3 SBUA-SCE-004-08
Attachment RII-36	Track 3 SBUA-SCE-005-02
Attachment RII-37	Track 3 SBUA-SCE-005-04.a-b
Attachment RII-38	Track 3 SBUA-SCE-005-04.c-e
Attachment RII-39	Track 3 SBUA-SCE-005-06
Attachment RII-40	Track 3 SBUA-SCE-005-07
Attachment RII-41	Track 3 SBUA-SCE-005-01
Attachment RII-42	Track 3 SBUA-SCE-005-03
Attachment RII-43	Track 3 SBUA-SCE-005-05

I. Identification & Qualifications

Q: Mr. Wilson, please state your name, occupation, and business address.

A: I am John D. Wilson. I am the research director of Resource Insight, Inc., 5 Water St., Arlington, Massachusetts.

Q: Summarize your professional education and experience.

A: I received a BA degree from Rice University in 1990, with majors in physics and history, and an MPP degree from the Harvard Kennedy School of Government with an emphasis in energy and environmental policy, and economic and analytic methods.

I was deputy director of regulatory policy at the Southern Alliance for Clean Energy for more than twelve years, where I was the senior staff member responsible for SACE's utility regulatory research and advocacy, as well as energy resource analysis. I engaged with southeastern utilities through regulatory proceedings, formal workgroups, informal consultations, and research-driven advocacy.

My work has considered, among other things, the cost-effectiveness of prospective new electric generation plants and transmission lines, retrospective review of generation-planning decisions, conservation program design, ratemaking and cost recovery for utility efficiency programs, allocation of costs of service between rate classes and jurisdictions, design of retail rates, and performance-based ratemaking for electric utilities.

My professional qualifications are further summarized in Exhibit RII-2.

Q: Have you testified previously in utility proceedings?

A: Yes. I have testified more than thirty times before utility regulators in California, the Southeast U.S., and Nova Scotia, and appeared numerous additional times before various regulatory and legislative bodies. I have testified before the California Public Utilities Commission in seven proceedings.

II. Introduction

Q: On whose behalf are you testifying?

A: I am testifying on behalf of Small Business Utility Advocates (SBUA). SBUA's mission is to represent the utility concerns of the small business community. Promoting an electricity rate structure that facilitates the success of small commercial customers with cost effective utilities supplying clean and renewable energy is central to this mission.[1]

There are approximately 4,131,508 small businesses in the state that comprise of 99.8% of all employer firms, provide 48.5% of private sector employment, account for over 210,000 net new jobs, and comprise approximately 42.1% of California's $165.6 billion in exports.[2] Small businesses are not only vital to California's economic health and welfare but also constitute an important class of ratepayers for utility companies.

Small commercial ratepayers have historically consumed more than 26,000 gigawatt-hours of electricity annually, representing 33% of SCE's load and nearly $5 billion in revenues at present rates.[3] The ratepayer interests of this class often diverge from residential ratepayers and larger commercial customers on a variety of utility matters. It is vital to small businesses that rate allocation and rate treatment are fair to all energy consumers.

Q: What is the scope of your testimony?

A: I reviewed the application of Southern California Edison (SCE) for Track 3 of its 2021-2023 General Revenue Case (GRC).

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[1] *See,* SBUA website at www.utilityadvocates.org.

[2] California Small Business Profile, 2020, U.S. Small Business Administration Office of Advocacy. *See* https://cdn.advocacy.sba.gov/wp-content/uploads/2020/06/04142955/2020-Small-Business-Economic-Profile-CA.pdf.

[3] Based on SCE's 2021 GRC Phase II workpapers.

Q: What issues do you address?

A: In Track 3, SCE describes its procurement of a third VMS software platform, which it calls Arbora. SCE gives the following explanation for its procurement of Arbora.

> As part of its 2020 WMP submitted on February 7, 2020, SCE developed an Integrated Vegetation Management (IVM) technology platform that aimed to replace the disparate tools developed over the past several years for the multiple programs within the Vegetation Management Program. The programs include Routine and Non-Routine (ad-hoc work), Pole Clearance, Drought Resolution Initiative (DRI) and the Hazard Tree Management Program (HTMP).[4]

This explanation is incomplete. SCE made the decision to develop Arbora in 2019, when SCE abandoned efforts to remediate the Clearion electronic vegetation management system (Clearion VMS), which failed immediately upon deployment in 2018. After a period of reverting to a paper and spreadsheet management system and two attempts to re-launch the Clearion VMS software, SCE identified an architecture flaw and abandoned efforts re-engineer the original software.

Once Clearion VMS was abandoned, SCE decided to pursue both short-term remediation and long-term replacement. The remediation solutions, Survey123 and Fulcrum, could be developed rapidly, but would not have all the functions that SCE had expected from Clearion VMS. The long-term replacement solution, Arbora, was intended to fully meet those functions.

The issue addressed in my testimony is whether it is reasonable for SCE to recover the costs associated with the Survey123 software that remediated and the Arbora software that is replacing the Clearion VMS.

[4] SCE, Track 3 Direct Testimony, p. 108, lines 13-17.

Q: What are your conclusions regarding the SCE application?

A: SCE's expenditures for remediation and replacement of its failed vegetation management system (VMS) software should be deemed to result from imprudent procurement of the Clearion VMS.

As discussed in Section IV of my testimony, the problems with the Clearion VMS software originated with a flawed software procurement and implementation process. SCE blames work management challenges that drove up costs for line clearances on the rapid ramp-up and increased work scope. In any case, SCE should have known that a higher level of line clearing would be required from time to time (e.g., during droughts and insect infestations). SCE should have procured software that could accommodate its requirements in a busy year.

Most important, the procurement process for the Clearion VMS software did not consider the importance of data synchronization capabilities. SCE's line-clearing crews often operate in remote areas without the ability to synchronize their database for weeks at a time. SCE did not identify the data quality issues that would result from the software synchronization inadequacies in the Clearion VMS software because it did not develop performance standards related to software synchronization prior to procuring the software. For example, SCE did not investigate the implications of the number of data users being significantly higher than other utilities that used the Clearion VMS software.

Even after procurement, it appears that SCE did not focus on the performance of the software synchronization during the initial testing or the first two root cause analyses that SCE conducted.

Survey123 is a remediation solution that SCE acknowledges lacks the capability to meet its performance objectives. Arbora is SCE's software solution that will replace the Clearion VMS. SCE expects Arbora to meet performance criteria that were overlooked in the procurement of the Clearion VMS.

Q: What do you recommend?

A: The Commission should disallow $16.15 million in capital and $1.11 million in O&M costs for 2020. Cost recovery for Survey123 should be disallowed because those costs are related to remedial actions after an imprudent error. Similarly, cost recovery for Arbora should be disallowed because its principal purpose is to do what Clearion VMS failed to do. It is unreasonable for customers to pay costs in excess of what SCE incurred to bring the Clearion VMS software online. The Commission has already authorized recovery of the Clearion VMS software costs. Customers should not be required to pay twice (or three times, in this case) for the same benefit, where those costs arose from SCEs imprudence.

III. Background of the Clearion VMS software.

Q: What is the Clearion software?

A: SCE explained the Clearion VMS software as follows:

> Prior to 2018, SCE did not have work management software for its routine vegetation work, relying instead on a paper-intensive system coupled with data collection software. In mid-2018 … SCE transitioned to an electronic vegetation management system (VMS).[5]

> At the highest level, the VMS system was composed of three parts. 1) Software with a local database on an end-user's (field personnel and planners/schedulers) computing device, 2) back office services and a 3) database(s) that runs in SCE's data centers. The VMS running on the end-user device synchronizes with the SCE back-end via cellular communications.

> The initial project scope and design in 2016 considered several hundred end-users with a sophisticated user interface screens for planners and schedulers and simpler field personnel user interface screens for inspection, trimming and quality assurance.[6]

[5] SCE, Track 2 Direct Testimony, p. 35, lines 8-11.

[6] Attachment RII-2, p. 1.

The VMS software was procured from Clearion Software LLC, which further describes the software as "a series of modules that is built to work with the ESRI ArcGIS platform."[7]

Q: Why did SCE switch from a paper-based system to Clearion VMS software?

A: SCE implemented the Clearion VMS software "in an effort to improve efficiency, quality control, reporting, analytics to support risk-based decision making, and compliance record retention for vegetation line clearance work."[8] SCE stated that,

> The main challenge of the paper-based system … was the inability to see assigned work on a map. The work points were exported into a spreadsheet format, which was not listed in the optimal order to be completed for tree trimming crew planning and work completion efficiency.
>
> … As a result, tree trimming crews spent more time each day locating trees that required work, and less time actually trimming the trees.[9]

Q: Please describe the procurement of the Clearion VMS software.

A: SCE declined to provide documentation of its procurement process for the Clearion VMS software in response to a data request, but described the process further in its Track 2 Rebuttal testimony.[10] SCE states that it procured the Clearion VMS software in a sole-source procurement because it was the only commercial off the shelf (COTS) "software that met all of SCE's requirements," and was "a partner of the vendor that was providing SCE with its GIS needs."[11]

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[7] See, http://clearion.com/solutions/vegetation-management/. Accessed August 28, 2020.

[8] SCE, Track 2 Rebuttal Testimony, p. 41, lines 7-9.

[9] Attachment RII-3.

[10] Attachment RII-21.

[11] SCE, Track 2 Rebuttal Testimony, p. 41, lines 2-4; p. 43, lines 1-2, 6-7.

In explaining its preference for COTS software, SCE stated,

> [SCE] procured the VMS in October of 2016 … The VMS was a Commercial Off The Shelf (COTS) package … SCE preferred to utilize a COTS solution at the time the decision was made in 2016, rather than developing from scratch, because it was aligned with SCE's strategy to reduce the creation of new custom-developed software solutions.[12]

Because SCE had such a strong preference for COTS software, it appears that it did not thoroughly investigate the customized solutions used by PG&E and SDG&E.[13]

Q: What evaluation criteria did SCE use to select Clearion VMS for sole-source procurement?

A: In addition to its preference for COTS software, SCE identified eight key requirements for the Clearion VMS, as follows.

1. Identifies individual trees
2. Includes tree characteristics
3. Includes environmental factors
4. Offers geospatial visibility
5. Displays SCE assets
6. Shows and allows input of data electronically
7. Includes schedules & shows work progress
8. Electronic reports[14]

SCE also stated that its 2016 "initial project scope and design" included three elements:

1. Several hundred end-users using either:
    - Sophisticated user interface screens (planners/schedulers), or

[12] Attachment RII-4.

[13] Attachment RII-22.

[14] SCE, Track 2 Rebuttal Testimony, Appendix F, p. 1.

- Simplified interface screens (field personnel).

2. Back-office services.
3. A database running in SCE's data centers.[15]

Q: What information did SCE rely upon when it selected Clearion VMS for sole-source procurement?

A: SCE's procurement process appears to have relied heavily on the vendor's representations, very general third-party recognition,[16] and information obtained from five utility users of Clearion VMS. SCE did not conduct any pre-purchase testing or definition of usage requirements beyond the very general requirements described above.[17]

SCE obtained references from five utilities, but it is unclear whether SCE gathered information beyond a simple phone interview process.[18] Of those five utilities, SCE was able to provide the number of crew and data users for three:

- DTE – 350 crews, 120 data users
- Southern Company – 400 crews, 60 data users
- Florida Power and Light (transmission) – 100 crews, 30 data users

SCE did not collect much performance information from the five utilities. For example, SCE states that it "did not collect scalability, enhanced trim capability, or performance metrics" from the utilities."[19] While public data are available regarding

[15] Attachment RII-2.

[16] SCE cited Gartner, Inc's "best-in-class" recognition. SCE, Track 2 Rebuttal Testimony, p. 42, line 22, to p. 43 line 1.

[17] SCE developed the "business requirements" in collaboration with "vendor consultants" after procurement was completed. SCE, Track 2 Rebuttal Testimony, p. 44, lines 5-8.

[18] Attachment RII-6.

[19] Attachment RII-29.

the miles of transmission and distribution lines on these systems, I do not know if the utilities use the Clearion VMS to manage crews across all or just a portion of their transmission and distribution systems. Other than the size of these utilities, and some information about the number of crews or data users, the documents and data responses provided by SCE seem to indicate that the five utilities did not provide much specific data regarding the performance of Clearion VMS. What data were provided—the number of data users—suggests that those utilities were deploying Clearion VMS at a significantly smaller scale than SCE intended.

Q: What was the cost of the Clearion VMS software?

A: SCE's costs included capital costs of $5.75 million and O&M costs of $0.34 million.[20] The majority of the capital costs were $2.0 million paid to Clearion Software LLC and $1.7 million paid to Environmental Systems Research Institute (ESRI). ESRI also received most of the O&M costs. According to SCE, these costs were "part of base IT capital within the 2015 GRC and 2018 GRC filing scope."[21]

The capital costs of the Clearion VMS software were included in Track 2, and SCE has filed an application for securitization of those capital costs. When securitized, those costs will be recovered through a fixed recovery charge.[22]

[20] Attachment RII-8.

[21] Attachment RII-9.

[22] Attachment RII-30. This information is different than what SCE stated in Track 2. SCE stated that, "… SCE is not seeking costs for the VMS in this proceeding. The cost to implement the VMS is not included in part of the track 2 incremental revenue request because it was purchased and implemented as part of base IT capital within the 2015 GRC and 2018 GRC filing scope." Attachment RII-21. Based on this representation, SBUA did not contest the recovery of costs for Clearion VMS software in Track 2.

Q: Did the VMS software vendor provide any performance guarantee?

A: No. Furthermore, the warranty provisions never came into effect because SCE "never provided final acceptance" of Clearion VMS.[23]

Q: What was the result of the Track 2 2021 General Rate Case?

A: In a Settlement Agreement with SBUA, Cal Advocates, and TURN, SCE agreed to a $90 million revenue reduction in O&M costs for Fire Mitigation Memorandum Accounts. "SBUA recommended a $75.1 million O&M reduction and a $4.2 million capital expenditure disallowance in SCE's vegetation management costs based on its assertion that SCE undertook a flawed procurement process of its vegetation management system (VES), that SCE failed to perform an adequate root-cause analysis after performance issues with the VMS arose, and that the VMS replacement software was only needed due to SCE's missteps with the VMS." The parties agreed that this was a "mutually acceptable outcome" to "avoid the expense and burden of protracted litigation." SBUA did not admit that its position on any issue lacked merit.[24]

IV. Failure of the Clearion VMS software.

Q: Please describe the failure of the Clearion VMS software.

A: The fundamental problem that forced SCE to decommission the Clearion VMS software was "data quality issues related to software synchronization inherent in the VMS design."[25]

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[23] Attachment RII-23.

[24] Joint Motion by SCE, Cal Advocates, TURN, and SBUA for Approval of 2021 General Rate Case Track 2 Settlement Agreement, A.19-08-013 (November 2,2020), pp. 8, 16, A-5.

[25] SCE, Track 2 Rebuttal Testimony, p. 42, lines 6-10.

SCE's position is that these issues were triggered by the "scale of vegetation management work in SCE's territory, along with the number of crews (users), exceeded the software's scalability limits and severely impacted broad deployment of the VMS."[26] SCE acknowledges that "new regulations and increased state-wide focus on wildfire mitigation activities" did not result in any new software performance requirements other than an "increased number of users and reports."[27]

SCE's argument that there was an "increased number of users" does not seem to be supported by evidence. In the System Architecture Design prepared by ESRI in 2017, the capacity analysis relied on 408 mobile users (100 active on peak) and 495 operations dashboard users (60 active on peak).[28] In providing an explanation as to why the problems were not anticipated, SCE states that the initial project scope and design in 2016 considered "several hundred end-users," and the number of users increased to "more than 500 in the field," which SCE characterized as a "dramatic increase."[29] However, the System Architecture Design appears to have evaluated the server capacity on the assumption of over 900 end-users and the capability to support more than 500 in the field does not appear to represent a dramatic increase over what was expected in 2017.

[26] SCE, Track 2 Direct Testimony, p. 35, lines 12 - 14.

[27] Attachment RII-31.

[28] Attachment RII-32, part c: ESRI, *System Architecture Design Document: Vegetation Management, Southern California Edison* (November 2017), p. 17.

[29] Attachment RII-2, p. 1.

Q: What were the productivity impacts of the Clearion VMS software failure?

A: SCE states that the problems had a "considerable impact on productivity."[30] Due to the problems with the Clearion VMS software, SCE transitioned back to a paper-based system.

The problems with the Clearion VMS software led to "decreased utilization of crews."[31] SCE acknowledges that field personnel used "productive 'work time' waiting for technical support" of the VMS software, including "system updates, device repairs, and general user issues."[32]

After SCE decommissioned the VMS software and reverted to the paper-based system, productivity and efficiency suffered at every step in the process.

Once crews received their assignments on paper, the productivity problems worsened. SCE states that "main challenge of the paper-based system … was the inability to see assigned work on a map. The work points were exported into a spreadsheet format …" After completing work at one site, the crew would need to "look through the entire spreadsheet (sometimes 10 or more pages long) for work in close proximity." Due to the increase in travel time, crews spent "less time actually trimming the trees."[33]

Then, even when they were at an assigned field location, data quality issues could not be easily resolved.[34] Crews needed to manually transmit updated information to back-office personnel, rather than entering the information directly into the system. Resolving a data quality issue would require a phone call, email, or

[30] SCE, Track 2 Direct Testimony, p. 35, line 16.

[31] SCE, Track 2 Direct Testimony, p. 35, line 17.

[32] Attachment RII-12.

[33] Attachment RII-3.

[34] Attachment RII-13, p. 1.

text to a person in the back office rather than simply accessing a database to correct the problem. Presumably, if no cellular signal was available, the crew would have to travel to a location with service.

While SCE was unable to provide data quantifying the impact of these problems on crew utilization, it appears very serious. SCE explained that it "could not release these crews based on the extremely scare resource availability of qualified tree trimmers in California at that time. … SCE could not risk losing the crews to other utilities and not being able to hire them back promptly later."[35] When the alternative to crew productivity problems is releasing the crew, the problem is probably not just reducing productivity by 10 or 20 percent, but likely more on the order of 50 percent.

An estimate that crew productivity was reduced by something on the order of 50 percent during much of the year is also supported by the sheer number of inefficiencies that SCE identified. Travel times were longer because crews lacked an easy way to map and plan their work locations and but also because crews may have been overlapping their work areas due to uncoordinated work in the back office. Delays in resolving problems on site were exacerbated by the lack of a mobile database platform. Potential worktime was also lost during to the additional training for the multiple transitions between different vegetation management systems.

Q: Were there other productivity problems related to the Clearion VMS software?

A: Yes. SCE procured the Clearion VMS software with the intention to use it only for line clearing and eventually its Dead, Dying and Diseased Tree program.[36] The procurement did not consider the potential to coordinate across all of SCE's

[35] SCE, Track 2 Direct Testimony, p. 35, line 17 through p. 36, line 4.

[36] SCE, Track 2 Rebuttal Testimony, p. 41, FN 73.

vegetation management programs (DRI, HTMP, Pole Clearing, Routine, and Non-Routine). This requirement was identified much later, perhaps in 2020.[37]

The failure to include this requirement in the procurement process represents a significant design flaw. Prioritizing and assigning crews individually by program would result in less efficient crew schedules than a unified assignment system. Furthermore, a paper-based system would either have required extra back-office processing to create and communicate geographically optimized assignments or have resulted in inefficient use of crews due to suboptimal assignments. Without software-based work planning,[38] neither annual scheduling and crew allocation nor the scheduling of crews across all vegetation management programs appears to have been handed efficiently.

Q: Did SCE and Clearion LLC attempt to fix the VMS software?

A: Yes. SCE describes three separate repair attempts.

First, SCE conducted what it describes as a root cause analysis beginning in June 2018 and identified a database design issue. SCE's narrative indicates that it conducted the analysis and repair on its own, without vendor support.[39]

Second, SCE conducted an enhanced root cause analysis beginning in August 2018, this time escalating the issue to its vendors. This analysis led to the conclusion that software installation "on user devices may not have been done correctly."

After a "successful" pilot, in March 2019 SCE re-introduced the Clearion VMS software, conducted further training on work practices and created a "dedicated team

[37] Attachment RII-13, p. 1.

[38] Attachment RII-13, p. 1.

[39] SCE, Track 2 Rebuttal Testimony, p. 44, line 22, to p. 43 line 2.

of data analysts to resolve data conflicts on an on-going basis."[40] Yet, "the issues continued."[41]

SCE then initiated a third root cause analysis. This time SCE "examined the synchronization architecture between the back office and the field devices."[42] This analysis apparently considered issues that had been overlooked during procurement and during the first two root cause analyses.

> SCE found that, due to the VMS architecture, whenever a user updated their database prior to syncing it, the VMS would overwrite every other user's database, resulting in data errors. This issue was further complicated by the length of time it took (or sometimes failure) to sync due to the volume of information and users. SCE then validated its findings of the root cause with the VMS vendors.[43]

SCE also identified that the synchronization problems could be triggered by a user working in a remote area for a few weeks or even going on vacation for a few weeks and then sending data before receiving all updates.[44] At that point, in the second quarter of 2019, SCE concluded that the Clearion VMS had irreparable data quality issues related to software synchronization inherent in its design.

[40] Attachment RII-2, p. 2-3.

[41] SCE, Track 2 Rebuttal Testimony, p. 45, lines 13-14.

[42] SCE, Track 2 Rebuttal Testimony, p. 45, lines 18-19.

[43] SCE, Track 2 Rebuttal Testimony, p. 45, lines 19-23.

[44] Attachment RII-2, p. 3; Attachment RII-24.

V. Problems with the Clearion VMS procurement

Q: Why didn't SCE identify the VMS software's architectural flaw during procurement?

