

ZELLER DATA REQUEST
ZELLER-SDG&E-DR-004
SDG&E 2019 GRC – A.17-10-007
SDG&E RESPONSE
DATE RECEIVED: JANUARY 2, 2018
DATE RESPONDED: JANUARY 24, 2018

Exhibit Reference: SDG&E - 24
Witness: Olmsted
Subject: Information Technology

1. SDG&E's testimony proposes a substantial increase in expenditures for IT technology, from \$97,966,000 from \$121,376,000 for O & M costs and a capital increase of \$242,219,000 to \$315,946,000. Some of this increase is attributed to the Fueling our Future initiative, however, it is generally understood that investments in IT are designed to increase, rather than decrease efficiency. The savings associated with these increased expenditures are approximately \$6 million. (see pg. 2)
 - A) What specific benefits will SDG&E's customers receive if the Commission approves SDG&E's request?
 - B) Will SDG&E's customers see cost savings in the future from these expenditures?
 - C) Aside from the savings specified on page 2, are there any other savings attributable to these IT expenditures, and if so, where are they reflected in the application?
 - D) How will SDG&E's proposed IT expenditures make it a more efficient utility? Provide specific examples with dollar values associated with these efficiencies.

SDG&E Response 1:

- A. The forecasts developed for IT expenditures are based on current spending levels. Additional costs are forecasted to continue to support business operations and drive efficiencies. The justification of IT O&M costs necessary to support operations are described in the IT testimony. The justification and benefits for capital IT are also described in the IT testimony, while the business unit justifications and benefits for other business projects are found in the respective testimonies.
- B. IT forecasts are just one of many factors in determining costs for customers.
- C. The savings documented in IT testimony are specific to IT initiatives. Other witness areas may also be including saving proposals that are a result of technology investments.

Technology solutions are woven into everyday activities. Users are forced to leverage less efficient workarounds when these services are not available. By providing more reliable technology services, IT enables SDG&E business units to improve their operations rather than being less productive when their systems are not available.

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2. In the testimony's discussion of the forecast methodology SDG&E employed to develop its expense estimates it states "The pace of change in the technology industry continues to accelerate when compared to prior years. ... and it goes on to observe ...the level of support provided by the IT Division continues to grow as capital projects are implemented because projects that drive benefits and efficiencies within the IT Division that would not have been reflected in our historical costs." (pg. 5)

A) Given this rapid level of technological change, and the increased demands being placed on the IT Division by operational units within SDG&E, why is SDG&E confident its estimates of capital and O & M needs in this area are appropriate?

B) the text quoted above suggests that the IT Division's workload in the test year is likely to entail tasks that are unknown at this time. Why is SDG&E confident that these activities will lead to cost savings?

C) What steps does the IT Division take to ensure that cost savings in other departments will be passed through to SDG&E's customers? Please provide documentation of examples of where these savings have been passed through to customers in past rate case cycles.

SDG&E Response 2:

- A. The O&M forecasts were developed based on input from subject matter experts in the various cost categories listed – applications, infrastructure and support. Those individuals developed Test Year spending levels based on current demands along with anticipated changes given their knowledge of their respective areas. As with any forecast or estimate, final results may go up or down from anticipated levels based on unforeseen events or changes in assumptions.

Capital project forecasts follow a similar approach although the building blocks are individual projects rather than operational work units.

- B. Savings proposed in IT testimony are related to Fueling Our Future, which are known tasks.
- C. As described in the IT capital planning section in testimony, the IT division plays a role in the process by reviewing concept documents presented by other departments and ensuring that costs are in line with the approved capital budget. Benefits realization and costs savings are determined by each department or business unit that is sponsoring an IT capital project.

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3. According to SDG&E's testimony on pg. 6-7, SDG&E's IT Division has been plagued by repeated System-wide outages in 2017, the total extent of which is over 51 days for half a year.
- A) What has been the effect of these outages on SDG&E's operations over the past year?
 - B) Has SDG&E's emergency response capabilities been affected by these outages? If yes, how has it been affected, if no, how did SDG&E avoid these effects?
 - C) Does SDG&E believe that its IT Division's operational record (given the outages it has experienced) has been acceptable during 2017?
 - D) According to Ex. 24, SDG&E spent \$97,976,000 on its IT Division in 2016. Did SDG&E's customers receive an adequate level of service (with 51 days of outages) for this \$97.9 million expenditure?
 - E) Why is SDG&E confident that its proposed expenditure for this area will cure the outage problem?
 - F) Was the first half 2017 typical or atypical with regard to SDG&E's IT outage performance?
 - G) How many IT outages did SDG&E experience for the rest of 2017? Please provide data on the date, duration and source of the outages?
 - H) How many minutes of IT outages did SDG&E experience in 2014-2016?