A: SCE did not identify data synchronization requirements on the list of criteria for a work management system.[45] This oversight manifested in three ways: SCE did not evaluate data synchronization performance standards during procurement, SCE did not conduct pre-deployment testing on data synchronization, and SCE did not give sufficient consideration to data synchronization issues during the first two root cause analyses.

Q: How could SCE have spotted the data quality issues related to software synchronization inherent in the Clearion VMS design?

A: SCE could have conducted a thorough RFP and it could have investigated the synchronization performance standards used by the five reference utilities.

SCE decided not to conduct an RFP after completing its evaluation of Clearion VMS and several other competitors. As discussed in Section III of this testimony, SCE identified eight key requirements and three technical elements for review prior to making the direct award of a contract for the Clearion VMS software.

In comparison, in its November 2019 RFP for its digital accelerator platform (discussed in Section VIII), SCE included 111 specific technical requirements and 19 pages of business requirements described as use cases, high-level implementation

[45] SCE states that its criteria for selecting the software included "the ability to identify individual trees and their characteristics, allow input of electronic data in the field, produce schedules and vendor progress reports, and provide geospatial visibility." SCE, Track 2 Rebuttal Testimony, p. 42, lines 6-10.

questions, and low-level testable functional requirements.[46] Among the technical requirements with respect to the application development platform are:

> 12.0 Supports real-time and offline integration to backend enterprise applications [details omitted for brevity]
>
> 13.0 Supports offline processing:
>
> - Client-side data caching (local data store) and persistence
> - Automatic Data synchronization when online

The technical requirements also provide for 500 concurrent users and 20,000 total users.[47] The RFP required bidders to respond to each technical requirement as to whether the requirement was met. For example, the bidder could respond "Meets Now," and must be able to demonstrate the capability to SCE on demand, or it could respond that the capability would be delivered in the "Long Term," meaning 1 to 3 years.[48]

Q: What do you conclude from a comparison of the Clearion VMS and digital platform procurement processes?

A: The depth of detail in the digital platform RFP vastly exceeds that of the VMS review, which was essentially captured on a single presentation slide. The process of developing the technical requirements for the digital platform RFP gave SCE greater clarity to the procurement process than the direct award procurement for Clearion VMS. The detailed RFP also created accountability for both SCE and potential vendors in identifying the requirements.

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[46] Attachment RII-25, part a: SCE, *Digital Accelerator Platform Request for Proposal* (November 1, 2019), pp. 9-39.

[47] *Id.*, pp. 14, 19.

[48] *Id.*, p. 38.

Q: How would it have been helpful to investigate the synchronization performance standards used by the five reference utilities?

A: SCE could have determined that none of the five utilities were operating Clearion VMS at a performance level similar to that of SCE by obtaining their synchronization performance standards.

It is likely that none of the five utilities that it obtained references from had similar data synchronization performance standards. As discussed above, SCE's requirements specified "several hundred data users." SCE obtained the number of data users from only three of the five utilities, and the maximum number of data users from any of those three utilities was 120 data users. However, this information was not considered in the final evaluation of the Clearion VMS software.

Furthermore, the contributing issue of remote working environments—SCE's line clearing crews would operate in areas where they might not access the main database for "a few weeks"[49]—appears to have been overlooked by SCE during this inquiry. SCE staff were aware of the need for its trimming crews to operate in remote areas, as demonstrated by SCE's budget policy regarding the necessary lodging.[50]

My review of the five utilities suggests that none had a similar need to maintain data synchronization in regions with heavily forested, challenging terrain.

- Southern Company is potentially the most comparable utility in terms of size and expansiveness of its transmission and distribution systems. However, the information provided by SCE does not make it clear whether the Clearion VMS software is used for all of Southern Company's operations, or only a part of them. Southern Company and its (then four) operating companies may have separate management systems for line clearing and other field operations. Also,

[49] Attachment RII-2, p. 2-3.

[50] Attachment RII-14.

even though Southern Company's system includes rural areas, some with small mountains, none are so remote that they would have prevented crews from synchronizing databases on a daily basis.

- Florida Power & Light is also comparable to SCE's customer base but has only a small portion of its system in remote, rural areas.
- DTE and IPL are fairly compact, primarily distribution-based utilities.
- Public Service of New Mexico also has relatively few miles of non-urban transmission, with much of its non-urban system located in desert regions with little need for line clearing activities.

If SCE relied primarily on these references to determine that the Clearion VMS would perform well on its system, then it did not address the need to maintain data synchronization in regions with heavily forested, challenging terrain.[51]

Q: Should SCE have known about the data quality issues related to software synchronization inherent in the Clearion VMS design?

A: Yes. SCE should have developed specific performance standards and conducted an RFP prior to procuring the Clearion VMS software. Just as SCE has performance standards when it enters into a power supply contract or purchases transformers, it should have had specific performance standards, evaluated them (to the extent feasible) and required performance guarantees as part of the RFP.

SCE asserts that it "could not have discovered the VMS issues prior to purchase." SCE states that it would have had to build a simulator to recreate the synchronization issues SCE experienced, without an indication that synching would

[51] SCE's rebuttal of this criticism provided cost data for two utilities as evidence of the "size of their vegetation management budgets." (SCE, Track 2 Rebuttal Testimony, p. 43, lines 8-15) My testimony did not question the level of the five utilities' spending, but rather suggested that those utilities had not faced the specific challenges that SCE should have anticipated and that led to the Clearion VMS software failure.

be an issue. SCE states that the issue only became apparent "through large use of the system by the many users."[52]

SCE's assertions amount to little more than handwaving. SCE did not know about the data quality issues related to software synchronization during procurement because it did not look. SCE acknowledges that, "Prior to the selection of Clearion VMS, the software was not evaluated for the scalability, capability to support enhanced trims or data synchronization performance characteristics."[53] Furthermore, the only consideration of synchronization in the System Architecture Design created by ESRI for SCE was with respect to the main server capacity.[54]

Furthermore, SCE's excuses related to the number of users are unsupported by any evidence that Clearion VMS would have performed effectively at the scale of "a few hundred users," which is what SCE initially scoped the system for, as discussed in Section III. While SCE represents that the system performed well when tested with a small number of users, it appears to have broken down soon after being deployed to "more than 500" users.[55] I am unaware of any evidence that the Clearion VMS system would have succeeded if the number of users had remained at only "a few hundred."

Q: If SCE had known that Clearion VMS had not shown that it could meet SCE's business requirements, such as the number of data users and the delay in some uploads, what were SCE's alternatives?

A: If, prior to procurement, SCE had known about the risks associated with data synchronization, SCE had essentially three choices. First, SCE could have gone ahead

[52] SCE, Track 2 Direct Testimony, p. 48, lines 13-24.

[53] Attachment RII-33

[54] Attachment RII-32, part c: ESRI, *System Architecture Design Document: Vegetation Management, Southern California Edison* (November 2017), p. 17.

[55] Attachment RII-2, p. 1.

with purchasing Clearion VMS and created a plan for addressing software failure if it could not perform. Second, SCE could have adopted a less-than-optimal combination of manual and automated processes. Third, SCE could have abandoned its requirement to use COTS software and developed a more customized solution, as it eventually did with Arbora. Even though Salesforce could have been considered as an alternative to Clearion VMS, SCE did not consider Salesforce or other similar platform-based software during the procurement.[56]

The fundamental problem with the procurement process that SCE initiated in 2016 is that by focusing on the COTS requirement, SCE failed to develop four performance criteria that it later determined to be essential during the Arbora procurement.

- Concept of a platform solution due to its ability to better manage data, communications, and workflow processes across programs for improved efficiency;
- Flexibility to rapidly accommodate new requirements that we cannot anticipate now as vegetation management requirements evolve in the future;
- Modern, mobile data synchronization criteria to ensure data quality when off-line devices connect back to the main system and synch up; and
- End-user scalability to continue to expand our workforce to mitigate wildfire risks.[57]

Had SCE identified these four performance criteria in 2016, SCE's evaluation of the Clearion VMS system would likely have identified the inadequacy of Clearion VMS to meet its business requirements early in the review process.

[56] Attachment RII-34.

[57] Attachment RII-31.

Q: What were the consequences of the failure to identify the Clearion VMS software's architectural flaw during the procurement process?

A: In Track 2, SCE acknowledged that work management challenges, particularly relating to the failure of the Clearion VMS software and hence to the flawed software procurement and implementation processes, contributed to the incremental costs for line clearances in 2018 and 2019. These extra costs compounded the challenges of the increased workload in response to the wildfire threat.

Q: Does SCE claim that the Clearion VMS software was ever used and useful?

A: No. Although SCE makes this assertion with respect to the Survey123 software,[58] SCE has not testified that the Clearion VMS software was ever used and useful.[59] When specifically asked if the Clearion VMS software has ever been used and useful, SCE objected and stated, "Clearion was implemented in June 2018, and use was finally discontinued in June 2019."[60] Subsequent to the closure of the Track 2 GRC proceeding, we have learned that SCE never "closed"[61] the Clearion VMS project and that "project closing" is a precondition for transferring costs to a "Plant in Service account, and therefore to rate base."[62]

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[58] SCE, Track 2 Rebuttal Testimony, p. 47, lines 2-3.

[59] SCE states that "SCE never provided final acceptance of the Clearion solution and did not enter into the warranty period and the warranty provisions never applied." Attachment RII-23.

[60] Attachment RII-30, part d.

[61] Attachment RII-19.

[62] Attachment RII-30, part f(iii). Even though the project never closed, SCE states that the capital costs for Clearion VMS are approved for recovery via securitization. See Footnote 22.

VI. Implementation of the replacement Survey123 software.

Q: What is the Survey123 software?

A: The Survey123 software is a premium add-on to the ESRI ArcGIS Online (AGOL) software. According to ESRI's website:

> ArcGIS Survey123 is a simple and intuitive form-centric solution for creating, sharing, and analyzing surveys in three easy steps. Create smart forms with skip logic, defaults, support for multiple languages, and much more. Collect data easily via the web or mobile devices in any environment and with minimal training. Analyze results quickly to make actionable decisions. Fully integrated with the ArcGIS platform, you can gather data using your computer or any mobile device in the field, even when offline, and then securely upload it to ArcGIS for further analysis.[63]

SCE further describes the Survey123 software as a "low-code cloud platform" "that uses modern mobile device synchronization designs." SCE developed forms and database structure using in-house resources.[64]

Each Survey123 form has a separate database; forms with different data structures cannot be integrated. Furthermore, the capabilities of Survey123 are limited by ArcGIS online. For example, large video files cannot be captured and referenced in Survey123 because this is not supported in ArcGIS.[65]

Q: Why did SCE decide to utilize the Survey123 software?

A: When SCE became aware of the serious architecture flaw in the Clearion VMS software, SCE decided that some other solution would be more "prudent" than "re-engineering the software product to make it robust enough."[66] SCE explained that while Survey123 "doesn't have all of the functions of a comprehensive work

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[63] See: https://www.esri.com/en-us/arcgis/products/arcgis-survey123/buy. Accessed August 28, 2020.

[64] Attachments RII-2 and RII-4.

[65] Attachment RII-15.

[66] Attachment RII-6, p. 3.

management system," it was able to address field productivity and timeliness concerns and "increase confidence in SCE's data to meet its public safety and compliance obligations," "given its costs and the speed in which it could be implemented."[67]

Q: Why didn't SCE select Survey123 instead of the Clearion VMS software in its original procurement?

A: It was available on the market in 2016, but ESRI, Survey123's developer, recommended the Clearion VMS software rather than Survey123.[68]

Q: When did SCE implement the Survey123 software?

A: SCE implemented the Survey123 software in either August or September 2019.[69]

Q: Did SCE ever plan to maintain the Survey123 software in service?

A: No. SCE states that the Survey123 software cannot "provide the capabilities needed to optimally support its vegetation management activities." SCE indicates that it requires a "single platform-based solution" and that the need for an Integrated Vegetation Management platform is described in its 2020 Wildfire Mitigation Plan filing.[70] Not long after implementing Survey123, SCE had already made plans to implement a replacement system for deployment in late 2020 and removing Survey123 from service in 2021.[71]

SCE was aware of Survey123's limitations since it was already using it for managing electrical inspections. SCE provides several reasons that the Survey123

[67] SCE, Track 2 Rebuttal Testimony, p. 46, lines 13-17, 21-25.

[68] SCE, Track 2 Rebuttal Testimony, p. 46, lines 18-19.

[69] Attachments RII-18 and RII-20.

[70] Attachment RII-13; SCE, Track 3 Direct Testimony, p. 108, lines 13-16.

[71] Attachment RII-11.

software cannot be "an optimal tool" and causes inefficient or suboptimal work. Among the reasons cited by SCE, Survey123 cannot prioritize vegetation management work across all programs (e.g., routine and non-routine), resulting in increased manual processes in the back-office and inefficient work assignments for crews. Survey123 also has reliability issues resulting from a "lack of customer role mapping [which] requires the use of contractor specific content." [72]

VII. Fulcrum software.

Q: What is the Fulcrum software?

A: In addition to Survey123, SCE adopted Fulcrum in early 2019 without an RFP due to the "issues with the existing Clearion [VMS] solution."[73] Fulcrum is a SaaS (Software as a Service) solution used to collect and update information in the field to support several vegetation management supplemental use cases. It is not fully integrated with SCE's back-office systems, instead providing a text file for download.[74]

Q: What is the cost of the Fulcrum software?

A: This is not known. SCE states that it has not included funding specifically allocated for the Fulcrum technology in GRC filings.[75]

[72] Attachment RII-13.

[73] Attachment RII-26, part d.

[74] Attachment RII-26, parts a, b, and e.

[75] Attachment RII-26, part f.

VIII. Procurement of the replacement Arbora software.

Q: What is the Arbora software?

A: "Arbora is a combination of Salesforce, Critigen's Lemur mapping technology and custom coding developed by SCE and Deloitte."[76] Arbora is intended to replace Survey123 and Fulcrum, each of which were adopted due to the failure of the Clearion VMS software.

Q: Why did SCE decide to procure the Arbora software?

A: In December 2019, SCE evaluated alternative long-term vegetation management solution tools, and determined that rather than using a vegetation specific niche tool (such as Clearion VMS), SCE should use a digital platform-based tool.

As discussed above, after recognizing the failure of the Clearion VMS software, SCE adopted Survey123 and Fulcrum as interim solutions, but recognized that it could not "provide the capabilities needed to optimally support its vegetation management activities."[77] Concurrent with the implementation of those solutions, SCE developed its plans for Arbora.[78]

SCE expects functionality from Arbora that is very similar to its requirements when it procured Clearion VMS. SCE states that Arbora:

> … will ultimately lead to improved program efficiency, including reduction in time between planned and actual trim dates and reduction in number of crew visits per work location. In addition to optimizing day-to-day operations, Arbora will

[76] Attachment RII-5, part f. Bain & Company also provided "initial product vision, as well as product management work including conducting user research in support of the design and development of the application, development of user stories for future releases, and building the ongoing product roadmap." Attachment RII-42.

[77] Attachment RII-13; SCE, Track 3 Direct Testimony, p. 108, lines 13-16.

[78] SCE has also represented the need for Arbora as being identified "due to growing wildfire needs across existing programs and the introduction of new programs." Attachment RII-17, part c. This representation is at odds with evidence that the failure of Clearion VMS drove development of Arbora.

> improve data accuracy by 1) maintaining updated vegetation management data without a large backlog of paperwork; 2) eliminating data errors from manual data entry; 3) obtaining near real-time information on work task items such as status, crew assignment, work dates; and 4) reducing manual intervention in overseeing vegetation management work and obtaining visibility into the individual tasks."[79]

SCE confirmed that it expected the Clearion VMS to provide those benefits when it was procured in 2016.[80]

Q: How was Arbora procured?

A: At the time that SCE made the decision to procure Arbora, it was already developing an RFP for a digital platform-based tool—the RFP was issued on November 1, 2019—and Salesforce was selected. The RFP included five potential use cases, one of which would be prioritized for initial implementation of Salesforce. The five use cases in the RFP were for inspection of overhead pole infrastructure, managing transmission and distribution crews' materials list, resolving data issues when servicing Community Choice Aggregators, predictive modeling to increase field safety, and automation of Public Safety Power Shutoff (PSPS) event processes.[81]

In December 2019, SCE decided to extend the scope of the digital platform-based tool to also meet its long-term vegetation management software needs. Along with its asset inspection applications, Arbora became one of the two first solutions that SCE would implement using Salesforce.[82]

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[79] SCE, Track 3 Direct Testimony, p. 108, line 18 to p. 109, line 5.

[80] Attachments RII-27 and RII-28. See also similar expectations described in SCE, Track 3 Direct Testimony, p. 114, lines 1-6.

[81] Attachment RII-25, part a: SCE, *Digital Accelerator Platform Request for Proposal* (November 1, 2019), pp. 6, 20, 25, 29-30, 33-34, 36.

[82] Attachment RII-36.

Critigen's Lemur mapping technology was selected concurrent with the decision to implement Arbora using Salesforce.[83] SCE had initially focused on ESRI-based solutions (ESRI is the vendor for ArcGIS, a mapping software, and Survey123), but ArcGIS could not be integrated with Salesforce in a manner that met SCE's requirements, so SCE decided to procure an additional third-party mapping software solution. Critigen's Lemur software was selected without an RFP; SCE reached its decision after exploring several options, including continued use of Survey123, use of Salesforce Maps, or custom development.[84]

SCE states that Deloitte LLP was selected as the Salesforce implementation partner through an RFP, including custom coding services. It is unclear when that RFP occurred and whether it identified the vegetation management project as a specific deliverable.[85]

Q: How does SCE propose to recover the costs of Arbora?

A: SBUA proposes that the costs for Arbora be found reasonable in this Track 3 proceeding. SCE would the file an application to securitize those costs pursuant to AB 1054.[86]

It is worth noting that SCE is paying for additional Salesforce licenses for other solutions being implemented on the Salesforce platform.[87] Those costs are not being charged to Arbora and are not at issue in my testimony.

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[83] SCE, Track 3 Direct Testimony, p. 112, line 10 to p. 113 line 2.

[84] Attachment RII-25, part b: SCE, *Solution Options Summary* (undated), slide 1; and SCE, *Maps Approach Readout* (March 27, 2020), slides 3,7, 8.

[85] SCE, Track 3 Direct Testimony, p. 114, lines 12-13. SCE did not respond to a data request regarding the RFP and selection process for Deloitte. Attachment RII-25, part b.

[86] Attachment RII-35.

[87] Attachment RII-37.

Q: When is Arbora being implemented and at what cost?

A: SCE first implemented Arbora in "beta" in May of 2020 for the Hazard Tree Mitigation Plan (HTMP) and Drought Resistant Initiative (DRI) programs with a "small number of users." In 2021, SCE anticipates 175-225 daily users for the HTMP and DRI programs. Full deployment of Arbora by SCE is planned for the end of 2022, with 1,900 to 2,100 daily users.[88]

Capital investment in Arbora will continue through at least 2026. In 2020, SCE invested $11.99 million in Arbora, including $1.25 million for Salesforce. SCE forecasts an additional $26.50 million for 2021-2026, including $3.3 million for Salesforce.[89] The vast majority of the Arbora capital costs are related to custom code and other consulting services.

SCE is also requesting recovery of $1.06 million in O&M costs for Arbora, of which $0.8 million were for Salesforce software costs that were not capitalizable.[90]

Q: What does SCE represent as the benefits of Arbora?

A: In Table II-39 of its Direct Testimony, SCE claims a benefit-to-cost ratio of 1.3 – 1.9 for reduction in time for tree crews to begin mitigation. SCE also claims that Arbora will enable

> coordination, which will facilitate cross-program planning and work execution, increase productivity resulting from improved field performance and efficiency by program without significant cost increases, improve reporting manifested by increased reporting speed and accuracy, and should result in a reduced rate of errors that usually result in manual work and re-work requirements.[91]

[88] Attachment RII-5, parts d, e.

[89] Attachment RII-16, attachment "SBUA-SCE-001 Q4d.xlsx"; Attachment RII-38.

[90] Attachment RII-38.

[91] SCE, Track 3 Direct Testimony, p. 114, lines 2-6.

SCE categorizes the benefits of Arbora into four categories: increased productivity, reduced errors, coordination, and improved reporting. SCE estimates that by 2023, improved productivity will result in $22 million in annual savings. SCE has not quantified cost savings associated with the other benefit areas.[92]

SCE provided documentation of its estimates for efficiency benefits, which were "based on best consensus among the vegetation management team."[93] SCE calculates that these benefits total $64.6 million in present value terms using discount rate of 10 percent.[94]

In the same documentation, SCE stated that the nominal cost basis was $60.4 million, but in a subsequent response to a data request, SCE provided a project cost of $62.9 million, or $51.1 million in present value terms.[95]

Q: Does SCE claim additional benefits from Arbora that were not expected from the Clearion VMS software?

A: Yes. SCE confirmed that the "procurement process for the Clearion VMS would have partially met the functionality listed for the Arbora project." By "partially," SCE explains that the expectations for the Clearion VMS software would not have included "managing data across vegetation management programs, such as Line Clearance, Hazard Tree Management Plan (HTMP), and the Drought Resistance Initiative (DRI)."[96]

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[92] Attachments RII-7 and RII-40.

[93] Attachment RII-10, part b.

[94] Attachment RII-10, part a, slide 2.

[95] Attachment RII-10, part a, slide 1; Attachment RII-39. The nominal cost of $60.4 million is supported by details in Attachment RII-10, but those details included 2020 costs of only $12.1 million, rather than the $13.05 requested for Arbora in this application. Attachment RII-10 did not include any supporting details for the $62.9 million nominal cost.

[96] Attachment RII-41.

In addition to the cross-program functionality described by SCE, it also appears that some of the functionality described for the Arbora 4.0 release such as route optimization and LIDAR data / map integration might not have been supported by the procurement process for the Clearion VMS.[97]

IX. Reasonableness and prudence of the Clearion VMS software failure.

Q: Did SCE prudently perform its duties in the procurement of the Clearion VMS software?