SDG&E Response 3:

SDG&E objects to the characterization of its testimony and to the form of these questions. Notwithstanding these objections, SDG&E responds as follows.

- A. System reliability/availability issues have created productivity challenges for the business units requiring workarounds such as going to paper-based operations, increasing staffing levels and increasing overtime in order to minimize disruptions to operations.

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SDG&E Response 3:-Continued

- B. No, emergency response capabilities were not affected. SDG&E avoided this by establishing agreed upon work arounds with various departments for unplanned outages. SDG&E was able to maintain a high percentage of completed orders during the requested customer appointment times. During the long network outage, the work order management system was up and functional, which allowed for manual order creation of orders. When the connection to the host system returned, orders were recreated in the host and completed during the reconciliation process.
- C. Although 2017 was a challenging year given some significant outages and there is clearly room for improvement, SDG&E was able to provide reasonable levels of service to its customers.
- D. Customers are not negatively affected by the outages as impacted groups leverage workarounds (e.g., manual processes, additional staffing) to address the productivity gaps created by the absence of automated solutions.
- E. A roadmap has been developed for 2018 and 2019 to refresh end of support and/or problematic equipment beyond its useful life. These plans have been reviewed with and endorsed by reputable third-party consultants.
- F. IT performance in 2017 was atypical.
- G. There were 6 additional incidents (5 in 2017, 1 in 2018) with similar characteristics as noted in testimony (widespread impacts to the business for several hours at a time):

Date	Duration	Source
7/3/2017	1,564	VDI not available
8/8/2017	4,011	Private Key Infrastructure (PKI) virtual machines (VM) down
11/26/2017	117	Multiple VMs down
12/2/2017	1,316	Multiple VMs down
12/3/2017	1,142	Multiple VMs down
1/7/2018	10,442	Multiple VMs down

- H. There were 5 similar incidents from 2014 – 2016:

Date	Duration	Source
5/14/2014	216	Network outage
5/23/2014	187	Multiple VMs down
5/28/2014	1,557	Multiple VMs down
12/19/2014	203	Firewall changes
3/23/2015	11,434	Active Directory replication errors

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4. On page 10, SDG&E proposes \$15,198,000 in infrastructure IT spending and \$17,489,000 in applications for the test year.
- A) Does SDG&E anticipate that this level of IT infrastructure and application expenditures will remain at these levels for 2020 & 2021?
- B) What type of a cost/benefit analysis is performed before SDG&E makes the decision to increase its infrastructure expenditures over four-fold?
- C) Does the IT Information Technology infrastructure request outlined in Table CR)-8 include personnel expenditures as well as capital outlays? Please disaggregate the expenditures if personnel costs are involved between capital outlays and salary and benefit costs.

SDG&E Response 4:

- A. Forecasts have not been developed for 2020 and 2021.
- B. IT contracted third-party consultants to review the current infrastructure solution and make recommendations on investments to improve reliability.
- C. Table CRO-8 contains only O&M costs, no capital outlays. Forecasted cost of \$15,198K is comprised of:

Labor	\$ 3,990K
Non-Labor	\$11,208K

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5. A) Re Table CRO-10 are costs associated with the Operational Data Center/Infrastructure Enhancements (line A) one-time expenditures or on-going?
- B) Why does it cost SDG&E \$1,005,000 to backfill vacancies in this area (see CRO-10 & 13)?
- C) What are these proposed expenditures being used for?
- D) Does SDG&E use an on-line application and recruiting process to backfill these positions?

SDG&E Response 5:

- A. The costs in CRO-10 will be on-going as of Test Year 2019.
- B. The costs associated with backfilling vacancies are the labor costs of new resources that fill openings, not the administrative costs related to identifying candidates (e.g., recruiting, interviewing, testing). Additional details can be found in O&M workpapers.
- C. SDG&E assumes the question refers to the costs associated with backfilling vacancies. The nature of the costs associated with backfilling vacancies is explained above in response to Question 5B.
- D. IT leverages the Human Resources department to backfill positions. Positions are typically posted to both internal and external candidates via on-line application and recruiting tools.

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6. A) Re Table CRO-14, what is the rationale behind contract additions and escalations?)
- B) What form of analysis was performed to determine these escalations and additions were necessary? Please provide the details.
- C) Were less expensive approaches considered as an alternative? Please detail the process employed.

SDG&E Response 6:

- A. IT procures products from third parties as part of capital implementations and operational improvements. These products have an acquisition cost along with on-going maintenance costs. Escalation clauses are usually included with the maintenance costs. The line item in CRO-14 forecasts expenditures for new product acquisition and increases in costs of products already under contract.
- B. A 6% increase of current contract spending was forecasted. This is a similar approach as taken in the 2016 GRC, in which an 8% increase was forecasted and accepted.
- C. Given the variability of the arrangements that exist in the several hundred contracts managed by IT, SDG&E felt it was prudent to leverage an overall percentage based on the approach taken in past GRCs.