A: No. SCE failed to prudently perform its procurement duties in three ways.

First, SCE failed to prudently establish the proper process for evaluating potential VMS software. SCE has not shown that the procurement of the Clearion VMS software adequately considered the distinct circumstances in which line clearing crews operate in California. Nor did SCE demonstrate prudent management as it failed to demonstrate that it engaged in adequate testing or piloting prior to transitioning to full deployment of the software in the field. SCE appears to have relied on little more than the untested assertions of Clearion LLC and five of its clients, whose experience with the software was apparently of limited relevance.

In contrast, the development of the Arbora software and related procurements demonstrates that SCE is now taking into consideration the distinct circumstances in which line clearing crews operate in California and that SCE has conducted testing or piloting prior to full deployment.[98] SCE knew or should have known that its crews

[97] SCE, Track 3 Direct Testimony, Figure II-9, p. 112. Note that "route optimization" is referred to as a feature of Arbora 4.0 but appears to have been dropped from the Arbora Features map (Attachment RII-41).

[98] For example, SCE states that "the Salesforce platform which is part of the Arbora system can meet the offline and data synchronization capabilities outlined in the RFP. This capability has been field tested as part of the initial pilot for the Arbora solution." Attachment RII-24.

would not be able to synchronize data as frequently as existing users of Clearion VMS, and that its user count was likely to be significantly higher than that of peer utilities. SCE also should have prudently engaged in testing to verify data synchronization capabilities to address those untested circumstances.

Second, SCE knew or should have known alternatives were available at the time SCE implemented the VMS software. SCE was aware that PG&E and SDG&E had developed customized solutions but does not report any lessons learned from any consultations it may have had with those utilities.[99] SCE did not consider "platform-based" alternatives (such as Salesforce) augmented by customization back in 2016, even though it could have,[100] in all likelihood due to its now-abandoned preference for commercial off-the-shelf software. If SCE had followed practices consistent with the needs of its utility system, SCE would have procured an alternative to the Clearion VMS software or would have remained with the paper-based system until suitable software was available.

Third, while the circumstances under which the Clearion VMS software was deployed were unexpected, the volume of tree trimming and removals was not so extreme that it represents a fundamental change in what level of performance was needed from the VMS software. The number of tree removals increased from historic levels that were less than 10,000 per year to over 26,000 in 2019.[101] In terms of computer processing and storage, it is typical for systems to plan for requirements to expand by much more than doubling or tripling.

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[99] SCE, Track 2 Rebuttal Testimony, p. 42, lines 13-14. SDG&E's use of a computerized Vegetation Management System in July 2007 is documented in D.18-07-025 (pp. 17-18).

[100] Attachment RII-34, part a.

[101] SCE, Track 2 Direct Testimony, Table II-10, p. 35.

As discussed in Section IV, SCE stated that the number of data users increased from "several hundred" to "more than 500," although other documents suggest that SCE planned for over 900 data users. If the system requirements had increased by 2019, it appears that the increase was not large enough to account for the failure of the VMS software. In any event, SCE should not have procured a system whose operational limits were close to SCE's current needs. SCE failed to prudently give due consideration to the capability of the Clearion VMS software to support an increase in users and synchronization capabilities.

Q: Did SCE prudently respond to the failure of the Clearion VMS software?

A: No. Once the Clearion VMS software failed in August 2018, a prudent manager would have directed a full root-cause analysis of the failure and re-evaluated the suitability of the software for SCE's current needs. As discussed above, SCE required three root-cause analyses before it identified the actual problem.

Instead of conducing a full root cause analysis, during the first two analyses it appears that SCE's IT team rushed to judgement, without sufficient management commitment to fully solving the problem. The rush to judgement constituted the tendency to "solve only a symptomatic cause-resulting in rework or fault re-occurrence."[102] As one author puts it, "The pressure—sometimes enormous pressure—will be on rushing to implement change and make the problem magically disappear."[103]

In each of the first two analyses, as soon as SCE identified a problem with the Clearion VMS software, it implemented a solution to that specific problem and put

[102] Duphily, Ronald J., *Root Cause Investigation Best Practices Guide,* The Aerospace Corporation for National Reconnaissance Office (May 2014), pp. 43, 60.

[103] Hopen, Deborah and James J. Rooney, "Getting to the Root of the Problem," *Six Sigma Forum Magazine* (November 2014), p. 29.

the software back into use, without checking that the fundamental issue had been addressed. SCE has not demonstrated that any special circumstances that prevented it from identifying the root cause during the first or second root-cause analysis. Only after the Clearion VMS had failed twice did SCE appear to give its team the backing to pursue the root cause.

The costly consequences of SCE's failure to prudently respond to the initial problems with the Clearion VMS software were addressed by the Track 2 Settlement Agreement in which SCE agreed to reduce its revenue requirement request by $90 million for 2018 and 2019. Those consequences continue in 2020 and 2021: SCE estimates that its Arbora system will achieve about $22 million in annual benefits when compared to the Survey123 and Fulcrum systems.

One could reasonably argue that the lack of $22 million in benefits represents further adverse consequences of SCE's failed procurement. However, this claim would depend on a showing that SCE could have procured and implemented a high-quality system by 2020. While I believe this is more likely than not, I am not making this recommendation because the evidence that SCE could have procured a system more effective than Survey123 and Fulcrum in 2016 is not definitive.

Instead, I have revisited this failure because SCE's response is further evidence that SCE had entirely overlooked the importance of data synchronization functionality during its procurement of Clearion VMS. If the data synchronization functionality had been included in the conceptual design for Clearion VMS (as it was for Salesforce/Arbora), a reasonable manager would have identified that the adequacy of that functionality should be reviewed during the first root cause analysis.

Q: Should the Commission authorize recovery of costs related to implementation of the Survey123 software?

A: No. SCE is seeking cost recovery for remedial software purchase and development costs that stem from its previous failure to prudently procure and implement VMS software. The costs related to the Survey123 software are unreasonable because SCE should not have had to incur them, and the costs should be excluded from its authorized revenue requirement to be recovered from ratepayers.

I am aware of two precedents that support the disallowance of costs related to remedial actions after an imprudent error. First, in D.16-04-006, the Commission recognized that during a 65-day outage of the Belden Powerhouse due to PG&E imprudence, PG&E had to purchase replacement power, and imposed a disallowance of $1.3 million to reflect its cost.[104] Second, in D.12-12-030, the Commission found the cost of retesting of pipelines due to missing records to be unreasonable. The Commission denied PG&E's request for recovery of "costs that stem from its previous failure to prudently perform its document management duties."[105] This case differs only in that instead of missing records, SCE had to abandon its entire recording and reporting system due to unresolvable flaws.

Furthermore, the costs related to the Survey123 software do not represent a useful investment beyond the remediation period. Since the Survey123 software will soon be replaced and no longer be either used or useful, it is not reasonable to allow recovery of its cost. I recommend that the Commission find that the $4.16 million in

[104] D.16-04-006, Decision on Pacific Gas and Electric Company 2012 Energy Resource Recovery Account Compliance Review (April 7, 2016), A.13-02-023, pp. 21, 24.

[105] D.12-12-030, Decision Mandating Pipeline Safety Implementation Plan, Disallowing Costs, Allocating Risk of Inefficient Construction Management to Shareholders, and Requiring Ongoing Improvement in Safety Engineering (December 20, 2012), R.11-02-019, p. 55.

2020 capital expenses and $0.05 million in O&M expenses on Survey123 be deemed to result from SCE's imprudence.

However, to the extent that any of the costs related to Survey123 represent capital investments in assets that can be used for the Arbora application and are not remedial to unused investments in Clearion VMS, then I would support recovery of those costs. For example, SCE notes that iPads used for Survey123 will be used for Arbora.[106]

Q: Should the Commission authorize recovery of costs related to implementation of the Fulcrum software?

A: No. SCE has not acknowledged any costs related to Fulcrum. However, to the extent that the Commission identifies any costs related to the procurement and use of Fulcrum, those costs should also be disallowed since SCE's evidence shows that Fulcrum has been used exclusively for remediation of the Clearion VMS failure.

Q: Should the Commission authorize recovery of costs related to implementation of the Arbora software?

A: No. SCE is seeking cost recovery for replacement software purchase and development costs that stem from its previous failure to prudently procure and implement VMS software. The basic principle is that customers should not have to pay twice (or three times, in this case) for the same benefit.

This principle has been established since at least 1994, when the Commission disallowed costs resulting from SCE's failure to take necessary steps that could have prevented the 1985 hot reheat pipe rupture in Unit 2 of the Mohave generating station. The Commission ordered disallowance of "cost in excess of what the company would

[106] Attachment RII-43, part b.

have incurred, including necessary power purchases while the plant was shut down for repairs."[107]

As my testimony demonstrates, the principal functionality of Arbora is the same as Clearion VMS, so it is unreasonable for customers to have to pay costs in excess of the costs SCE incurred to bring the Clearion VMS system online. I recommend that the Commission find that the $11.99 million in 2020 capital expenses and $1.06 million in O&M expenses on Arbora be deemed to result from SCE's imprudence.

However, if SCE can show that certain costs related to Arbora are related to functionality that was not expected to be delivered by the Clearion VMS software, then it would be reasonable for SCE to recover those incremental costs. By "functionality," I mean specific services that are entirely distinct from those performed by Clearion VMS or assets, such as iPads used for field operations, that are not remedial to or replacements for unused investments in Clearion VMS.

Q: Please summarize the disallowance do you recommend to the Commission?

A: I recommend disallowance of the $4.21 million in Survey123 software costs and $13.05 million in Arbora costs. As shown in Table 1, the total recommended disallowance is $17.26 million.

Table 1: Recommended Disallowances of Software and Line Clearing Costs ($ millions)

Costs	*Capital*	*O&M*	*Total*
2020 Survey123 Costs	$ 4.16	$ 0.05	$ 4.21
2020 Arbora Costs	$ 11.99	$ 1.06	$ 13.05
Total	**$ 16.15**	**$ 1.11**	**$ 17.26**

In addition, I recommend the Commission take appropriate action to ensure that SCE does not recover further remediation and replacement costs related to Survey123,

[107] D.94-03-048 (March 9, 1994) in Investigation on the Commission's Own Motion of the Maintenance and Operating Practices, Safety Standards and the Reasonableness of Costs Incurred from the Mohave Coal Plant Accident, I.86-04-002, p. 56.

Fulcrum or Arbora. To the extent that SCE can show that some of its Arbora costs are related to functionality or assets that were not included in the Clearion VMS procurement, it would be reasonable to allow SCE to demonstrate the prudence of those costs for recovery. As discussed above, SCE forecasts an additional $26.50 million for 2021-2026, including $3.3 million for Salesforce.[108] These costs should be subject to full or partial disallowance when SCE requests their recovery.

Q: Does this conclude your testimony?

A: Yes.

[108] Attachment RII-16, attachment "SBUA-SCE-001 Q4d.xlsx"; Attachment RII-38.

Attachment RII-1

JOHN D. WILSON

Resource Insight, Inc.
5 Water Street
Arlington, Massachusetts 02476

SUMMARY OF PROFESSIONAL EXPERIENCE

2019–Present **Research Director, Resource Insight, Inc.** Provides research, technical assistance, and expert testimony on electric- and gas-utility planning, economics, and regulation. Reviews electric-utility rate design. Designs and evaluates conservation programs for electric utilities, including conservation cost recovery mechanisms and performance incentives. Evaluates performance of renewable resources and designs performance evaluation systems for procurement. Designs and assesses resource planning and procurement strategies for regulated and competitive markets.

2007-19 **Deputy Director for Regulatory Policy, Southern Alliance for Clean Energy.** Managed regulatory policy, including supervision of experts in areas of energy efficiency, renewable energy, and market data. Provided expert witness testimony on topics of resource planning, renewable energy, energy efficiency to utility regulators. Directed litigation activities, including support of expert witnesses in the areas of rate design, resource planning, renewable energy, energy efficiency, and resource procurement. Conducted supporting research and policy development. Represented SACE on numerous legislative, utility, and private committees across a wide range of climate and energy related topics.

2001–06 **Executive Director, Galveston-Houston Association for Smog Prevention.** Directed advocacy and regulatory policy related to air pollution reduction, including ozone, air toxics, and other related pollutants in the industrial, utility, and transportation sectors. Served on the Regional Air Quality Planning Committee, Transportation Policy Technical Advisory Committee, and Steering Committee of the TCEQ Interim Science Committee.

2000–01 **Senior Associate, The Goodman Corporation.** Provided transportation and urban planning consultant services to cities and business districts across Texas.

1997–99 **Senior Legislative Analyst and Technology Projects Coordinator, Office of Program Policy Analysis and Government Accountability, Florida Legislature.** Author or team member for reports on water supply policy, environmental permitting, community development corporations, school district financial management and other issues – most recommendations implemented by the 1998 and 1999 Florida Legislatures. Edited statewide government accountability newsletter and coordinated online and internal technical projects.

1997 **Environmental Management Consultant, Florida State University.** Project staff for Florida Assessment of Coastal Trends.

1992-96 **Research Associate, Center for Global Studies, Houston Advanced Research Center.** Coordinated and led research for projects assessing environmental and resource issues in the Rio Grande / Rio Bravo river basin and across the Greater Houston region. Coordinated task force and edited book on climate change in Texas.

EDUCATION

BA, Physics (with honors) and history, Rice University, 1990.

MPP, John F. Kennedy School of Government, Harvard University, 1992. Concentration areas: Environment, negotiation, economic and analytic methods.

PUBLICATIONS

"Urban Areas," with Judith Clarkson and Wolfgang Roeseler, in Gerald R. North, Jurgen Schmandt and Judith Clarkson, *The Impact of Global Warming on Texas: A Report of the Task Force on Climate Change in Texas*, 1995.

"Quality of Life and Comparative Risk in Houston," with Janet E. Kohlhase and Sabrina Strawn, *Urban Ecosystems*, Vol. 3, Issue 2, July 1999.

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"Monopsony Behavior in the Power Generation Market," with Mike O'Boyle and Ron Lehr, *Electricity Journal*, August-September 2020.

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"Smoke in the Water: Air Pollution Hidden in the Water Vapor from Cooling Towers – Agencies Fail to Enforce Against Polluters," Galveston Houston Association for Smog Prevention, February 2004.

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"Mercury in Galveston and Houston Fish: Contamination by Neurotoxin Places Children at Risk," Galveston Houston Association for Smog Prevention, October 2004.

"Exceeding the Limit: Industry Violations of New Rule Almost Slid Under State's Radar," Galveston Houston Association for Smog Prevention, January 2006.

"Whiners Matter! Citizen Complaints Lead to Improved Regional Air Quality Control," Galveston Houston Association for Smog Prevention, June 2006.

"Bringing Clean Energy to the Southeastern United States: Achieving the Federal Renewable Energy Standard," Southern Alliance for Clean Energy, February 2008.

"Cornerstones: Building a Secure Foundation for North Carolina's Energy Future," Southern Alliance for Clean Energy, May 2008.

"Yes We Can: Southern Solutions for a National Renewable Energy Standard," Southern Alliance for Clean Energy, February 2009.

"Green in the Grid: Renewable Electricity Opportunities in the Southeast United States," with Dennis Creech, Eliot Metzger, and Samantha Putt Del Pino, World Resources Institute Issue Briefs, April 2009.

"Local Clean Power," with Dennis Creech, Eliot Metzger, and Samantha Putt Del Pino, World Resources Institute Issue Briefs, April 2009.

"Energy Efficiency Program Impacts and Policies in the Southeast," Southern Alliance for Clean Energy, May 2009.

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"Cleaner Energy for Southern Company: Finding a Low Cost Path to Clean Power Plan Compliance," Southern Alliance for Clean Energy, July 2015.

"Analysis of Solar Capacity Equivalent Values for Duke Energy Carolinas and Duke Energy Progress Systems," prepared for and filed by Southern Alliance for Clean Energy, Natural Resources Defense Council, and Sierra Club in North Carolina NCUC Docket No. E-100, Sub 147, February 17, 2017.

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"Tracking Decarbonization in the Southeast, 2019 Generation and CO_2 Emissions Report," with Heather Pohnan and Maggie Shober, Southern Alliance for Clean Energy, August 2019.

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"Implementing All-Source Procurement in the Carolinas," prepared for Natural Resources Defense Council, Sierra Club, Southern Alliance for Clean Energy, South Carolina Coastal Conservation League and Upstate Forever, for submission in NCUC Docket E-100, Sub 165, and SCPSC Dockets 2019-224-E and 2019-225-E (February 2021).

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PRESENTATIONS

"Clean Energy Solutions for Western North Carolina," presentation to Progress Energy Carolinas WNC Community Energy Advisory Council, February 7, 2008.

"Energy Efficiency: Regulating Cost-Effectiveness," Florida Public Service Commission undocketed workshop, April 25, 2008.

"Utility-Scale Renewable Energy," presentation on behalf of Southern Alliance for Clean Energy to the Board of the Tennessee Valley Authority, March 5, 2008.

"An Advocates Perspective on the Duke Save-a-Watt Approach," ACEEE 5th National Conference on Energy Efficiency as a Resource, September 2009.

"Building the Energy Efficiency Resource for the TVA Region," presentation on behalf of Southern Alliance for Clean Energy to the Tennessee Valley Authority Integrated Resource Planning Stakeholder Review Group, December 10, 2009.

"Florida Energy Policy Discussion," testimony before Energy & Utilities Policy Committee, Florida House of Representatives, January 2010.

"The Changing Face of Energy Supply in Florida (and the Southeast)," 37th Annual PURC Conference, February 2010.

"Bringing Energy Efficiency to Southerners," Environmental and Energy Study Institute panel on "Energy Efficiency in the South," April 10, 2010.

"Energy Efficiency: The Southeast Considers its Options," NAESCO Southeast Regional Workshop, September 2010.

"Energy Efficiency Delivers Growth and Savings for Florida," testimony before Energy & Utilities Subcommittee, Florida House of Representatives, February 2011.

"Rates vs. Energy Efficiency," 2013 ACEEE National Conference on Energy Efficiency as a Resource, September 2013.

"TVA IRP Update," TenneSEIA Annual Meeting, November 19, 2014.

"Views on TVA EE Modeling Approach," presentation with Natalie Mims to Tennessee Valley Authority's Evaluating Energy Efficiency in Utility Resource Planning Meeting, February 10, 2015.

"The Clean Power Plan Can Be Implemented While Maintaining Reliable Electric Service in the Southeast," FERC Eastern Region Technical Conference on EPA's Clean Power Plan Proposed Rule, March 11, 2015.

"Renewable Energy & Reliability," 5th Annual Southeast Clean Power Summit, EUCI, March 2016.

"Challenges to a Southeast Carbon Market," 5th Annual Southeast Clean Power Summit, EUCI, March 2016.

"Solar Capacity Value: Preview of Analysis to Date," Florida Alliance for Accelerating Solar and Storage Technology Readiness (FAASSTeR) meeting, Orlando, FL, November 2017.

"Making the Most of the Power Plant Market: Best Practices for All-Source Electric Generation Procurement," Southeast Energy and Environmental Leadership Forum, Nicholas Institute for Environmental Policy Solutions, August 2020.

"Making the Most of the Power Plant Market: Best Practices for All-Source Electric Generation Procurement," Indiana State Bar Association, Utility Law Section, Virtual Fall Seminar, September 2020.

EXPERT TESTIMONY

2008 **South Carolina PSC** Docket No. 2007-358-E, surrebuttal testimony on behalf of Environmental Defense, the South Carolina Coastal Conservation League, Southern Alliance for Clean Energy and the Southern Environmental Law Center. Cost recovery mechanism for energy efficiency, including shareholder incentive and lost revenue adjustment mechanism.

2009 **North Carolina NCUC** Docket No. E-7, Sub 831, direct testimony on behalf of Environmental Defense Fund, Natural Resources Defense Council, Southern Alliance for Clean Energy, and Southern Environmental Law Center. Cost recovery mechanism for energy efficiency, including shareholder incentive and lost revenue adjustment mechanism.

Florida PSC Docket Nos. 080407-EG through 080413-EG, direct testimony on behalf of Southern Alliance for Clean Energy and the Natural Resources Defense Council. Energy efficiency potential and utility program goals.

South Carolina PSC Docket No. 2009-226-E, direct testimony in general rate case on behalf of Environmental Defense, the Natural Resources Defense Council, the South Carolina Coastal Conservation League, Southern Alliance for Clean Energy and the Southern Environmental Law Center. Cost recovery mechanism for energy efficiency, including shareholder incentive and lost revenue adjustment mechanism.

2010 **North Carolina NCUC** Docket No. E-100, Sub 124, direct testimony on behalf of Environmental Defense Fund, the Sierra Club, Southern Alliance for Clean Energy, and Southern Environmental Law Center. Adequacy of consideration of energy efficiency in Duke Energy Carolinas and Progress Energy Carolinas' 2009 integrated resource plans.

Georgia PSC Docket No. 31081, direct testimony on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of energy efficiency in

Georgia Power's 2010 integrated resource plan, including cost effectiveness, rate and bill impacts, and lost revenues.

Georgia PSC Docket No. 31082, direct testimony on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of energy efficiency in Georgia Power's 2010 demand side management plan, including program revisions, planning process, stakeholder engagement, and shareholder incentive mechanism.

2011 **South Carolina PSC** Docket No. 2011-09-E, allowable ex parte briefing on behalf of Southern Alliance for Clean Energy, South Carolina Coastal Conservation League, and Upstate Forever. Adequacy of South Carolina Electric & Gas's 2011 integrated resource plan, including resource mix, sensitivity analysis, alternative supply and demand side options, and load growth scenarios.

South Carolina PSC Docket Nos. 2011-08-E and 2011-10-E, allowable ex parte briefing on behalf of Southern Alliance for Clean Energy, South Carolina Coastal Conservation League, and Upstate Forever. Adequacy of Progress Energy Carolinas and Duke Energy Carolinas' 2011 integrated resource plans, including resource mix, sensitivity analysis, alternative supply and demand side options, cost escalation, uncertainty of nuclear and economic impact modeling.

2013 **Georgia PSC** Docket No. 36498, direct testimony on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of energy efficiency in Georgia Power's 2013 integrated resource plan, including cost effectiveness, rate and bill impacts, and lost revenues, economics of fuel switching and renewable resources.

South Carolina PSC Docket No. 2013-392-E, direct testimony with Hamilton Davis in Duke Energy Carolinas need certification case on behalf of the South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. Need for capacity, adequacy of energy efficiency and renewable energy alternatives, and use of solar power as an energy resource.

2014 **South Carolina PSC** Docket No. 2014-246-E, direct testimony generic proceeding on behalf of the South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. Methods for calculating dependable capacity credit for renewable resources and application to determination of avoided cost.

2015 **Florida PSC** Docket No. 150196-EI, direct testimony in Florida Power & Light need certification case on behalf of Southern Alliance for Clean Energy. Appropriate reserve margin and system reliability need.

2016 **Georgia PSC** Docket No. 40161, direct testimony on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of renewable energy in Georgia Power's 2016 integrated resource plan, including portfolio diversity,

operational and implementation risk, analysis of project-specific costs and benefits (including location and technology considerations), and methods for calculating dependable capacity credit for renewable resources.

2019 **Georgia PSC** Docket Nos. 42310 and 42311, direct testimony with Bryan A. Jacob in Georgia Power's 2019 integrated resource plan and demand side management plan on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of renewable energy in IRP, retirement of uneconomic plants, and use of all-source procurement process. Shareholder incentive mechanism for both renewable energy and DSM plan.

2020 **Nova Scotia UARB** Matter No. M09519, direct testimony with Paul Chernick in Nova Scotia Power's application for approval of the Smart Grid Nova Scotia Project on behalf of the Nova Scotia Consumer Advocate. Cost classification, decommissioning costs, justification for software vendor selection, and suggested changes to project scope.

Nova Scotia UARB Matter No. M09499, direct testimony with Paul Chernick in Nova Scotia Power's 2020 annual capital expenditure plan on behalf of the Nova Scotia Consumer Advocate. Potential to decommission hydroelectric systems, review of annually recurring capital projects, use of project contingencies, and cost minimization practices.

Nova Scotia UARB Matter No. M09579, direct testimony with Paul Chernick in Nova Scotia Power's application for the Gaspereau Dam Safety Remedial Works on behalf of the Nova Scotia Consumer Advocate. Alternatives to proposed project, project contingency factor, estimation of archaeological costs, and replacement energy cost calculation.

Nova Scotia UARB Matter No. M09707, direct testimony with Paul Chernick on Nova Scotia Power's 2020 Load Forecast on behalf of the Nova Scotia Consumer Advocate. Impacts of recession, application of end-use studies, improvements to forecast components, and impact of time-varying pricing.

California PUC Docket A.19-10-012, direct and rebuttal testimony with Paul Chernick in San Diego Gas & Electric's application for the Power Your Drive Electric Vehicle Charging Program on behalf of the Small Business Utility Advocates. Ensuring that utility-installed chargers advance California goal for electric vehicles. Budget controls. Reporting requirements. Evaluation, monitoring and verification processes. Outreach to small business customers.

California PUC Docket A.19-08-013, direct testimony in Southern California Edison's 2021 general rate case (track 2) on behalf of the Small Business Utility Advocates. Reasonableness of remedial software costs to be included in authorized revenue requirement.

Georgia PSC Docket Nos. 4822, 16573 and 19279, direct, rebuttal and surrebuttal testimony in Georgia Power Company's PURPA avoided cost review

on behalf of the Georgia Large Scale Solar Association. Reviewing compliance with prior Commission orders. Application of capacity need forecast in projection of avoided capacity cost. Calculation of cost of new capacity. Proposal of standard offer contract.

California PUC Docket A.19-11-019, direct, reply, responsive, and reply to responsive testimony with Paul Chernick in Pacific Gas & Electric's 2021 general rate case (phase 2) on behalf of the Small Business Utility Advocates. Cost of service methods. Rate design, including customer charges, demand charges, real time pricing tariffs, TOU differentials and periods.

Nova Scotia UARB Matter No. M09548, direct testimony on the audit of Nova Scotia Power's Fuel Adjustment Mechanism on behalf of the Nova Scotia Consumer Advocate. Reasonableness of fuel contract costs. Scope of study on dispatch practices. Impact of greenhouse gas shadow pricing. Compliance issues related to resource planning.

2021 **California PUC** Docket R.20-11-003, direct and reply testimony on rulemaking to ensure reliable electric service in the event of an extreme weather event on behalf of the Small Business Utility Advocates. Modifications to Critical Peak Pricing programs and Time of Use periods. Modifications to load management programs.

Nova Scotia UARB Matter No. M09898, direct testimony on Nova Scotia Power's Annually Adjusted Rates on behalf of the Nova Scotia Consumer Advocate. Effect of delays in power contract. Unit modeling assumptions. Variable capital costs. Application of Time-Varying Pricing.

Nova Scotia UARB Matter No. M09920, direct testimony on Nova Scotia Power's Annual Capital Expenditure Plan for 2021 on behalf of the Nova Scotia Consumer Advocate. Cost minimization. Project contingency. Economic analysis model. Analysis of specific projects.

Nova Scotia UARB Matter No. M09777, direct testimony on Nova Scotia Power's Time-Varying Pricing Tariff Application on behalf of the Nova Scotia Consumer Advocate. Effect of proposed TVP tariffs on load, capacity savings, and energy costs. Recommended CPP tariffs. Treatment of demand charges in TVP tariffs. Implementation and evaluation of TVP tariffs. Lost revenue adjustment mechanism.

South Carolina PSC Docket Nos. 2019-224-E and 2019-225-E, surrebuttal testimony on 2020 Integrated Resource Plans filed by Duke Energy Carolinas and Duke Energy Progress. All-source procurement process. Process for resolution of disputed issues in IRP proceedings.

California PUC Docket A.20-10-011, direct and reply testimony with Paul Chernick in Pacific Gas & Electric's Commercial Electric Vehicle Day-Ahead Hourly Real Time Pricing Pilot on behalf of the Small Business Utility

Advocates. Rate design for real time pricing tariff. Marketing to small businesses. Evaluation plan.

California PUC Docket R.20-08-020, direct and reply testimony with Paul Chernick in rulemaking to revisit net energy metering (NEM) tariffs on behalf of the Small Business Utility Advocates. Rate design for NEM tariff. Method for analyzing NEM tariff program.

California PUC Docket A.20-10-012, direct testimony with Paul Chernick in Southern California Edison's 2021 general rate case (phase 2) on behalf of the Small Business Utility Advocates. Cost of service methods. Rate allocation and design, including customer charges and real time pricing tariffs.

Attachment RII-2

ArcGIS Survey123

Introducing Survey123 for ArcGIS

Announcements June 23, 2016

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Surveys, forms, polls, and questionnaires are really just the same thing: a list of questions. Questions, however, are one of the most powerful ways of gathering information for making decisions and taking action.

Survey123 for ArcGIS is a simple, yet powerful field data gathering solution that makes creating, sharing, and analyzing surveys possible in just three easy steps.

1- Ask Questions: Survey123 lets you easily create forms and publish them into ArcGIS. Actually, with Survey123 you can create and publish smart forms. Smart forms support a wide variety of questions from the basic: text, date, integers, decimals, photos, etc., to the more exotic: single and multi-choice questions, signatures, time, notes, repeats, sketches, barcodes and much more.

ArcGIS Blog

ismael

Ismael Chivite joined Esri in 2002. A geographer by training, he loves helping people leverage GIS to improve the way they work. As a Senior Product Manager, Ismael is always looking for ideas to create new and improve existing Esri products. Outside working hours: Legos, rock climbing, Romanesque architecture and jamon iberico. On occasion, he enjoys jamon during working hours too.

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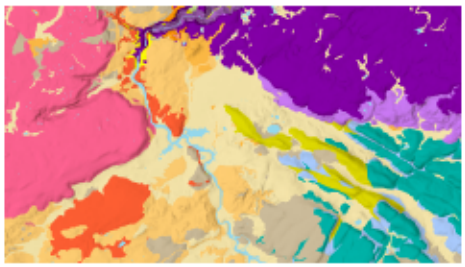

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Finally, a true smart form supports your ability to control the look and feel. Smart forms support grouping of questions, notes, embedded images and audio as well as multiple layouts to help field users do their jobs.

With Survey123 for ArcGIS you can author simple smart surveys right from your web browser. Alternatively, you can leverage the full power of the XLSForm specification and build the most sophisticated surveys with Survey123 Connect for ArcGIS: a desktop tool that will help you author and publish surveys into ArcGIS using spreadsheets.

2- Get Answers: The Survey123 for ArcGIS field app is available in the Google Play, iTunes and Windows stores. Once installed on your device, you can easily download published surveys shared with you, and capture data while online or offline. The Survey123 field app is the most robust way to capture data in any condition and with the most sophisticated surveys, but you can also access simple surveys with your web browser on either your desktop or mobile device.

3- Make the Best Decisions: Capturing data is just the means to an end. Survey123 includes ready-to-use reporting tools, so you can understand right away how much data is being captured, where, when and by whom. Reports also include summaries of responses to your questions so you can understand trends in your data.

The beauty of Survey123 is not just that it introduces smart forms into ArcGIS, but also the fact that it is fully integrated with ArcGIS. Survey123 for ArcGIS leverages the security and information model of ArcGIS and integrates with other apps such as Workforce for ArcGIS and Operations Dashboard for ArcGIS. Data submitted into ArcGIS can also be easily used from ArcGIS Pro, the analytical tools in ArcGIS.com, and Portal for ArcGIS, as well as Story Maps and Web AppBuilder for ArcGIS.

If you would like to get started with Survey123 for ArcGIS, go to survey123.arcgis.com and login with your ArcGIS Online credentials. Create your own surveys then start exploring options for capturing data with them and accessing the reports. This quick 3-minute overview video may also be a good starting point.

You can also learn more and join the Survey123 community in Geonet. In the Survey123 Geonet Group you can ask questions and access the Survey123 blog where you will find a lot of information about advanced features, for example, Tutorials on XLSForms, tricks to download your data, and working with Surey123 and your own ArcGIS for Server and Portal for ArcGIS.

We launched Survey123 for ArcGIS under the Esri Beta Labs back in April 2015. The Beta community has helped this product make great progress and we want to say thanks to all folks who provided their feedback and encouraged the addition of key features. For us, in the Survey123 team, going out of Beta is just the beginning: we are eager to refine Survey123 and take it to the next level!

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET PubAdv-SCE-150-LJL

To: Public Advocates Office
Prepared by: Scott Yoshikawa
Job Title: Sr. Manager
Received Date: 5/21/2020

Response Date: 6/5/2020

Question 10:
On page 37, lines 8-9, SCE states it had to hire out-of-state crews to supplement California- based crews in order to meet the substantially increased workload. Provide documentation that supports SCE's assertion and demonstrates specifically that its cost increases were driven by work volume and the impact of a contractor shortage at the same time SCE was hiring out of state crews to supplement its California based crews.

Response to Question 10:
SCE provides two attachments to support its response. The first is an excerpt from a November 2018 PowerPoint presentation that forecasts an increase in work due to expanded clearances and removing overhangs (the excerpt has been modified only to remove an attorney-client privileged legend that was erroneously placed there). The second attachment is an example of an email confirming the hiring of 'out of town' crews to help with increased workload. In that instance, the additional 20 out of town crews were brought on for an estimated $7.5M to work through 2019.

Generally, the order of preference for meeting increased crew demands are:

1. Incumbent contractors hiring new resources

2. Incumbent contractors subcontracting to local tree trimming companies, under their supervision and administration.

3. Incumbent contractors subcontracting to out-of-town tree trimming companies.

4. SCE vetting, contracting and managing new contractors (local or out of town).

The reason for preferring new crews to be brought on as subcontractors is for operational efficiency. Our incumbent contractors are experts in our system and Southern California vegetation and can provide the oversight for these new resources. They also have defined rates that were negotiated under competitive solicitation. The preference for in-town crews is to avoid any per diem passthrough costs that would be incurred for food and lodging.

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET PubAdv-SCE-Verbal-001

To: Public Advocates Office
Prepared by: BILL KOTTEAKOS
Job Title: Senior Manager, Compliance
Received Date: 6/9/2020

Response Date: 6/17/2020

Question 03.e-f:
In regards to Line Clearances:
e. Elaborate on the electronic/manual recordkeeping history for line clearing and the plan for future system use/cost.
f. Provide 1-2 examples of tree trimming records during the manual period.

Response to Question 03.e-f:

e. Prior to 2016, SCE used a manual/paper process for Vegetation Management line clearing work. In 2016 and 2017, SCE transitioned to a hybrid (electronic/manual) process and in August 2018, transitioned to an electronic system. However, SCE experienced system performance issues with the newly implemented electronic system and as a result of the system performance issues commenced using a manual system of Excel spreadsheets to schedule and track assigned and completed work until an electronic solution could be developed. SCE leveraged our historic inventory to produce the excel files for vegetation crews to work from and provide back documentation.

As stated in SCE's track 2 testimony, SCE developed and customized data-gathering software for vegetation inspections and trimming from software already in use for electrical inspections. The functionality supported by the software included initiation, scheduling execution and completion, including reporting pending and completed vegetation management work. This system was implemented in September 2019 and subsequently used to document work completion and is currently being used. SCE plans to use current system through at least 2021.

Concurrently, SCE is exploring another system to hold/manage all Vegetation work on one platform. SCE is planning to use this system for other vegetation management programs in late 2020 before taking any action to apply it to line clearing.

f. An example of the manual reporting which was tracked using Excel spreadsheets is provided below for "pre-inspection" and "pruning-tree trimming." Please refer to the attached files:

- Pre-inspection: PubAdv-SCE-Verbal-001_PreInspection.xlsx
- Pruning (tree trimming): PubAdv-SCE-Verbal-001_Pruning.xlsx

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 4/23/2021

Response Date: 5/7/2021

Question 03.a-h:
SCE provides a brief summary of its Arbora Procurement RFI and RFP process. (WP SCE-Tr.3-01 Vol. 01 – Arbora Procurement RFI and RFP Process, pp. 28-29.)
(a) Please provide copies of relevant documents, including RFIs, RFPs, and evaluation of responses to the RFP(s).
(b) The RFI process appears to have identified "platform-based" solutions as the "path forward," but the workpaper does not explain why Salesforce was selected. Please provide documents that evaluate Salesforce in comparison to other "platform-based" solutions.
(c) Testimony appears to emphasize the value of maintaining "ESRI-based solutions" and that Salesforce would require a "third-party mapping software," and Critigen's Lemur application was selected. (Testimony, p. 112, line 10 through p. 113, line 2) Please explain why SCE did not select an ESRI-based mapping software solution, particularly in light of SCE's comments emphasizing the benefits of data and work being on the same platform (Workpaper, p. 28).
(d) Please provide data used in or relevant to the Benefit-to-Cost Ratio (Testimony, Table II-39) and Project Benefits (Workpaper, p. 30), including pre-Arbora baseline data and data collected since Arbora deployment began. We understand that Arbora functionality is only partially deployed and thus there are no post-deployment data available.
(e) Please provide any available production rate data for vegetation management activities, such as inspections/inspector/day and trims/crew/day since January 1, 2019.
(f) Please confirm that Arbora is Salesforce, Critigen's Lemur mapping technology, and custom coding developed by either SCE or Deloitte. (Testimony, p. 109, lines 6-13 and p. 113, lines 3-5) If not confirmed, please provide a complete definition of the Arbora technology solution acquired using the requested (and ongoing) capital expenditure.
(g) Please explain what manual or automated processes are required to maintain consistent data between Arbora and other relevant SCE software. For example, maintaining up-to-date customer contact data.
(h) Please document the performance guarantees or warranty provisions related to Arbora.

Response to Question 03.a-h:
3a. See attached digital platform RFP document "SBUA-SCE-001-Q3.a-h DA Platform RFP-FINAL.docx" and the attached RFP scoring sheet "SBUA-SCE-001-Q3.a-h Digital Platform RFP Score Sheet.xlsx". See attached long-term vegetation management tool assessment document "SBUA-SCE-001-Q3.a-h "VM long-term tool recommendation".

3b. SCE completed an RFP in 2019 to select a Digital Platform vendor. Four vendors were evaluated, and Salesforce was selected. In December of 2019, SCE completed an evaluation of the best long-term vegetation management solution evaluating tool options in three categories, 1)

vegetation specific niche tools, 2) artificial intelligence / machine learning (AI/ML) focused tools, and 3) platform-based tools. This evaluation recommended that a platform-based tool was the best fit to fulfill requirements, address gaps, and would provide the greatest flexibility. Based on this evaluation and the Digital Platform RFP that was completed, Salesforce was selected as the tool for long term vegetation management.

3c. SCE selected Critigen's Lemur application because it works as an integrated bolt-on to the Salesforce application, including in an off-line mode. The ESRI tools were not suitable to work with Salesforce in an off-line or unconnected mode. However, Lemur does utilize the ESRI Solution Development Kit (SDK) for the integration, providing some technology consistency.

3d. Please refer to SCE's response to PubAdv-SCE-T3-003-MW5, Q.6 regarding the benefit-to-cost ratio and project benefits. Arbora functionality is only deployed to a small number of pilot users, and therefore there is no post-deployment data available.

3e. SCE notes that Arbora was implemented in May of 2020, but it was still in a beta-format and without full functionality. Initially, Arbora was rolled out for the Hazard Tree Mitigation Plan (HTMP) and Drought Resistant Initiative (DRI) programs. Thus, providing a daily production rate for inspectors and crews would not provide an accurate depiction of Arbora's intended capabilities.

In 2021, there will be 175-225 daily users for HTMP and DRI specifically. SCE plans for Arbora's full deployment in all vegetation management programs by the end of 2022. Once fully deployed, SCE anticipates Arbora to have between 1,900 and 2,100 daily users.

3f. Yes, Arbora is a combination of Salesforce, Critigen's Lemur mapping technology and custom coding developed by SCE and Deloitte.

3g. SCE is developing standard, automated integrations to maintain consistent data between Arbora and SCE's systems of record.

3h. This information is confidential between SCE and our vendor.

Attachment RII-6

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: Dina Reyes
Job Title: Senior Manager, IT Procurement
Received Date: 5/6/2020

Response Date: 5/20/2020

Question 02:
Please provide a list of the "over 40 other utilities" that previously implemented the VMS. (p. 35 at 12)

Response to Question 02:

1. DTE
2. Southern Company
3. Georgia Power
4. Alabama Power
5. Mississippi Power
6. Gulf Power
7. Florida Power and Light (transmission)
8. Oklahoma Gas and Electric
9. Encore Energy
10. Lower Colorado River Authority
11. Public Service New Mexico
12. Excel Energy
13. Eugene Electric (Oregon)
14. Blackhills (South Dakota)
15. We Energies (Wisconsin)
16. KUB
17. Ducane Light
18. (AES) DPL- Dayton Power and Light
19. (AES) Indianapolis Power and Light
20. Knoxville Utility Board
21. Middle Tennessee Co-Op
22. North Nnec Co-Op
23. Center Virginia Co-Op
24. Ameren Energy
25. Georgia Dept of Transportation
26. AT&T Telecom

27. Hydro Quebec
28. Alberta Transmission Co.
29. Essential Energy (Australia)
30. Power Co (New Zealand)
31. Webb Energy (New Zealand)
32. East Central Energy Minnesota
33. Clay Electric Co-Op Florida
34. Duck River (Tennessee)
35. Scana Electric (South Carolina)
36. Ever Source (North East Utilities)
37. Vermont Electric Co-OP
38. PPL (Pennsylvania Power and Light)
39. Midsouth Co-Op (Texas)
40. Duke Energy (Luis Tree Service)
41. Mid-Carolina Electric Co-Op

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET P u b A d v - S C E - T 3 - 0 0 7 - M W 5

To: Public Advocates Office
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 4/7/2021

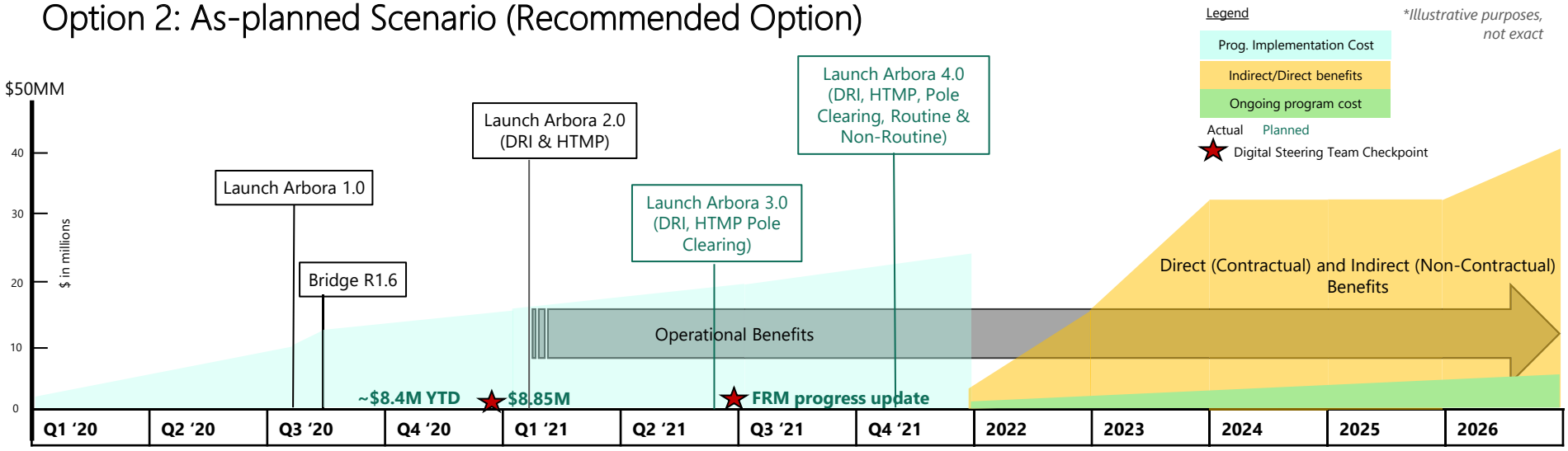
Response Date: 4/15/2021

Question 06:
Please provide the cost-benefit analysis that is mentioned on page 113, line 7.