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7. A) Re Table CRO-17, SDG&E is proposing an expenditure of \$50,262,000 for its LTE communications network in 2019. How did SDG&E determine this level of expenditures was required?
- B) What less expensive alternatives were considered before making this request?
- C) Given the pace of technological change noted in your testimony and highlighted in Question 2, how can SDG&E be confident the \$50,262,000 it is requesting in 2019 is an appropriate investment?
- D) Does SDG&E anticipate continuing this level of expenditures in subsequent years or is this a two-year phenomenon? (2018-2019?)

SDG&E Response 7:

- A. SDG&E engaged outside engineering firms specializing in utility and public carrier communications services to prepare a total cost of ownership (TCO) analysis over 20 years given current and future field communications business needs related to SCADA, Distributed Energy Resources, fire risk mitigation, company and public safety technologies as well as others. This analysis considered communications solutions for critical infrastructure communications requirements currently deployed or utilized by SDG&E as well as alternative technologies and solutions employed by other utilities across the country. This analysis, in addition to our participation in the Electric Power Research Institute (EPRI) Telecom Initiative and direct interaction with solutions providers, was used to formulate the expenditures submitted in the 2019 GRC.
- B. Yes, several solution alternatives were included in the analysis referenced in the response to 7A, including technologies and solutions employed by other utilities and communications providers across the country. SDG&E's conclusion is that a Private LTE network will meet current and future needs, while allowing for consolidation of existing legacy or proprietary wireless solutions.
- C. As stated in responses for section 7A and 7B, SDG&E has done considerable due diligence to determine that a Private LTE network is the appropriate solution to meet its communications needs for critical infrastructure. The expenditures presented in this testimony reflect estimates provided during preliminary engagements with solutions providers. In addition, SDG&E has experience piloting, deploying and operating purpose built wireless networks.

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SDG&E Response 7: -Continued

D. No, SDG&E does not anticipate this level of expenditure in subsequent years. The initial expenditures allow SDG&E to secure the long-term rights to private, licensed radio frequencies and to build out the core network infrastructure. Following core network deployment, future expenditures will be related to adding communications services for our business applications, expanding the coverage and capacity as needed, and periodic hardware refresh.

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8. A) How will the transmission communications reliability enhancement (Phase II) expenditures proposed on Page 20 affect SDG&E operations?
- B) Does SDG&E anticipate this investment will improve its ability to respond to fires or other emergencies? Provide specific examples of how this investment will affect operations.
- C) What value do SDG&E customers receive from its data mining activities identified on page 20?
- D) What specific efficiencies or service enhancements does this activity provide SDG&E's ratepayers? Please provide quantitative examples of this improvement.

SDG&E Response 8:

- A. SDGE will have additional insight into the near real-time health of the communication network components for sites in scope for Transmission Communications Reliability (TCRI) Phase II via both automated monitoring tools and an enterprise network monitoring portal. This will provide additional monitoring and troubleshooting capabilities of the health of the communication network, which carries electric transmission and distribution data. The additional communication network redundancy will enable SDG&E to withstand unforeseen network events without impact to electric and gas operations.
- B. In addition to benefits described in question A, TCRI phase 2 enables SCADA and teleprotection control systems which are used to detect events and protect the electric grid faster than traditional protection approaches when adverse events occur.
- TCRI provides a higher availability of the network carrying SCADA and teleprotection data, resulting in quickly protecting the electric grid during emergencies within service territories.
- An example of operational use includes the ability to re-route electrical and SCADA traffic in the event of an emergency. Also, during emergencies SDG&E will have remote engineering access to field assets and tightened protection and control settings.
- C. SDG&E customers benefit from improved reliability of electric service, reduced unplanned outages and reduced time to resolve outages via data provided by TCRI. These benefits are a result of operation's ability to automatically correlate the communication network monitoring data to pinpoint the cause of a communication network failure. This reduces the time required to isolate and restore SCADA and teleprotection control of electric service. Additionally, data can be used to track and report on equipment failures and work with vendors to isolate and prevent future failures.

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SDG&E Response 8: -Continued

D. The TCRI network is designed to support critical network communications to manage the electrical grid. This means that SDG&E would rely less on outside telecommunication company support. The TCRI network employs redundant network components, which eliminates single points of failure between facilities and substations. Through automated network monitoring, operations personnel can remotely isolate a network component to minimize failures and reduce or eliminate failures to electric grid control systems.

A quantitative example of replacing the legacy TDM (Time-Division Multiplexing) network will reduce response times from hours to minutes.