Response to Question 06:

See attached power point file "PubAdv-SCE-T3-007-MW5-Q06 - Arbora Cost Benefits – Dec 2020.pptx" for the cost-benefit analysis. Although this document was initially marked as "confidential" when it was created, SCE does not consider it to be confidential for purposes of discovery and the record in this proceeding.

Phased Delivery: Program Costs and Benefits
Option 2: As-planned Scenario (Recommended Option)



Full Implementation: Conservative Benefits	Present Value	Nominal	Dec-20	Dec-21	Dec-22	Dec-23	Dec-24	Dec-25	Dec-26
Indirect and Direct Benefits	$ 64,562,688	$ 96,535,182	$ -	$ -	$ 7,805,807	$ 22,182,344	$ 22,182,344	$ 22,182,344	$ 22,182,344

Full Implementation BCR: Conservative	1.34

$ in Millions

Cost Breakdown	Dec-20 2020	Dec-21 2021	Dec-22 2022	Dec-23 2023	Dec-24 2024	Dec-25 2025	Dec-26 2026	Total
Arbora Release 1.0 (DRI MVP)	$6.8							$6.8
Arbora Release 2.0 (DRI, HTMP MVP)	$2.0							$2.0
Arbora Release 3.0 (DRI, HTMP, Pole Clearing MVP)	$0.3	$2.6						$2.9
Arbora Release 4.0 (DRI, HTMP, Pole Clearing, Routine, Non Routine)		$5.7						$5.7
Software Licenses (SalesForce and Lemur) for 1,000 users (up to the 1st MVP)	$1.4							$1.4
iPad purchase and Refresh (3 Yrs. cycle)	$0.4	$0.0	$0.0	$0.0	$0.4	$0.0	$0.0	$0.8
Pod Product Development (80%)	$0.0	$1.1	$2.2	$2.3	$2.3	$2.4	$2.5	$12.8
T&D VM Business Readiness Team		$0.5						$0.5
iPad Refresh			$1.8				$1.8	$3.6
iPad Setup Labor			$0.5				$0.5	$0.9
Total Capital	**$10.9**	**$9.9**	**$4.5**	**$2.3**	**$2.7**	**$2.4**	**$4.7**	**$37.4**
Training and OCM	$0.3	$0.9	$0.0	$0.0	$0.0	$0.0	$0.0	$1.2
Pod Maintenance and Enhancement	$0.0	$0.3	$0.6	$0.6	$0.6	$0.7	$0.7	$3.5
Software Licenses (SalesForce and Lemur)	$0.9	$0.9	$0.9	$1.0	$1.0	$1.0	$1.1	$6.8
Platform Licenses	$0.0	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$1.3
Enterprise Software Licenses (O365, OKTA, JAMF)	$0.0	$0.1	$0.4	$0.4	$0.4	$0.5	$0.5	$2.3
Field Service Support (FSS-iPad Maintenance Labour)	$0.0	$0.1	$0.4	$0.4	$0.5	$0.5	$0.5	$2.4
Enterprise Device Maintenance and Support (Apple Care, Damage/Lost iPads, Verizon)	$0.0	$0.2	$1.0	$1.0	$1.1	$1.1	$1.1	$5.6
Total O&M	**$1.2**	**$2.6**	**$3.6**	**$3.7**	**$3.8**	**$4.0**	**$4.1**	**$23.0**
Total Cost (O&M and Capital)	**$12.1**	**$12.5**	**$8.1**	**$6.0**	**$6.5**	**$6.4**	**$8.8**	**$60.4**

** Benefits represent aspirational targets and are subject to future negotiations which may result in less benefits than stated above*

Financial Benefits Summary

$M

Benefits Breakdown	Assumption Drivers	Baseline Cost 2021-2026	Potential Benefits 2021-2026	Potential Benefits 2022-2027
Non-Routine Breakdown:				
P1 Emergent	Hours saved- 4,300 P1s per year at rate $103 vs a rate of $236	$5.07	$2.2	$2.2
Trouble Order (TO)	Current TO per year is 25,000 to be reduced by 62% to 9,688 per year at a rate of $236. Average hours drive time to point currently of 1.67hrs to be eliminated	49.2	21.5	21.5
Storm Work Order	20% annual time reduction in RT (3,200 hrs) and PT (3,500 hrs). A base of $10.5M RT rate of $236/hr and PT rate of $383/Hr.	10.5	2.1	2.1
Supplemental Patrols	50% Avg work points from supplemental patrols (15,000 points)	29.6	17.2	17.2
Total Non-Routine Base Line Cost / Benefits		**$94.4**	**$43.0**	**$43.0**
Routine Breakdown:				
Trim Capacity				
Capacity Increase Reduced field	6% increase in annual base trim (924K) at a rate of $173 per trim (four years)	$801.0	$37.7	$37.7
Capacity Increase Productivity	2% increase in annual base trim (924K) at a rate of $173 per trim		13.4	13.4
Trim Capacity		**$801.0**	**$51.1**	**$51.1**
HTMP Removal Capacity				
Capacity Increase from production	5% increase in annual base trim (18K) at a rate of $1,357 per trim		$4.9	$4.9
Capacity Increase from integration	15% increase in annual base trim (18K) at a rate of $1,357 per trim	$125.0	15.8	15.8
Capacity Increase from emergent	139 increase in removal per year at a rate of $1,357		0.8	0.8
HTMP Removal Capacity		**$125.0**	**$21.5**	**$21.5**
Capacity Increase DRI Work Planning	3% increase in removal capacity (9.6K) per year at a rate of $2,425	$116.4	$2.8	$2.8
Capacity Increase DRI Work Integration	14% increase in removal capacity (9.6K) per year at a rate of $2,425		13.7	13.7
DRI Removal Capacity		**$116.4**	**$16.4**	**$16.4**
Pole Clearing Clearance Capacity	5% increase in clearing capacity (305K poles) per year at a rate of $45			
Pole Clearing Capacity		**$68.6**	**$2.6**	**$2.6**
Total Routine Base Line Cost / Benefits		**$1,111.1**	**$91.6**	**$91.6**
Total Potential Benefits Before Adjustment		**$1,205**	**$134.6**	**$134.6**
Adjustment to Benefits:				
Routine[2]	IT Sr. Leadership: Routine benefits of $91.6M reduced by 40%		$55.0	$55.0
Non-Routine	IT Sr. Leadership: Non-Routine benefits of $43.0M reduced by 10%		$38.7	$38.7
Fulcrum Maintenance [2]	Estimated maintenance cost to be eliminated as of 2022 for current platform		$2.5	$2.5
Total Benefits After Adjustment			**$96.2**	**$96.2**
Present Value of Benefits			**$64.3**	**$58.9**

* Benefits represent aspirational targets. Approximately 60% of the benefits are subject to contract negotitions.

Arbora will deliver improved efficiencies / effectiveness

Increase productivity: Improve field performance and efficiency

Reduce errors: Reduce rate of errors, manual work, and rework requirements

Enable coordination: Support cross-program planning and work execution

Improve reporting: Increase reporting speed and accuracy

1 Increase field productivity (more trims/crew)

Key Metric
Trim / removal capacity per month

Current state	Arbora improvement	Expected impact
• Crews required to **revisit completed workpoints** to confirm and clean data	• **Data captured accurately 1st time** and contractors can flag incorrect data • Will add to productive time per crew	55K Additional **routine trim capacity per year** (~+6%) Excess capacity valued at ~**$9.4M/year*** Excess capacity value is not a direct cost saving, but should reflect in lower future unit rates in 2022 RFP
• Lack of productivity and capacity forecasting keeps **crews in unproductive areas**	• Planner led **productivity forecasting** increases productive time of underutilized crews • Will drive ~550 hours/week of additional productive time across all programs	20K Additional **routine trim capacity** (~+2%); excess capacity valued at **~$3.4M/year*** 1K Additional **HTMP removal capacity** (~+6%); excess capacity valued at **~$1.4M/year*** 280 Additional **DRI removal capacity** (~+3%); excess capacity valued at **~$687K/year***
• Crews are only **assigned to a single program**	• Single master schedule will allow **crews to work across Routine, HTMP and DRI,** reducing travel time	3K Additional **HTMP removal capacity** (~+17%); excess capacity valued at **~$4M/year*** 1.5K Additional **DRI removal capacity** (~+16%); excess capacity valued at **~$3.4M/year***

* Value dependent contract renegotiations (pass through of increased efficiencies to unit pricing) and associated RFP timing
Note: assumptions based on 2020 program performance, contractors and SME inputs; Assumptions applied (see notes)

1 Increase field productivity (cost savings on P1s)

Key Metric
Cost savings per year

Current state

- P1 (non-routine) mitigation process is manual, conducted through **phone calls and emails**
- Average **3-4 hours** from prescription until crew arrives for mitigation

Arbora improvement

- P1s will be entered in Arbora and will be automatically routed to the nearest vendor and suggest the closest crew
- **Crew travel time reduced by an estimated ~30 minutes**

Expected impact

$444K

Cost saving per year

Note: Blended T&E rate estimated at $236 per hour; time saving estimated between 18-36 minutes per mitigation; estimated ~4300 UVM P1s per year

2 Reduce rate of errors / rework requirements

Key Metric
Employee time spent aggregating / reconciling data

Current state	Arbora improvement	Expected impact
• Multiple **disconnected tools** to manage work, based on **4 primary systems** (incl. paper records); requires weeks to aggregate data across programs	• All of vegetation management on a **single tool** eliminates time needed for aggregation	2 weeks — Week **reduction in time to aggregate data** (from ~2 weeks to real-time)
• **Data integrity/ quality challenges** results in considerable SCE VM time spent on data reconciliation • **Incidences of errors / missed workpoints**	• Schedulers, SSPs and contractors will work off a **single data source**	33% — Schedulers time (approximately 60 hours per scheduler per month) will be **freed to focus on contractor oversight and assignments**
• Planning, vendor queries and data support handled **external to tool with no centralized documentation**	• Planners, performance management and contractor **analysis will be handled inside Arbora**	1 — **Single tools to handle all work force management** data capture, reporting or analysis

Source: Scheduler estimate of time spent on data reconciliation.

3 Enable coordination between programs

Key Metric
Employee satisfaction score (survey)

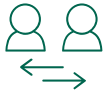
Current state

- Separate schedules for each **program developed in isolation**
- Programs **compete for crews** with no way to weigh competing program needs
- **Separate teams schedule for each individual program** and each scheduler is required to schedule for the entirety of SCE's territory
- **SSPs are unaware of HTMP, DRI, Pole Clearing and Weed Abatement programs** that are operating in their districts

Arbora improvement

- Planners will develop **a single master schedule within Arbora that will incorporate all program work**
- Both SCE and contractor field force will use Arbora to **oversee and execute work across all programs** within their designated territory
- Schedulers will **assign an integrated schedule** across all programs within Arbora
- Arbora will **capture program data and work touchpoints in one database** in order to view overlapping vegetation and customer interactions

Expected impact



Enhanced accountability

Improved working environment

More meritocratic distribution of work

Ability to combine programs over time (i.e. HTMP & DRI) for even greater effectiveness

Improve employee and contractor morale

4 Improve reporting speed and accuracy

Key Metrics
Time to invoice paid
Time to generate report

Current state	Arbora improvement	Expected impact
• Reports generated by 3rd party data visualization software or **exported to Excel** for manipulation	• **Performance dashboards** tracking monthly progress and corporate goals by program	Real Time — **Shift from monthly to real time reporting** (improved compliance, greater responsiveness)
• Productivity and crew capacity / levels **provided by contractor on weekly calls**	• **Contractor and crew level productivity data and safety tracking** feeds directly to contractor report cards	**Improved scheduler decision making** and load balancing to favor more productive contractors
• Large portion of **invoices are received and processed late**, sometimes by as much as 6-9 months; difficult and time consuming to calculate and book accruals	• **Integration with invoicing system** (SAP) and ability to easily **align distinct groups of work (work plans) with matching invoice ID**	6 weeks — **Reduction in time** to reconcile and approve invoices enabling more real-time spend visibility and improving decision making

Source: Scheduler estimate of time spent on data reconciliation.

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: Dina Reyes
Job Title: Senior Manager, IT Procurement
Received Date: 5/6/2020

Response Date: 5/20/2020

Question 04:
Please provide any information SCE has in its possession regarding the other utilities that previously implemented the VMS, such as the number of crews, miles of line, number of individuals inputting and retrieving data from the system, and other factors related to the scale of vegetation management work relevant to the software's scalability limits. (p. 35 at 12-14)

Response to Question 04:
At the time of working with VMS (Q1 of 2018), the client list below was provided to SCE.

- DTE
  - 350 Crews
  - 120 Data Users
- Southern Company
  - 400 Crew
  - 60 Data Users
- Georgia Power
- Alabama Power
- Mississippi Power
- Gulf Power
- Florida Power and Light (transmission)
  - 100 Crews
  - 30 Data Users
- Oklahoma Gas and Electric
- Encore Energy

- Lower Colorado River Authority
- Public Service New Mexico
- Excel Energy
    - 100 Crews
    - 20 Data users
- Eugene Electric (Oregon)
- Blackhills (South Dakota)
- We Energies (Wisconsin)
- KUB
- Ducane Light
- (AES) DPL- Dayton Power and Light
- (AES) Indianapolis Power and Light
- Knoxville Utility Board
- Middle Tennessee Co-Op
- North Nnec Co-Op
- Center Virginia Co-Op
- Ameren Energy
- Georgia Dept of Transportation
- AT&T Telecom
- Hydro Quebec
- Alberta Transmission Co.
- Essential Energy (Australia)
- Power Co (New Zeeland)
- Webb Energy (New Zeeland)
- East Central Energy Minnesota

- Clay Electric Co-Op Florida
- Duck River (Tennessee)
- Scana Electric (South Carolina)
- Ever Source (North East Utilities)
- Vermont Electric Co-OP
- PPL (Pennsylvania Power and Light)
- Midsouth Co-Op (Texas)
- Duke Energy (Luis Tree Service)
- Mid-Carolina Electric Co-Op

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: Dina Reyes
Job Title: Senior Manager, IT Procurement
Received Date: 5/6/2020

Response Date: 5/20/2020

Question 05.a-b:
Did the vendor provide any performance guarantee or warranty?
a.If so, how has SCE benefitted from that guarantee or warranty? If the warranty was limited to recovery of only certain costs, please explain whether SCE attempted to negotiate broader terms and why SCE proceeded with only limited cost recovery options.
b. If not, why did SCE not obtain such a guarantee or warranty?

Response to Question 05.a-b:
There were warranty provisions in the sales agreement between SCE and the VMS manufacturer.

a. If so, how has SCE benefitted from that guarantee or warranty? If the warranty was limited to recovery of only certain costs, please explain whether SCE attempted to negotiate broader terms and why SCE proceeded with only limited cost recovery options.

SCE objects to this request to the extent it seeks a legal conclusion. Subject to the forgoing objection(s), the VMS manufacturer did work with SCE in an attempt to resolve the VMS issues. As of this date, SCE has not received any reimbursement for financial costs pursuant to the warranty provisions of the sales agreement. The limitations of liability provisions in the sales agreement between SCE and VMS were developed as part of a broader negotiation that included many terms, including scope and price. It is common for contracts of this nature to have limitation of liability provisions, including mutual waivers of consequential damages and monetary caps, subject to certain exceptions.

b. If not, why did SCE not obtain such a guarantee or warranty?

N/A. See above.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 2

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 6/24/2021

Response Date: 7/8/2021

Question 01.a-c:
Reference responses to PubAdv-SCE-T3-007-MW5 and SBUA-SCE-001 Q03.d:
a) Please provide the electronic workpapers used to prepare the material on slides 1 and 2 of the powerpoint file "PubAdv-SCE-T3-007-MW5-Q06 - Arbora Cost Benefits – Dec 2020.pptx".
b) For each expected impact (slides 4-8) that is quantified, please identify the source for the expected impact and provide all calculations, assumptions, and methods used to determine the expected impact.
c) Please provide any additional data used in or relevant to the Benefit-to-Cost Ratio (Testimony, Table II-39) and Project Benefits (Workpaper, p. 30), or confirm that all such data have been provided.

Response to Question 01.a-c:

Response to Question 01.a. See the attached file "SBUA-SCE-002-Q1-Financial Benefits Summary" for the electronic workpapers used to prepare the materials on slides 1 and 2.

Response to Question 01.b. Slides 4 and 5 reflect the estimated efficiency and trim capacity improvements of the business case benefits. Estimated costs were applied to these to come up with the financial calculations. All business case assumptions and calculations are broken down in the attached spreadsheet. See attached "SBUA-SCE-002-Q1-201211_Benefits Sizing.vS6_dashboard notes.xlxs."

The source for all data inputs in this analysis was from Vegetation Management subject matter experts and leadership. Many of the efficiency improvements were based on best consensus among the vegetation management team.

Slides 6 through 8 reflect soft benefits estimated during Vegetation Management Scheduler interviews and reviewed by Vegetation Management leadership. None of these soft benefits are reflected in the calculated business case.

Response to Question 01.c. The data used in the Benefit-to-Cost Ratio (Testimony, Table II-39) is included in the "SBUA-SCE-002-Q1-201211_Benefits Sizing.vS6_dashboard notes.xlxs" and other supporting data regarding the project benefits has been provided.

SBUA-SCE-002-Q1-Financial Benefits Summary.xlsx, "Slide 1"

$ in Millions

Cost Breakdown $M		Dec-20	Dec-21	Dec-22	Dec-23	Dec-24	Dec-25	Dec-26	Total
Capital		**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Total**
Arbora Release 1.0 (DRI MVP)	Labor & Pod Dev.	$6.8							$6.8
Arbora Release 2.0 (DRI, HTMP MVP)	Labor & Pod Dev.	$2.0							$2.0
Arbora Release 3.0 (DRI, HTMP, Pole Clearing MVP)	Labor & Pod Dev.	$0.3	$2.6						$2.9
Arbora Release 4.0 (DRI, HTMP, Pole Clearing, Routine, Non Routine)	Labor & Pod Dev.		$5.7						$5.7
Software Licenses (SalesForce and Lemur) for 1,000 users (up to the 1st MVP)	SW Licenses.	$1.4							$1.4
iPad purchase and Refresh (3 Yrs. cycle)	Hardware.	$0.4	$0.0	$0.0	$0.0	$0.4	$0.0	$0.0	$0.8
Pod Product Development (80%)	Labor & Pod Dev.	$0.0	$1.1	$2.2	$2.3	$2.3	$2.4	$2.5	$12.8
T&D VM Business Readiness Team	Labor & Pod Dev.		$0.5						$0.5
Survey 123, iPad Refresh	Hardware.			$1.8				$1.8	$3.6
Survey 123, labor	Labor & Pod Dev.			$0.5				$0.5	$0.9
Total Capital		**$10.9**	**$9.9**	**$4.5**	**$2.3**	**$2.7**	**$2.4**	**$4.7**	**$37.4**
O&M									
Training and OCM		$0.3	$0.9	$0.0	$0.0	$0.0	$0.0	$0.0	$1.2
Pod Maintenance and Enhancement		$0.0	$0.3	$0.6	$0.6	$0.6	$0.7	$0.7	$3.5
Software Licenses (SalesForce and Lemur)		$0.9	$0.9	$0.9	$1.0	$1.0	$1.0	$1.1	$6.8
Platform Licenses		$0.0	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$1.3
Enterprise Software Licenses (O365, OKTA, JAMF)		$0.0	$0.1	$0.4	$0.4	$0.4	$0.5	$0.5	$2.3
Field Service Support (FSS-iPad Maintenance Labour)		$0.0	$0.1	$0.4	$0.4	$0.5	$0.5	$0.5	$2.4
Enterprise Device Maintenance and Support (Apple Care, Damage/Lost iPads, Verizon)		$0.0	$0.2	$1.0	$1.0	$1.1	$1.1	$1.1	$5.6
Total O&M		**$1.2**	**$2.6**	**$3.6**	**$3.7**	**$3.8**	**$4.0**	**$4.1**	**$23.0**
Total Cost (O&M and Capital)		**$12.1**	**$12.5**	**$8.1**	**$6.0**	**$6.5**	**$6.4**	**$8.8**	**$60.4**

SBUA-SCE-002-Q1-Financial Benefits Summary.xlsx, "Slide 2"

$ in Millions		Cost		Benefits[1]	
		Base Line Cost Est.		Potential Benefits*	
Benefits Breakdown	**Assumption Drivers**	**2021-2026**		**2021-2026 As- planned**	**2022-2027 Delayed**
Non-Routine Breakdown:					
P1 Emergent	Hours saved- 4,300 P1s per year at rate $103 vs a rate of $236	$5.1		$2.2	$2.2
Trouble Order (TO)	Current TO per year is 25,000 to be reduced by 62% to 9,688 per year at a rate of $236. Average hours drive time to point currently of 1.67hrs to be eliminated	49.2		21.5	21.5
Storm Work Order	20% annual time reduction in RT (3,200 hrs) and PT (3,500 hrs). A base of $10.5M RT rate of $236/hr and PT rate of $383/Hr.	10.5		2.1	2.1
Supplemental Patrols	50% Avg work points from supplemental patrols (15,000 points)	29.6		17.2	17.2
Total Non-Routine Base Line Cost / Benefits		**$94.4**		**$43.0**	**$43.0**
Routine Breakdown:					
Trim Capacity					
Capacity Increase Reduced field	6% increase in annual base trim (924K) at a rate of $173 per trim (four years)	$801.0		$37.7	$37.7
Capacity Increase Productivity	2% increase in annual base trim (924K) at a rate of $173 per trim			13.4	13.4
Trim Capacity		**$801.0**		**$51.1**	**$51.1**
HTMP Removal Capacity					
Capacity Increase from production	5% increase in annual base trim (18K) at a rate of $1,357 per trim			$5.5	$5.5
Capacity Increase from integration	15% increase in annual base trim (18K) at a rate of $1,357 per trim	$125.0		15.8	15.8
Capacity Increase from emergent	139 increase in removal per year at a rate of $1,357			0.8	0.8
HTMP Removal Capacity		**$125.0**		**$22.1**	**$22.1**
Capacity Increase DRI Work Planning	3% increase in removal capacity (9.6K) per year at a rate of $2,425	$116.4		$2.8	$2.8
Capacity Increase DRI Work Integration	14% increase in removal capacity (9.6K) per year at a rate of $2,425			13.7	13.7
DRI Removal Capacity		**$116.4**		**$16.4**	**$16.4**
Pole Clearing Clearance Capacity	5% increase in clearing capacity (305K poles) per year at a rate of $45				
Pole Clearing Capacity		**$68.6**		**$2.6**	**$2.6**
Total Routine Base Line Cost / Benefits		**$1,111.1**		**$92.2**	**$92.2**
Total Potential Benefits Before Adjustment		**$1,205**		**$135.2**	**$135.2**
Adjustment to Benefits:					
Routine	IT Sr. Leadership: Routine benefits of $91.6M reduced by 40%			$55.3	$55.3
Non-Routine	IT Sr. Leadership: Non-Routine benefits of $43.0M reduced by 10%			$38.7	$38.7
Fulcrum Maintenance	Estimated maintenance cost to be eliminated as of 2022 for current platform			$2.5	$2.5
Total Benefits After Adjustment				**$96.5**	**$96.5**

[1]Benefits represent aspirational targets. Approximately 60% of the benefits are subject to contract negotiations

Routine benefits to start in 2023

	Dec-20	Dec-21	Dec-22	Dec-23	Dec-24	Dec-25
	$0	$0	$7,805,807	$22,182,344	$22,182,344	$22,182,344
Full Implementation: Conservative Benefits						
Present Value	$64.56					

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: JAEL GURROLA
Job Title: Principal Manager, Finance
Received Date: 5/6/2020

Response Date: 5/20/2020

Question 07:
Please provide documentation of the cost of the VMS, including all expenditures to the VMS vendor, expenditures to any other party, and all internal SCE costs related to purchasing, deploying, attempting to fix, and utilizing the VMS.

Response to Question 07:

SCE objects to this request to the extent it is not reasonably related to any claim or defense, as SCE is not seeking costs for the VMS in this proceeding. The cost to implement the VMS is not included as part of the track 2 incremental revenue request because it was purchased and implemented as part of base IT capital within the 2015 GRC and 2018 GRC filing scope. Subject to the foregoing objection(s) SCE responds as follows:

Capital spend:

Description	2016	2017	2018	2019	Grand Total
Contract CPO	**872,715**	**2,470,318**	**493,197**	**1,342,200**	**5,178,430**
	843	745	(13,260)	330	(11,341)
@ BUSINESS INC	4,160	153,483			157,643
ANAND PAG INC		5,256			5,256
BRIDGEWATER CONSULTING GROUP, INC		20,250	810	81,480	102,540
CLEARION SOFTWARE LLC	666,900		205,850		872,750
CLEARION SOFTWARE, LLC.				1,169,950	1,169,950
CYIENT INC			48,830	90,440	139,270
ENVIRONMENTAL SYSTEMS RESEARCH INST	200,812	1,383,993	93,428		1,678,233
INFOSYS LIMITED		635,630	75,000		710,630
TATA AMERICA INTERNATIONAL CORP		270,961	37,127		308,088
TATA CONSULTANCY SERVICES LIMITED			45,412		45,412
Contract Supplemental		**24,614**	**20,159**	**16,660**	**61,433**
		24,614	13,328	16,660	54,602
THE ACT 1 GROUP INC			6,831		6,831
Labor Normal Time	**27,095**	**196,028**	**59,219**	**35,260**	**317,602**
	27,095	196,028	59,219	35,260	317,602
Labor Other Earnings	**7,690**	**44,979**	**13,139**	**7,546**	**73,354**
	7,690	44,979	13,139	7,546	73,354
Mat Load, Tax, freight		**6,097**			**6,097**
		6,097			6,097
Material Direct Purchase		**69,533**			**69,533**
		69,533			69,533
Miscellaneous Allocations		**4,701**	**1,092**	**2,564**	**8,357**
		4,701	1,092	2,564	8,357
Other - Operating		**80,377**	**361,164**	**(439,272)**	**2,269**
		80,377	361,164	(439,272)	2,269
Procurement	**7,593**	**11,846**	**2,607**	**7,586**	**29,632**
	7,593	11,846	2,607	7,586	29,632
REPORTING Overhead	**427**	**3,052**	**747**	**748**	**4,975**
	427	3,052	747	748	4,975
SM IMM SETTLEMENTS & CORRECTIONS		**605**			**605**
		605			605
Grand Total	**915,519**	**2,912,150**	**951,325**	**973,292**	**5,752,286**

O&M spend:

Description	2016	2017	2018	2019	Grand Total
Contract CPO Expenses	**149**		**66,267**	**655**	**67,071**
	149			655	804
TATA AMERICA INTERNATIONAL CORP			66,267		66,267
Contract Supplemental Expenses			**87,500**		**87,500**
ENVIRONMENTAL SYSTEMS RESEARCH INST			87,500		87,500
Material Direct Purchase Expenses		**444**	**623**		**1,066**
		444	623		1,066
Other Oper Expense - Accruals			-		-
			-		-
Other Oper Expense - Non-Accrual	**1,505**	**163,065**	**9,198**	**9,053**	**182,822**
	1,505	14,921	8,991	9,053	34,471
ENVIRONMENTAL SYSTEMS RESEARCH INST		146,875			146,875
SODEXO MAGIC FOOD SERVICE		1,269	207		1,476
Grand Total	**1,654**	**163,509**	**163,588**	**9,708**	**338,459**

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: BILL KOTTEAKOS
Job Title: Senior Manager, Compliance
Received Date: 5/6/2020

Response Date: 5/20/2020

Question 08:
Please quantify the "considerable impact on productivity" resulting from the problems with the VMS. If it is not possible to specifically quantify the impact, please provide a range of potential impacts. (p. 35 at 16)

Response to Question 08:

SCE is unable to quantify the productivity impact from the VMS, but productivity issues encountered included:

- The inability to dispatch work in the most efficient manner to work crews
- Inefficiencies in routing assigned work with the use of mapping software
- Inability to track work completion which required additional resources to verify work was completed
- High maintenance and continued troubleshooting of the VMS required a large number of field personnel to use productive "work time" waiting for technical support. Significant time would be lost waiting for technical support with system updates, device repairs, and general user issues
- The VMS would take a significant amount of time to "sync" assigned/completed work records, often ending in failure and more technical support being required
- Large amounts of time spent on training all contractors over multiple sessions because of system complexity for field users

Attachment RII-13

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: Jeff Gooding
Job Title: Principal Manager – IT Enterprise Architecture
Received Date: 5/6/2020

Response Date: 5/20/2020

Question 09:
Please identify the "software already in use for electrical inspections" and its vendor(s).

Response to Question 09:
As part of SCE's Enhanced Overhead Inspection (EOI) program, SCE used a low-code development platform called Survey123 that runs on ArcGiS On-line (AGOL) and is offered by ESRI. SCE went live with the Survey123 solution for Vegetation Management in early August of 2019.

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: BILL KOTTEAKOS
Job Title: Senior Manager, Compliance
Received Date: 5/6/2020

Response Date: 5/20/2020

Question 10:
Please explain the productivity difference between the "paper-based system" and the use of "software already in use for electrical inspections." (p. 36 at 4 and 6)

Response to Question 10:

The main challenge of the paper-based system SCE used until the transition to the software already in use for electrical inspections was the inability to see assigned work on a map. The work points were exported into a spreadsheet format, which was not listed in the optimal order to be completed for tree trimming crew planning and work completion efficiency. Effectively, the crews had two options (described below) to get work completed, neither of which was considered as efficient as a functioning vegetation management software with mapping capability:

- Go down the list sequentially which resulted in driving around the work area looking for the identified work points

- Select a specific location, and then once at that specific location the vendor could look through the entire spreadsheet (sometimes 10 or more pages long) for work in close proximity. This was not always possible, because although the tree inventory contains street addresses for reference, it does not provide the same level of accuracy as latitude and longitude.

As a result, tree trimming crews spent more time each day locating trees that required work, and less time actually trimming the trees. While a crew's daily productivity varies based on numerous factors, including drive time in between trees, tree size, equipment usage, etc., the transition to the inspection software significantly increased average crew productivity .

Attachment RII-15

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: JAEL GURROLA
Job Title: Principal Manager, Finance
Received Date: 5/6/2020

Response Date: 5/20/2020

Question 11:
Please provide documentation of the incremental cost of implementing the "software already in use for electrical inspections," including all expenditures to the vendor(s), expenditures to any other party, and all internal SCE costs related to purchasing, deploying, attempting to fix, and utilizing the software. (p. 36 at 6)

Response to Question 11: Survey 123 Costs

Description	2019 July	Aug	Sept	Oct	Nov	Dec	2019 Total	2020 Jan	Feb	Mar	Apr	2020 Total	Grand Total
Contract CPO	**232,968**		**93,957**	**30,000**	**37,851**	**94,000**	**488,777**	**168,000**	**251,748**	**355,387**	**1,701,540**	**2,476,675**	**2,965,452**
			617		245	94,000	94,862						94,862
ENVIRONMENTAL SYSTEMS RESEARC	232,968						232,968	168,000	10,000		1,680,584	1,858,584	2,091,552
INFOSYS LIMITED				30,000			30,000						30,000
LDSD, LLC									97,000	150,000		247,000	247,000
OPTIV SECURITY INC					8,857		8,857						8,857
TATA CONSULTANCY SERVICES LIMITED									144,748	205,387	20,956	371,091	371,091
ZONES INC			93,340		28,750		122,090						122,090
Contract Supplemental	**3,171**	**18,770**	**20,843**	**116,811**	**289,727**	**957,718**	**1,407,040**	**46,971**	**32,963**	**54,829**	**34,714**	**169,476**	**1,576,516**
				90,860	206,094	886,715	1,183,669						1,183,669
THE ACT 1 GROUP INC	3,171	18,770	20,843	25,951	83,633	71,004	223,372	46,971	32,963	54,829	34,714	169,476	392,848
Labor Normal Time	**56,386**	**81,458**	**60,884**	**68,549**	**28,510**	**37,061**	**332,849**	**37,590**	**39,012**	**35,518**	**29,181**	**141,302**	**474,150**
	56,386	81,458	60,884	68,549	28,510	37,061	332,849	37,590	39,012	35,518	29,181	141,302	474,150
Labor Other Earnings	**12,067**	**17,432**	**13,029**	**14,670**	**6,101**	**7,264**	**70,563**	**8,044**	**8,349**	**7,601**	**6,245**	**30,239**	**100,801**
	12,067	17,432	13,029	14,670	6,101	7,264	70,563	8,044	8,349	7,601	6,245	30,239	100,801
Labor Premium Time	**36,260**	**43,026**	**21,476**	**20,059**	**8,077**	**4,295**	**133,193**	**3,847**	**3,535**	**3,207**	**2,352**	**12,941**	**146,134**
	36,260	43,026	21,476	20,059	8,077	4,295	133,193	3,847	3,535	3,207	2,352	12,941	146,134
Mat Load, Tax, freight			**119,400**		**31,554**	**333**	**151,287**						**151,287**
			119,400		31,554	333	151,287						151,287
Material Direct Purchase			**1,256,840**		**332,150**	**3,500**	**1,592,490**						**1,592,490**
ZONES INC			1,256,840		332,150	3,500	1,592,490						1,592,490
Miscellaneous Allocations	**482**	**220**	**1,813**	**285**	**1,091**	**2,079**	**5,970**	**(58)**	**737**	**486**	**2,440**	**3,605**	**9,575**
	482	220	1,813	285	1,091	2,079	5,970	(58)	737	486	2,440	3,605	9,575
Other - Operating	**431**	**4,292**	**1,338**	**2,020**	**4,152**	**1,699**	**13,932**	**255**	**489**	**186**	**707**	**1,637**	**15,569**
	431	4,292	1,338	2,020	4,152	1,699	13,932	255	489	186	707	1,637	15,569
Procurement	**1,228**	**98**	**7,133**	**763**	**3,431**	**5,487**	**18,139**	**1,118**	**1,480**	**2,133**	**9,029**	**13,760**	**31,899**
	1,228	98	7,133	763	3,431	5,487	18,139	1,118	1,480	2,133	9,029	13,760	31,899
REPORTING Overhead	**399**	**229**	**1,335**	**95**	**1,627**	**536**	**4,221**	**4,065**	**707**	**1,168**	**3,076**	**9,015**	**13,237**
	399	229	1,335	95	1,627	536	4,221	4,065	707	1,168	3,076	9,015	13,237
Grand Total	**343,391**	**165,524**	**1,598,049**	**253,252**	**744,272**	**1,113,972**	**4,218,460**	**269,833**	**339,019**	**460,515**	**1,789,284**	**2,858,650**	**7,077,111**

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: Vivien Chen
Job Title: Financial Analysis, Senior Advisor
Received Date: 4/23/2021

Response Date: 5/4/2021

Question 04:
Please provide the full general ledger entries for all costs related to Arbora. Please ensure a vendor name is provided for all contracts or explain why none is provided.

Response to Question 04:
Refer to tabs named "4(d) Capital" and "4(d) O&M" of "SBUA-SCE-001 Q4d.xlsx", as attached to SCE's response to question 4(d) of this data request set. Vendor names are provided for costs recorded under Contract, Material, and Other cost element groups as applicable. Costs recorded under Labor, Indirect, Allocation, and Overhead cost element groups represent primarily SCE personnel and internal support costs and therefore no vendor name is available.

Attachment Omitted Due to Length

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 4/23/2021

Response Date: 5/3/2021

Question 04.b-c:
(b) Please identify which costs are related to training contractors on the Arbora system.
(c) Please explain why the costs related to Arbora were not considered part of base IT capital within the filing scope of a GRC.

Response to Question 04.b-c:

4b. The Resident Logic costs of $199,541 are related to training contractors on the Arbora system.

4c. Arbora was not identified as a need during our 2021 GRC cycle and only came to light after SCE had filed the 2021 GRC due to growing wildfire needs across existing programs and the introduction of new programs. This capability need was discussed in the 2020-2022 Wildfire Mitigation Plan (WMP) and supports the implementation of the Vegetation Management WMP activities through the Arbora program.

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 1

To: SBUA
Prepared by: JAEL GURROLA
Job Title: Principal Manager, Finance
Received Date: 5/6/2020

Response Date: 5/20/2020

Question 14.a-b:
The VMS is not mentioned in the PricewaterhouseCoopers audit. Did PricewaterhouseCoopers review VMS expenditures?

a. If PricewaterhouseCoopers did not review the VMS procurement, why not?
b. If PricewaterhouseCoopers did review the VMS procurement:
   i. Please provide all relevant documentation of the review.
   ii. Please provide any opinions formed by PricewaterhouseCoopers of the VMS.
   iii. Did PricewaterhouseCoopers determine whether SCE's procurement decision considered all reasonable alternatives to the VMS, evaluated the VMS software appropriately, and conducted an effective evaluation of the VMS software in comparison to reasonable alternatives? Please explain.

Response to Question 14.a-b:

PricewaterhouseCoopers (PWC) is not a party to this proceeding. SCE is responding to this request based on the audit scope. PWC did not review the costs to implement the VMS because the costs were not included as part of the track 2 incremental revenue request. The costs to purchase and implement the VMS were part of base IT capital within the 2015 GRC and 2018 GRC filing scope.

a) PWC did not review the costs to implement the VMS because the costs were not included as part of the track 2 incremental revenue request. The costs to purchase and implement the VMS were part of base IT capital within the 2015 GRC and 2018 GRC filing scope.
b) N/A
   i. N/A
   ii. PWC did not review the costs to implement the VMS
   iii. PWC did not review the costs to implement the VMS because the costs were not included as part of the track 2 incremental revenue request. The costs to purchase and implement the VMS were part of base IT capital within the 2015 GRC and 2018 GRC filing scope.

Attachment RII-19

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 2

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 6/24/2021

Response Date: 7/7/2021

Question 02:
Please provide annual capital and expense cost recovery amounts, including actual and forecast years, for the Clearion VMS software included in base IT capital within the 2015 and 2018 GRC filing scopes.

Response to Question 02:
SCE objects to this question as the term "annual capital and expense recovery amounts" is vague and ambiguous. Notwithstanding that objection, SCE interprets the term to be intended to refer to authorized revenue requirements associated with the Veg Management software.

The Commission adopted SCE's proposals for VM software in the 2015 GRC and the 2018 GRC. But having projects approved in a GRC is not always equivalent to having those costs be included in rates (in the short-term). Rates are based on authorized revenue requirements, and there are only two mechanisms by which a capital project, such as the Veg Management software, is included in the authorized revenue requirement. First, the project can be included in the initial rate base used to forecast the Test Year at the time of the application (e.g., end of year 2012 rate base for the 2015 GRC, and end of year 2015 rate base for the 2018 GRC). Second, the project's costs can be included and adopted (in whole or in part) as part of the application if the project closed before or during the Test Year. Neither or these conditions is applicable to the approved VM software at issue here. Instead, the project in the 2015 GRC was approved by the Commission, but forecast to closed in the post-test year of 2016, and the project in the 2018 GRC was approved with reductions, but was forecast to close in the post-test year of 2020. No capital expenditures closed in time to be part of the GRC recorded rate base true-up between GRC cycles.

In one manner both projects did impact the adopted test year revenue requirement. Capital expenditures on capitalized software projects can be expensed as incurred for tax purposes. So, the two projects reduced SCE's authorized taxes and revenue requirement for the years 2015-2017 and 2018-2020. In short, customers are benefitting from a revenue requirement reduction and benefitting from the functionality the software provides without the capital costs forecasted to close in the TY 2018 GRC.

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET S B U A - S C E - 0 0 2

To: SBUA
Prepared by: Sunanda Singh
Job Title: Senior Project Manager
Received Date: 6/29/2020

Response Date: 7/14/2020

Question 02.a-b:
Please explain how SCE is using Survey123 for other uses. (Reference SBUA-SCE-001 Questions 9 and 13)

a. Please explain the database structure for Survey123 relative to these other uses. For example, do they use the same database(s)?

b. For these other uses, please explain whether Survey123 will remain in use. Does it suffer from similar issues to those described in the response to Question 13?

Response to Question 02.a-b:
2a. Each Survey123 form (e.g., Distribution, Transmission, Vegetation Management) has a separate database with its own parameters. While integration capabilities can be developed, there are constraints on the extent of integration. For example, the databases/schemas underlying forms for Aerial Inspection, Distribution, Transmission, Generation, and Vegetation Management forms have different data structures and cannot be integrated within Survey123.

2b. Survey123 is a good tool for simple data collection, including the data that a field inspector would collect on his/her iPad. However, Survey123 lacks many functions needed to capture the entire workflow, including work management and scheduling, and lacks capabilities regarding data management and integrated reporting (as described in our response to question 13) that SCE requires when managing its workforce.

Additionally, some SCE programs, such as Aerial Inspection, capture unstructured data such as large video files and LiDAR (Light Detection and Ranging) data. We intend to apply advanced computer vision processing using Machine Learning and Artificial Intelligence to this data in a variety of ways, such as to help identify asset defects and risks. ArcGIS Online, which Survey123 is based upon, does not support these capabilities.

While Survey123 may remain in use for some time in the future for simple forms, SCE intends to replace Survey123 with more robust and flexible platforms.

Southern California Edison
A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2

DATA REQUEST SET SBUA-SCE-002

To: SBUA
Prepared by: BILL KOTTEAKOS
Job Title: Senior Manager, Compliance
Received Date: 6/29/2020

Response Date: 7/14/2020

Question 03:
Please provide any productivity metrics that SCE tracked related to vegetation management, on a monthly (or quarterly, if unavailable monthly) basis. Since SCE stated that it is "unable to quantify the productivity impact from the VMS", please provide any necessary explanation for interpreting these metrics. (Reference SBUA-SCE-001 Questions 8 and 10)

Response to Question 03:
Historically, SCE tracked the volume of trims performed as it related to those that were planned to be completed (i.e., throughput) and did not track the number of trims performed per day by each crew. The number of trims performed by a crew can vary significantly depending on the location, terrain, tree attributes, and size of work crews. However, it was believed that trims/crew/day averaged ~10-12.

In April 2019, SCE identified a significant decline in pruning throughput. Shortly thereafter, SCE implemented the paper-based system of assigning work and began tracking inspection and trimming of the paper-based process.

However, when SCE initially began tracking production in May 2019, it found production was low compared to historic trims required. For May and June, SCE managed the work using office staff and normal crew resources but realized additional measures would be necessary to meet production requirements as schedule adherence was being compromised. In July, SCE started ramping up crew counts while simultaneously implementing an Incident Management Team (IMT) to provide daily monitoring of production and interaction with all SCE vegetation contractors to get accurate production information.

The table below intends to illustrate the production rate achieved based on three specific time periods:

- May/June 2019
  - Paper-based system – normal staffing
- July/August 2019
  - Paper-based system with IMT oversight and increased crew resources
- Implementation of Survey 123 in September 2019
  - Electronic process

Inspection/Trim	Unit of Measure	Paper-based system	Paper / IMT	Electronic
Inspection	# of inspections / inspector/ day	~ 39	~ 51	~ 86
Trim	# of trims/ crew / day	~ 8	~ 10	~ 12

Attachment RII-22

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 3

To: SBUA
Prepared by: Jeff Gooding
Job Title: Principal Manager, Enterprise Architecture
Received Date: 6/28/2021

Response Date: 7/12/2021

Question 08:
Please provide any information that SCE has regarding the performance of PG&E and SDG&E's "highly customized solutions" (Track 2 Rebuttal, p. 42, lines 13-14) to vegetation management system needs during the response to expanded wildfire mitigation efforts and the HFTD decision, specifically whether either system failed to meet the utility's needs.

Response to Question 08:

In SCE's conversations with PG&E and SDG&E's teams, we initially focused on understanding if either company was using vegetation management software that was Commercial-Off-The-Shelf (COTS) that we could procure to replace Clearion with. Our understanding was each used customized solution and we focused on the design of PG&E as their scalability and performance requirements would meet or exceed SCE's. Their use of simple form mobile apps in the field was similar to what we had adopted with Survey123 as part of our EOI field inspection approach and validated that we could use that tool to provide an interim field vegetation app to replace Clearion with. We are not aware that either company's system failed to meet either of their needs.

Refer to SCE's response to a similar SBUA data request in Track 2 for supporting information. Refer to (A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2 DATA REQUEST SET S B U A - S C E - 0 0 3 Prepared by: Christopher Coker Received Date: 10/2/2020 Response Date: 10/12/2020)

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 3

To: SBUA
Prepared by: Jeff Gooding
Job Title: Principal Manager, Enterprise Architecture
Received Date: 6/28/2021

Response Date: 7/12/2021

Question 09:
Please document the performance guarantees or warranty provisions for the Clearion VMS software and the Fulcrum software.

Response to Question 09:

The Warranty period in the Master Services Agreement with Clearion states "The warranty period for Services and Deliverables shall commence upon the date of final acceptance of the Services and Deliverables and shall continue for one (1) year." Despite all parties' good faith efforts to resolve the performance issues, SCE never provided final acceptance of the Clearion solution and did not enter into the warranty period and the warranty provisions never applied. Additionally, there were no performance guarantees in Clearion Statement of Work.

Fulcrum also has similar Warranty provisions, with a few differences, due to Fulcrum being a SaaS solution, in their master services agreement but has not experienced significant performance issues. Additionally, there are no performance guarantees in the Fulcrum Statement of Work.

SBUA may also refer to SCE's response to a similar Data Request asked during the Track 2 discussions. Refer to (A.19-08-013 Track 2 – SCE 2021 General Rate Case Track 2 DATA REQUEST SET SBUA-SCE-001 Prepared by: Dina Reyes Received Date: 5/6/2020 Response Date: 5/20/2020)

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 3

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 6/28/2021

Response Date: 7/12/2021

Question 10.a-d:
Is it correct to conclude from SCE's Track 2 Rebuttal Testimony that the fundamental problem with the Clearion VMS software is that it could not maintain data synchronization in regions with heavily forested, challenging terrain? (Track 2 Rebuttal, p. 41, lines 16-20; p. 45, lines 16-22; p. 46, lines 7-8; Appendix K, p. 3 "user was in a remote area working for a few weeks").

a.Please identify where in the RFP ("SBUA-SCE-001-Q3.a-h DA Platform RFPFINAL.docx") SCE indicated a preference for or a required deliverable that the Arbora system will be able to maintain data synchronization in regions with heavily forested, challenging terrain.

b.Please identify where in the RFP scoring sheet ("SBUA-SCE-001-Q3.a-h DA Platform RFPFINAL.docx") SCE recorded an evaluation of whether the proposal demonstrated that the product would be able to maintain data synchronization in regions with heavily forested, challenging terrain.

c.Please explain whether the Arbora system components will be able to maintain data synchronization in regions with heavily forested, challenging terrain, and what testing is planned to verify that capability.

d.If testing of Arbora identifies issues with data synchronization, what is SCE's alternative plan?

Response to Question 10.a-d:
While the fundamental problem with the VMS software was centered on maintaining the integrity of the data synchronization between the end users and the central database, it is incorrect that heavily forested and challenging terrain is the cause of this problem. Heavily forested and challenging terrain tend to be in remote locations where cellular coverage is intermittent or not available which was a contributing issue to the data synchronization problem, but the fundamental problem was a software architecture flaw in the synchronization design that, combined with a large user base and a lack of data integrity controls in the VMS code, would cause data conflicts and data integrity issues.

Response to Question 10.a. As state above, data synchronization in heavily forested, challenging terrain refers to the need for offline (low or no cellular connectivity) mobile capability. Please see section 3.1.3, items 12.0 and 13.0 of the document "SBUA-SCE-003-Q4.a-c DA Platform RFP.pdf" which lists the platform requirements to support real-time and offline integration to backend enterprise applications (item 12.0) and to support offline processing (item 13.0).

Response to Question 10.b. The evaluation of whether the proposal demonstrated that the product

would be able to maintain data synchronization, relative to platform requirement items 12.0 and 13.0 referenced in 10.a. above, is included in the scoring of "Section 1a Digital Platform" of the "SBUA-SCE-001-Q3.a-h Digital Platform RFP Score Sheet.xlxs". Additionally, please see lines 45 and 46 of the attached document "SBUA-SCE-003-Q10.a-d Digital Platform Technical Requirements – Salesforce.xlxs" that provides the detailed response to the RFP requirement items 12.0 and 13.0 that the Salesforce platform meets those requirements.

Response to Question 10.c. As stated in the response to Question 10.b. above, the Salesforce platform which is part of the Arbora system can meet the offline and data synchronization capabilities outlined in the RFP. This capability has been field tested as part of the initial pilot for the Arbora solution.

Response to Question 10.d. As stated in the response to Question 10.c. above, the offline and data synchronization capability as part of the Arbora solution has already been successfully field tested.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 3

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 6/28/2021

Response Date: 7/12/2021

Question 04.a-c:
Re: Response to SBUA-SCE-001-Q03:

a.The supplied attachment provided as "SBUA-SCE-001-Q3.a-h DA Platform RFPFINAL.docx" includes extensive comments. Please provide a final version.

b.In response to Q03.a, SCE provided an RFP and scoring sheet related to the procurement of Salesforce. In response to Q3.f, SCE confirmed that Arbora also includes Critigen's Lemur mapping technology and custom coding developed by SCE and Deloitte. Please provide copies of relevant documents, including RFIs, RFPs, evaluation of responses, benefit/cost ratios, or any equivalent documentation used in the procurement process for Critigen's Lemur mapping technology and the customer coding services provided by Deloitte.

c.In response to Q03.f, SCE stated that custom coding is a component of Arbora. Please reconcile the claim that a custom-built system "generally costs more, has a longer implementation timeline, and generally requires custom solutions and software programming to make modifications and upgrades" (Track 2 Rebuttal, p. 42, lines 11-13) with the determination that the Arbora system is a cost-effective investment (Track 3 Direct, p. 113, lines 7-17.)

Response to Question 04.a-c

Response to Question 04.a. Please see attachment "SBUA-SCE-003-Q4.a-c DA Platform RFP.pdf"

Response to Question 04.b. Please see the attached evaluation documents utilized as part of the decision to select Critigen's Lemur mapping solution "SBUA-SCE-003-Q4.a-c 210415_Front end option evalaution_v3.pptx" and "SBUA-SCE-003-Q4.a-c Fit-gap Analysis – Maps Readout.pptx"

Response to Question 04.c. A custom-built system referenced in the Track 2 Rebuttal refers to an application that is completely custom coded from the ground up as opposed to a packaged system that has some custom coding to fill product gaps as part of the developed solution. In the case of Arbora, the solution is utilizing the Salesforce software platform for the core capabilities and only using custom coding in the cases where the configured, out-of-the-box capability from the Salesforce platform does not meet the business capability requirements. This approach reduces the time and cost that would have been required to custom build a similar solution from the ground up.

Attachments Omitted Due to Length

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 3

To: SBUA
Prepared by: Jeff Gooding
Job Title: Principal Manager, Enterprise Architecture
Received Date: 6/28/2021

Response Date: 7/12/2021

Question 01.a-f:
Regarding the Fulcrum software (Track 3 Direct Testimony, p. 112):
a. Please explain the services or uses provided by Fulcrum.
b. Please provide the "gaps" associated with Fulcrum (line 6).
c.Please explain whether or not Fulcrum will continue to be used when Arbora is implemented.
d.Please describe the procurement process for the Fulcrum software and provide copies of relevant documents, including RFIs, RFPs, evaluation of responses, benefit/cost ratios, or any equivalent documentation.
e.Please explain whether the Fulcrum software has or will soon reach the end of its expected useful life. Please provide evidence from any prior proceeding to document the expected useful life of the Fulcrum software.
f.Please provide annual capital and expense cost recovery amounts, including actual and forecast years, for the Fulcrum software and the relevant GRC proceedings in which the cost was included.

Response to Question 01.a-f:

Response to Q1a: Please explain the services or uses provided by Fulcrum.

Fulcrum is used to as a simple form based mobile application by field personnel to support the following vegetation management supplemental use cases:

- Hazard tree management program (HTMP)
- Drought Resolution Initiative (DRI)
- Pole Brushing
- Weed abatement
- Supplemental patrols
- Storm response (individual app per storm)
- Third party QC (several apps)
- Other small programs (several apps)

Response to Q1b: Please provide the "gaps" associated with Fulcrum (line 6).

Fulcrum provide the capability to quickly create simple forms to collect and update information in the field through a mobile application that runs on a mobile device. The gaps included a lack of robust scheduling or work management capabilities and Fulcrum also lacks fully automated

integration with our back-office systems (Fulcrum supplies a .csv file for download).

Response to Q1c: Please explain whether or not Fulcrum will continue to be used when Arbora is implemented.

Fulcrum will not continue to be used and will be decommissioned when Arbora is implemented.

Response to Q1d: Please describe the procurement process for the Fulcrum software and provide copies of relevant documents, including RFIs, RFPs, evaluation of responses, benefit/cost ratios, or any equivalent documentation.

There was no formal RFP associated with the selection of Fulcrum. Fulcrum was selected by the vegetation management team in early to mid-2019 to support the new HTMP program. Around the same time, we understood the issues with the existing Clearion solution and Fulcrum was selected for its agility.

Response to Q1e: Please explain whether the Fulcrum software has or will soon reach the end of its expected useful life. Please provide evidence from any prior proceeding to document the expected useful life of the Fulcrum software.

From a software market standpoint, Fulcrum is a SaaS (Software as a Service) solution and would not suffer from technology obsolescence-based end of life for a particular release or version of the software. SCE's rationale for replacing Fulcrum with Arbora is a consolidation of vegetation management data and applications on a single platform that has robust work management and scheduling functions and more modern integration and reporting functionality.

Response to Q1f: Please provide annual capital and expense cost recovery amounts, including actual and forecast years, for the Fulcrum software and the relevant GRC proceedings in which the cost was included

While SCE did request funding for VMS, the 2015 and 2018 filings, that VMS referred to our Clearion/ESRI based solution and our funding requests in Track 2 referred to Survey123. Funding specifically allocated for the Fulcrum technology was not included in either the 2015 or 2018 GRC filings.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 3

To: SBUA
Prepared by: Jeff Gooding
Job Title: Principal Manager, Enterprise Architecture
Received Date: 6/28/2021

Response Date: 7/12/2021

Question 06.a-d:
Re: Track 3 Direct Testimony, p. 109. Please state whether PG&E's procurement process for the Clearion VMS in 2018 included an expectation that it could improve data accuracy by providing the following benefits. If the answer is not an unequivocal yes, please cite to testimony or any other evidence in Track 2 of this proceeding or in any prior GRC proceeding to provide supporting evidence for the answer.

a.Maintaining updated vegetation management data without a large backlog of paperwork
b.Eliminating data errors from manual data entry
c.obtaining near real time information on work task items such as status, crew assignment, work dates
d.Reducing manual intervention in overseeing vegetation management work and obtaining visibility into the individual tasks.

Response to Question 06.a-d:

SCE is not aware of PG&E's procurement processes, however, assuming SBUA intended the question on the Clarion VMS to be directed to SCE's procurement process of the Clarion VMS, yes, it was SCE's expectation at the time of procurement that Clearion would provide the following:

a. Maintaining updated vegetation management data without a large backlog of paperwork
b. Eliminating data errors from manual data entry
c. obtaining near real time information on work task items such as status, crew assignment, work dates
d. Reducing manual intervention in overseeing vegetation management work and obtaining visibility into the individual tasks

Attachment RII-28

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 3

To: SBUA
Prepared by: Jeff Gooding
Job Title: Principal Manager, Enterprise Architecture
Received Date: 6/28/2021

Response Date: 7/12/2021

Question 07:
Re: Track 3 Direct Testimony, pp. 109-110. Please state whether PG&E's procurement process for the Clearion VMS in 2018 included an expectation that it could deliver each functionality item described beginning on line 21, p. 109 and ending at line 25, p. 110. If the answer is not an unequivocal yes, please cite to testimony or any other evidence in Track 2 of this proceeding or in any prior GRC proceeding to provide supporting evidence for the answer.

Response to Question 07:

Assuming SBUA's question is directed to SCE rather than PG&E, yes, SCE expected Clearion would deliver the functionality listed in the filing referenced in the question above.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 4

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 8/2/2021

Response Date: 8/16/2021

Question 03.a-c:
Regarding SCE's statement that SBUA Witness Wilson asserted that "these utilities had a far smaller scope of work than SCE." (Track 2 Rebuttal, p. 43, line 9)

a. Does SCE agree that SBUA Witness Wilson's primary complaint about the references from other utilities is that SCE "did not obtain information relevant to the need to maintain data synchronization in regions with heavily forested, challenging terrain"?

b. Please confirm that Mr. Wilson did not state or infer that the five other utilities had "a far smaller scope of work than SCE." If not confirmed, please explain.

c. Please identify and supply any documents demonstrating that SCE evaluated the five other utilities' (i) number of data users supported by the software, (ii) maximum volume of trees trimmed, (iii) capabilities to support "enhanced trims," or (iv) performance requirements related to data synchronization. Please include SCE's understanding of the definition of data users in the context of any information that may be supplied in response to this question.

Response to Question 03.a-c:

a. SCE objects to the subparts (a) and (b) of the question based on relevance as it relates to Track 2, not Track 3. SCE further objects to the question as it calls for speculation on SCE's part about what SBUA witness Wilson's "primary complaint" was in his Track 2 testimony.

b. See response above.

c. Please refer to our response to SBUA-SCE-004 Question 1. Although SCE did not collect scalability, enhanced trim capability, or performance metrics from each utility we discussed VMS solutions with in 2016, SCE's understanding of the definition of data users is end users of the VMS software in the field or in the office.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 4

To: SBUA
Prepared by: Martin Collette
Job Title: Principal Advisor
Received Date: 8/2/2021

Response Date: 8/13/2021

Question 07.a-f:
Referring to SCE's response to SBUA-SCE-002, Q2, regarding the recovery of the costs of the Clearion VMS software included in base IT capital within the 2015 and 2018 GRC filing scopes.

a. Please explain how SCE customers are "benefitting from the functionality the [Clearion VMS] software provides."

b. Please clarify how, if at all, SCE intends to recover the costs of the Clearion VMS software.

i. Have any of the costs been included in any track of this proceeding, and if so, how much and in what document(s)?

ii. Have any of the costs been included in an application for a rider, and if so, which rider, what date, and which costs?

iii. Does SCE intend to request recovery through a future rider application? If so, when and which rider?

c. Does SCE believe that the Clearion VMS software was used and useful in the test year for this proceeding? If so, explain how.

d. Does SCE believe that the Clearion VMS software has ever been used and useful? If so, when was that true?

e. Regarding the statements that a "project can be included in the initial rate base used to forecast the Test Year at the time of the application (e.g., end of year 2012 rate base for the 2015 GRC, and end of year 2015 rate base for the 2018 GRC)," but that condition is not "applicable to the approved VM software," please explain why the VM software was not "included in the initial rate base" for either GRC.

f. Regarding the statements that a "project's costs can be included and adopted (in whole or in part) as part of the application if the project closed before or during the Test Year," but that condition is not "applicable to the approved VM software,"

i. Please explain if why the "project in the 2015 GRC [and] forecast to close in the post-test year of 2016" was included in any track of the current application and, if not, why not;

ii. If the project is included any track of the current GRC application, please provide estimates of the annual revenue requirement and average rate impact associated with that cost recovery;

iii. Please define "close" as used in this portion of the response; and

iv. Please provide the dates at which the "project in the 2015 GRC" and the "project in the 2018 GRC" closed or are expected to close.

v. If the project (or two projects) has not yet closed, please explain why.

Response to Question 07.a-f:

a) SCE presumes that SBUA is referring to the following paragraph in the response to Question 2, SBUA-002:
"In one manner both projects did impact the adopted test year revenue requirement. Capital

expenditures on capitalized software projects can be expensed as incurred for tax purposes. So, the two projects reduced SCE's authorized taxes and revenue requirement for the years 2015-2017 and 2018-2020. In short, customers are benefitting from a revenue requirement reduction and benefitting from the functionality the software provides without the capital costs forecasted to close in the TY 2018 GRC."

This statement was intended to refer generically to capital software projects. As previously described, capital software projects that close outside of the test year will not create capital-related revenue requirements in the authorized Test Year revenue requirement given the post-Test Year ratemaking mechanism the Commission has adopted for SCE in previous rate cases. But if the forecast for the capital software project includes capital expenditures in the Test Year, those capital expenditures are tax deductible and therefore lower the authorized revenue requirement. To the extent that a project is then completed and implemented outside of the Test Year, customers will then benefit from the functionality provided.

b) The capital costs of the Clearion project were included in Track 2, and as part of the Track 2 Settlement (which SBUA was a party to), all capital costs in SCE's Track 2 application were accepted as reasonable. The Settlement was subsequently adopted by the Commission in D.21-01-012. SCE has filed an application (A.21-06-016) for securitization of the AB 1054 capital costs adopted by that decision. Capital-related costs covered by AB 1054 will be recovered through a Fixed Recovery Charge in an amount determined in the Financing Order issued by the Commission as part of the securitization (i.e., the Financing Order) application (A.21-06-016).

c) Track 3 has no "Test Year" as it is intended to recover 2020 recorded costs from various wildfire-related memorandum accounts, and reconcile recorded and adopted costs from D.20-04-013, among other things, pursuant to the Scoping Memo from A.19-08-013.

d) SCE objects to this question. The term "used and useful' is a legal term that the Commission has interpreted in a variety of ways. For instance, from page 209 of the Proposed Decision in Track 1: "Generally speaking, the Commission has determined that plant which is not used and useful should be excluded from rate base. However, the Commission has also made exceptions to this policy. In doing so, the Commission has stressed that the specific circumstances of each situation must be evaluated, include the burden and benefits of the plant assets in question." (footnote omitted.) Please see the response to part (c) of this question.

   Subject to the foregoing objection, SCE offers the following information: Clearion was implemented in June 2018, and use was finally discontinued in June 2019.

e) As explained in SCE's earlier responses, the projects did not close until after the Test Year in each of those rate cases.~~?~~

f) (i)
   The forecasts for the Vegetation Management software in the 2015 GRC were not based on any particular software product, but a particular business requirement and an estimate of the costs that would be incurred to address that business requirement. As there was no

particular product specified, it is not possible to answer the question as to whether the same product was requested in subsequent rate case applications. The only thing that can be compared is the business requirements from the 2015 GRC. The request in the 2018 GRC was based on a revised contracting strategy, but was largely addressing similar business requirements as identified in the 2015 GRC request. Subsequently, wildfire mitigation became much more of a priority, as reflected in D.17-12-024, and that altered the business requirements for the Vegetation Management software. The requirements from that last decision are the key drivers for the choices that SCE has made in 2018-2020.

(ii)
Please refer to the response to part (i) of this question.

(iii)
As work is done on a capital project, costs are accrued in a work order. A project closing refers to the time when the project is declared to be operational, either in whole or in a substantial part of the project, at which time costs will be transferred from one asset account, Work In Progress, to a Plant in Service account, and therefore to rate base. This is consistent with standard accounting practices and long-standing regulatory convention. Please refer to SCE-07, Volume 2 for a discussion of how capital expenditures are converted to rate base.

(iv) and (v)
Projects included in a rate case application are forecasts, and circumstances may change after the application is filed that result in the project requirements changing, or the schedule being delayed or accelerated, or the project simply being canceled. After the 2015 application, SCE implemented significant changes to its vendor contracting strategy, and as a result revisited the Vegetation Management software project included in that application, and delayed sourcing. After the 2018 application was filed in September 2016, the Commission adopted changes in Vegetation Management practices in D.17-12-024 that necessitated a substantial change in the requirements for SCE's planned VMS. This eventually resulted in the purchase and implementation of Clearion, as documented in our Track 2 testimony.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 4

To: SBUA
Prepared by: Jeff Gooding
Job Title: Principal Manager
Received Date: 8/2/2021

Response Date: 8/16/2021

Question 05:
Please provide the software performance criteria that are required by "new regulations and increased state-wide focus on wildfire mitigation activities" but were not required prior to those changes. (Track 2 Rebuttal Testimony, p. 46, line 9) Please also explain how those newer performance criteria are different from those used in the procurement and initial testing of the Clearion VMS software.

Response to Question 05:
To clarify our response, the whole sentence referred to above from the Track 2 Rebuttal Testimony on page 46 begins on line 6 and end on line 10 and states: "Despite SCE prudently selecting and implementing the VMS, the data quality issues related to software synchronization inherent in the VMS design required that the VMS be redesigned to accommodate the increased scale of SCE's deployment caused by the new regulations and increased state-wide focus on wildfire mitigation activities."

While there are no software performance criteria that are specifically required by "new regulations and increased state-wide focus on wildfire mitigation activities," the increased size, frequency, damage and risks of climate change-driven wildfire events since 2016 increased SCE's need to scale of our use of the VMS including in order to increase in the number of inspections. These factors in turn increased the number of users and reports required by regulators and continue to drive new VMS requirements as SCE strives to improve public safety through mitigating wildfire risks.

The performance criteria that differentiated our selection of Arbora versus what we anticipated that we would need from a VMS solution in 2016 are centered on the following:

- Concept of a platform solution due to its ability to better manage data, communications, and workflow processes across programs for improved efficiency;
- Flexibility to rapidly accommodate new requirements that we cannot anticipate now as vegetation management requirements evolve in the future;
- Modern, mobile data synchronization criteria to ensure data quality when off-line devices connect back to the main system and synch up;
- End-user scalability to continue to expand our workforce to mitigate wildfire risks.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 4

To: SBUA
Prepared by: Jeff Gooding
Job Title: Principal Manager – IT Enterprise Architecture
Received Date: 8/2/2021

Response Date: 8/16/2021

Question 04.a-d:
Regarding the "business requirements" developed by the SCE IT team and vendor consultants (Track 2 Rebuttal, p. 44).

a. Please identify the vendor consultants.

b. Please provide the business requirements and all supporting documentation.

c. Please provide any evaluations of the Clearion VMS software related to those business requirements.

d. Please provide any similar business requirements documented for the development and procurement of Arbora, including documentation of the process for developing those business requirements.

Response to Question 04.a-d:
Response to 4a:

The vendor consultants that primarily supported the development of Business Requirements was Bain & Co. Other vendor consultants involved included Clearion and ESRI.

Response to 4b:

Please refer to the attached business requirements document "SCE VM Phase 2 Requirements Final_3_20_2017_SCE_Comments_v2.docx"

Response to 4c:

Please refer to the attached system architecture document, "SBUA-SCE-004-Q.04.a-d_SCE_Vegetation_Management_System_Architecture_Final_v3.docx", which includes the overall logical solution architecture (including Clearion & ESRI) required to meet the business requirements.

Response to 4d:

The process for developing the business requirements included:

1. Performed a detailed discovery including field visits, as well as validation against business goals and business case benefits;
2. Defined and documented the personas (user types and associated use cases) as well as process flows that would be delivered as part of the Arbora application;

3. Defined and documented the features map that outlines the high-level features to be delivered as part of the Arbora application;
4. Defined and documented user stories under each feature to be used to develop the capability on the Arbora application.

Please refer to the documents “SBUA-SCE-004-Q4 210601_Project Arbora Key Program Workflows All Programs & Personas_v2.pptx”, “SBUA-SCE-005-Q01a 210803_Arbra Features Map.pptx” and “SBUA-SCE-004-Q4 210816_user stories per release_v1.xlsx”. Please note that the document, "SBUA-SCE-004-Q4 210601_Project Arbora Key Program Workflows All Programs & Personas_v2.pptx," was confidential at the time of development but is no longer the case.

ATTACHMENTS OMITTED DUE TO LENGTH

Attachment RII-33

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 4

To: SBUA
Prepared by: Jeff Gooding
Job Title: Principal Manager
Received Date: 8/2/2021

Response Date: 8/16/2021

Question 01.a-d:
Please identify in Track 2 Rebuttal Testimony, Appendix F, or in any similar documents supplied by SCE in response to SBUA's prior data requests, where the Clearion VMS software was evaluated for the following characteristics. If SCE does not believe it would have been appropriate to evaluate the software for the suggested characteristic, please provide the reason.

a. The maximum number of data users supported by the software
b. The maximum volume of trees trimmed
c. The capability to support "enhanced trims"
d. Any performance standard related to data synchronization

Response to Question 01.a-d:
Prior to the selection of Clearion VMS, the software was not evaluated for the scalability, capability to support enhanced trims or data synchronization performance characteristics. At the time, 2016, given our expected use of the Clearion VMS, SCE believed the risk of running into scalability and performance issues was relatively low based on the success other utilities had with the software. In hindsight, it is also unclear that even if SCE had asked Clearion to identify any potential scalability and performance limitations of their software that Clearion would have identified any, as Clearion appeared as surprised as SCE about the scalability issues as we worked through them together in 2019.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 4

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 8/2/2021

Response Date: 8/13/2021

Question 02.a:
Please explain why the Salesforce software platform or other similar alternatives were not considered among the options listed in the Track 2 Rebuttal Testimony, Appendix F.

a. If there were any requirements identified for the procurement described in Appendix F that would have excluded the Salesforce software platform from consideration, please explain why those requirements do not apply to Arbora.

Response to Question 02.a:
At the time of the Clearion assessment and selection, the business requirement was for a "vegetation management" tool, specific to the needs of the individual vegetation management programs and data. Since that time, SCE has taken an expanded view regarding managing data across vegetation management programs, such as Line Clearance, Hazard Tree Management Plan (HTMP), and the Drought Resistance Initiative (DRI). While SCE again evaluated vegetation management-specific tools just prior to the selection of Salesforce, the concept of a platform solution took prominence because of its ability to better manage data, communications, and workflow processes across programs for improved efficiency. SCE selected Arbora for its ability to promote efficiencies across similar activities.

There were not any requirements described in Appendix F that would have excluded Salesforce from consideration.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 4

To: SBUA
Prepared by: Martin Collette
Job Title: Principal Advisor
Received Date: 8/2/2021

Response Date: 8/10/2021

Question 08:
Please clarify how SCE intends to recover the costs of Arbora. Please include estimates of the annual revenue requirement and average rate impact associated with that cost recovery.

Response to Question 08:
As discussed in the response to SBUA-SCE-001, Question 4.b-c, Arbora was not included as part of SCE's Track 1 GRC request. As the costs of Arbora are wildfire mitigation-related, and were incurred during 2019 and 2020, they are included as part of SCE's share of AB 1054-eligible expenditures that must be exclude from equity rate base pursuant to the statute. SCE has proposed that the costs for Arbora be found reasonable in this Track 3 proceeding, which would then allow the costs to be securitized in a subsequent Financing Order application pursuant to AB 1054. The rate component set in that subsequent proceeding for the costs will depend on prevailing interest rates at the time of the application; accordingly, SCE is not able to provide any estimates at this time.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 5

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 8/4/2021

Response Date: 8/13/2021

Question 02:
Please clarify the origin of the RFP process that selected Salesforce. The RFP itself makes no mention of vegetation management, suggesting that Arbora was developed after SCE identified the need for a platform-based system. However, other documents suggest that the RFP process selected Salesforce to meet the needs of Arbora (e.g., Track 3 Workpaper, p.. 28). In your answer, please explain the relation of the five "use cases" in the RFP to SCE's present and future use of Salesforce and to Arbora.

Response to Question 02:
SCE completed an RFP in 2019 to select a Digital Platform vendor, not specific to Vegetation Management. Four vendors were evaluated, and Salesforce was selected. In December of 2019, SCE completed an evaluation of the best long-term vegetation management solution, evaluating tool options in three categories, 1) vegetation specific niche tools, 2) artificial intelligence / machine learning (AI/ML) focused tools, and 3) platform-based tools. This evaluation recommended that a platform-based tool was the best fit to fulfill requirements, address gaps, and would provide the greatest flexibility. Based on this evaluation and the Digital Platform RFP that was completed, Salesforce was selected as the tool for long-term vegetation management. The five use cases listed in the RFP represent a variety of business capability needs that SCE required in a digital platform. These were used to clarify the functionality of the Digital Platform and illustrate how the platform could be configured to meet those needs. Many of the business capability needs illustrated by these use cases are also required for the Arbora solution. Presently SCE is developing asset inspection applications on the Salesforce platform, and is planning to develop the WorkIt, Field Crew Electronic Work Order and Inventory Management, solution on the Salesforce platform as well.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 5

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 8/4/2021

Response Date: 8/13/2021

Question 04.a-b:
Regarding SBUA-SCE-001 Q4d.xlsx:
a. Please explain whether the entire cost of Salesforce is being charged to Arbora, or whether SCE is charging a portion of the Saleforce cost to other projects or cost centers.
b. Please provide a forecast of Salesforce costs to SCE and the portion being charged to Arbora.

Response to Question 04.a-b:
The entire cost of Salesforce licenses is not being charged to Arbora. The license costs are split between Arbora and the other products being implemented on the Salesforce platform, including inspection and work management applications.

Program	Annual Salesforce License Forecast
Arbora	$558,000
Inspection Applications	$503,000
Work Management Applications	$3,935,000

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 5

To: SBUA
Prepared by: Vivien Chen
Job Title: Financial Analysis, Senior Advisor
Received Date: 8/4/2021

Response Date: 8/6/2021

Question 04.c-e:
Regarding SBUA-SCE-001 Q4d.xlsx:

c. Please explain the capital costs related to document numbers 1001886219 and 1001894265 in cost element 6161260 (Softwr Lic Elect Del), as no Vendor Name is provided.

d. Please explain the capital costs related to document numbers 1001894265, 1001942033, and 1001945017 in cost element 6161018 (Consulting Services), as no Vendor Name is provided.

e. Please explain the O&M costs related to document numbers 3200615206 and 3201940891 in cost element 6161260 (Softwr Lic Elect Del), as no Vendor Name is provided.

Response to Question 04.c-e:
c & d – please see below for vendor names and description of the costs:

Recovery	Track 3 Activity	Track 3 Sub Activity	Cost Element Group	Cost Element	Cost Element Name	Vendor Name	Dcoument Number	Incremental $	Description
WMPMA	Vegetation Management	Technology Solutions	Contract	6161018	Consulting Services	DELOITTE CONSULTING LLP	1001894265	484,315	Fees for Digital Platform services and expenses for the period 02/02/20 - 05/02/20
WMPMA	Vegetation Management	Technology Solutions	Contract	6161018	Consulting Services	DELOITTE CONSULTING LLP	1001942033	550,000	Fees for SCE Digital Salesforce Foundry - Arbora for the period December 2020
WMPMA	Vegetation Management	Technology Solutions	Contract	6161018	Consulting Services	RESONANTLOGIC, LLC	1001945017	(199,542)	This was a correction to transfer IT solution service/support from capital to O&M
WMPMA	Vegetation Management	Technology Solutions	Other	6161260	Softwr Lic Elect Del	SALESFORCE.COM INC	1001886219	(469,970)	This was a correction to transfer software license not capitalizable from capital to O&M
WMPMA	Vegetation	Technology Solutions	Other	6161260	Softwr Lic Elect Del	SALESFORCE.COM INC	1001894265	1,633,200	Digital Accelerator software delivered electronically

e - please see below for vendor names and description of the costs:

Recovery	Track 3 Activity	Track 3 Sub Activity	Cost Element Group	Cost Element	Cost Element Name	Vendor Name	Dcoument Number	Incremental $	Description
WMPMA	Vegetation Management	Technology Solutions	Other	6161260	Softwr Lic Elect Del	SALESFORCE.COM INC	3200615206	357,720	Software (Lightning Field Service-Dispatcher and Salesforce Maps) delivered electronically
WMPMA	Vegetation Management	Technology Solutions	Other	6161260	Softwr Lic Elect Del	SALESFORCE.COM INC	3201940891	469,970	This was a correction to transfer software license not capitalizable from capital to O&M

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 5

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 8/4/2021

Response Date: 8/18/2021

Question 06:
Regarding the Benefit-to-Cost Ratio Summary (Table II-39)
•Table II-39 states that the BCR is between 1.3 and 1.9.
•Data response attachment 06_PubAdv-SCE-T3-007-MW5-Q06 - Arbora Cost Benefits – Dec 2020.pptx provides a BCR of 1.34.
•The BCR of 1.34 does not appear to correspond to the ratio of five-year Benefits ($64.6 million PV or $96.5 nominal) to Cost ($60.4 nominal) given on the same slide.
•Those five-year benefits do not appear to correspond to the one-year benefits identified in rows 111-117 of data response SBUA-SCE-002-Q1-201211_Benefits Sizing.vS6_dashbard notes.xlsx. The three alternative one-year benefits totals appear to be $32.5, $31.1, and $45.0 million.
Please provide clear, detailed support for the BCR range of 1.3 to 1.9 represented in Table II-39 as well as any other BCR valuations that SCE considers relevant to its testimony.

Response to Question 06:
The benefit to cost ratio was calculated based on a present value rate of return (PVRR) for both benefits and costs. A conservative estimate of benefits was calculated (lower benefits) as well as a non-conservative estimate of benefits (higher benefits). The calculations are as follows:

Project Costs and Benefits	Nominal	Present Value Rate of Return
Project Cost (May 2020 est.)	$62.9M	$51.1M
Conservative Benefit	$96.5M	$64.6M
Non-Conservative Benefit	$145.7M	$97.9M

The resulting Benefit-to-Cost Ratios calculated on the PVRR values are:

Conservative: $64.6M/$51.1M = 1.26, approx. 1.3x
Non-Conservative: $97.9M/$51.1M = 1.91, approx. 1.9x

The Benefit to Cost Ratio of 1.34x corresponds to the estimated benefits applied against updated project costs as of December 2020:

Project Costs	Est May 2020	Est Dec 2020
Capital	$36.0M	$37.4M
O&M	$26.9M	$23.0M
Total Nominal	$62.9M	$60.4M
PVRR	$51.1M	$48.2M

Resulting BCR based on updated Dec 2020 cost estimate:
$64.6M/$48.2M = 1.34x

A discount of 10% to 40%, depending on the benefit area, was applied to the one-year benefit totals from the "SBUA-SCE-002-Q1-201211_Benefits Sizing.vS6_dashbard notes.xlsx to account for other unforeseen items that may impact the realization of the benefits. When fully implemented, the conservative benefits of $32.5M, further discounted by just over 30%, results in an annualized full benefit of $22.2M as show in "PubAdv-SCE-T3-007-MW5-Q06 - Arbora Cost Benefits – Dec 2020.pptx"

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 5

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 8/4/2021

Response Date: 8/17/2021

Question 07:
Re: Data response attachment 06_PubAdv-SCE-T3-007-MW5-Q06 - Arbora Cost Benefits – Dec 2020.pptx
Please confirm that SCE has not developed any value (in dollars) for the improved efficiencies / effectiveness of reduce errors, enable coordination, or improve reporting. In other words, all the benefits that SCE assumed in the BCR are due to forecast increased productivity. If not confirmed, please provide detailed support for any such valuations.

Response to Question 07:
SCE has not developed any value in dollars for the benefits related to reduced errors, improved coordination, and improved reporting. The financial benefit case is based on increased productivity of field crews.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 5

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 8/4/2021

Response Date: 8/17/2021

Question 01.a-b:
Re: Arbora Release Roadmap (Figure II-9).

a. Please provide a more detailed list of the functions that SCE expects will be provided by Arbola.

b. Please state whether SCE's procurement process for the Clearion VMS included an expectation that it would provide the functionality described in the response to (a). (If no more detailed list exists, please use Figure II-9 for the response.) If SCE's expectation would have been that it would not provide the functionality, please clarify whether it would have partially met the functionality listed.

Response to Question 01.a-b:
Response to Question 01.a. See attached document "SBUA-SCE-005-Q01a 210803_Arbora Features Map.pptx" for a more detailed list of functions SCE expects will be provided by Arbora. Please note that the document was confidential at the time of development but is no longer the case.

Response to Question 01.b. The procurement process for the Clearion VMS would have partially met the functionality listed for the Arbora project in Figure II-9. As stated in the response to "SBUA-SCE-004-Q02.a.":

> At the time of the Clearion assessment and selection, the business requirement was for a "vegetation management" tool, specific to the needs of the individual vegetation management programs and data. Since that time, SCE has taken an expanded view regarding managing data across vegetation management programs, such as Line Clearance, Hazard Tree Management Plan (HTMP), and the Drought Resistance Initiative (DRI). While SCE again evaluated vegetation management specific tools just prior to the selection of Salesforce, the concept of a platform solution took prominence because of its ability to better manage data, communications, and workflow processes across programs for improved efficiency. SCE selected Arbora for its ability to promote efficiencies across similar activities.

It is this additional platform capability to better manage data, communications and workflow processes across programs that would not have met the requirements for Arbora.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 5

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 8/4/2021

Response Date: 8/17/2021

Question 03.a-d:
Regarding SBUA-SCE-001 Q4d.xlsx, Please explain the role of Bain & Company in Arbora, specifically addressing the following points.

a. How is that role distinct from its role in the overall project management office?

b. How is that role is distinct from Deloitte?

c. Why are all the costs for Bain & Company on Arbora considered a capital expense, but Bain & Company expenses for the project management office are considered O&M?

d. Why is Bain & Company's capital expense of $3.155 million about one-quarter of the total capital expense recorded on this ledger?

Response to Question 03.a-d:
Bain & Company's role in the Arbora project was to provide initial product vision, as well as product management work including conducting user research in support of the design and development of the application, development of user stories for future releases, and building the ongoing product roadmap.

Response to Question 03.a. Bain & Company's role in the vegetation management PMO was focused on the processes and operations for vegetation management field operations and their work on Arbora was focused on the design of the technology solution to support that operational work.

Response to Question 03.b. Deloitte's role was focused on the configuration and development of the capability on the Salesforce platform based on the product management work that Bain & Company provided.

Response to Question 03.c. The costs for Bain & Company on Arbora are considered a capital expense as they are part of the development of a software application capital asset. In comparison, the Bain & Company costs for the project management office were focused on the creation of the vegetation management program's organizational structure, roles and responsibilities, etc.

Response to Question 04.d. The work that Bain & Company performed included requirements discovery, complex design work, functionality prioritization, ongoing validation of design against developed capability as well as reporting. It is not uncommon for these efforts to take 25% or more of the overall project cost.

Southern California Edison
A.19-08-013 Track 3 – SCE 2021 General Rate Case Track 3

DATA REQUEST SET S B U A - S C E - 0 0 5

To: SBUA
Prepared by: Matthew Peacore
Job Title: Principal Manager
Received Date: 8/4/2021

Response Date: 8/17/2021

Question 05.a-d:
Regarding SBUA-SCE-002-Q1-Financial Benefits Summary.xlsx, tab "Slide 1":
a. Please explain what "Pod Product Development (80%)" refers to, including the "80%" reference.
b. Please explain why capital investment is continuing in Survey123. The testimony gives the impression that it will be replaced by Arbora.
c. Please explain why the total ($10.92 million capital, $1.22 million O&M) do not match Table II-38 ($11.99 million capital, $1.06 million O&M). If an updated cost forecast exists, please provide it as part of the response.
d. Please explain why the software licenses for Salesforce and Lemur are estimated at $1.4 million, while the general ledger total provided in data response attachment SBUA-SCE-001 Q4d.xlsx for those two companies is only $140,833 (document numbers 5004932792, 5004938366, and 5004799340).

Response to Question 05.a-d:

a. The on-going product capability development for Arbora will be a handled by a team of development resources called a "Pod". In addition to the new capability development, this team will also be responsible for regular application support and maintenance. We estimate that 80% of their work will be for development of new capabilities and will be a capital expense and 20% will be for application support and maintenance and will be an O&M expense.

b. Survey123 will be replaced by Arbora. The continued capital investment that is labeled in the table as Survey123 is for iPad hardware refresh, both the hardware and the associated labor to perform the refresh. These iPads are used for Survey123 currently and as Arbora rolls out will be used for the Arbora application as well.

c. The capital and O&M 2020 spend amounts are correct in Table II-38; these reflect the actual recorded costs for 2020. The numbers in the SBUA-SCE-002-Q1-Financial Benefits Summary.xlsx, tab "Slide 1", were developed before the end of 2020 and were estimated amounts, which is why there are some differences.

d. Rows 272 and 273 (doc#1001886219 and 1001894265) had a 'blank' vendor name but these should be Salesforce as well. The vendor name was missing because these costs were

originally charged to incorrect accounting and were corrected via journal entries and the transaction details did not come across with corrected journal entries. The total for the software licenses for Salesforce and Lemur should be:

Recovery	Track 3 Activity	Track 3 Sub Activity	Cost Element Group	Cost Element	Cost Element Name	Vendor Name	Dcoument Number	Incremental $
WMPMA	Vegetation Management	Technology Solutions	Contract	6161112	Info Sys Profsl Svcs	SALESFORCE.COM INC	5004932761	40,417
WMPMA	Vegetation Management	Technology Solutions	Contract	6161112	Info Sys Profsl Svcs	SALESFORCE.COM INC	5004932791	(40,417)
WMPMA	Vegetation Management	Technology Solutions	Contract	6161112	Info Sys Profsl Svcs	SALESFORCE.COM INC	5004932792	40,417
WMPMA	Vegetation Management	Technology Solutions	Contract	6161112	Info Sys Profsl Svcs	SALESFORCE.COM INC	5004938366	40,417
WMPMA	Vegetation Management	Technology Solutions	Other	6161260	Softwr Lic Elect Del	CRITIGEN LLC	5004799340	60,000
WMPMA	Vegetation Management	Technology Solutions	Other	6161260	Softwr Lic Elect Del	SALESFORCE.COM INC	1001886219	(469,970)
WMPMA	Vegetation Management	Technology Solutions	Other	6161260	Softwr Lic Elect Del	SALESFORCE.COM INC	1001894265	1,633,200
								1,304,063