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PREPARED DIRECT TESTIMONY OF
DANIEL LINDER
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY
CHAPTER 6



BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

APRIL 28, 2017

TABLE OF CONTENTS

1

2 I. INTRODUCTION1

3 II. SYSTEM ARCHITECTURE1

4 A. Legacy CIS1

5 B. Future State Architectural Design5

6 (i) CIS Replacement Planning5

7 (ii) Target Operating Architecture – CIS6

8 (iii) SAP Solution Overview8

9 (iv) Multi-Channel Framework13

10 (v) Phased or Single Release - Implementation Options14

11 III. PROJECT SCOPE – RICEFW15

12 IV. IT IMPLEMENTATION RESOURCING AND TIMELINE.....17

13 A. Implementation Methodology and Phases.....18

14 B. Implementation Timeline.....21

15 C. Implementation Resourcing Plan.....22

16 D. Production Storm Solution Support Resource Plan and Transition to Ongoing

17 Solution Support Resource Plan27

18 V. CONCLUSION.....30

19 VI. STATEMENT OF QUALIFICATIONS32

20

1 **PREPARED DIRECT TESTIMONY OF**

2 **DANIEL LINDER**

3 **CHAPTER 6**

4 **I. INTRODUCTION**

5 The purpose of my direct testimony is to discuss the Information Technology (“IT”) organization’s implementation of San Diego Gas & Electric Company’s (“SDG&E’s”) program to replace its existing legacy Customer Information System (“CIS”) and subsystems. I will address the future system architecture to be established through SDG&E’s legacy CIS replacement program (“CIS Replacement Program”), and provide an overview of: (1) the new SAP Customer Relationship & Billing (“CR&B”) (*i.e.*, the future state CIS) system architecture and functionality; (2) the modifications to the SAP CR&B solution and “RICEFW’s” (Reports (R), Interface (I), Conversion (C), Extensions (E), Forms (F) and Workflow (W)); (3) the resourcing and timeline required for the IT implementation of the new CIS; and (4) the resourcing for the stabilization and transition of the solution to the ongoing support team for the new SAP CR&B.

16 **II. SYSTEM ARCHITECTURE**

17 **A. Legacy CIS**

18 SDG&E’s legacy CIS supports the core customer facing and back office operational capabilities, such as those associated with customer contact, billing, and credit, which are required to serve customers and to comply with regulatory mandates. As discussed in Chapters 1 and 2, SDG&E’s technology footprint has changed significantly from the initial deployment of its legacy CIS in 1997. SDG&E currently has a highly complex, customized

1 CIS and a large inventory of subsystems with outdated and sometimes redundant
2 capabilities.

3 To meet the future needs of its customers, and to reduce costs and timelines related
4 to CIS system changes, SDG&E must transition to SAP CR&B as soon as possible. As part
5 of this transition, SDG&E will not only replace the outdated technology in its legacy CIS,
6 but will also consolidate a significant amount of functionality that is currently being
7 supported through its subsystems. By transitioning the decentralized functionality of the
8 current subsystems to SAP CR&B, SDG&E will be able to better manage system changes
9 and reduce and/or eliminate costs associated with licensing and supporting these
10 subsystems.

11 Below is a comprehensive list of the SDG&E systems and corresponding
12 functionality intended to be replaced with SAP CR&B.

13 **Table DL-1: Legacy CIS and Subsystems Functionality to be Replaced**

System	Description
Legacy CIS	Provides functionality for customer billing, revenue and financial reporting, interval data processing, meter inventory, service orders, and credit and collection processing.
SAP Customer Relationship Management (“CRM”)	Provides functionality for supporting business processes for energy efficiency programs, demand response programs, and customer communications.
MyAccount	Provides functionality for online interactions with the customer, such as bill presentment and payment, online energy management, and other self-service applications.
Aggregated Customer Information System (“ACIS”)	Provides functionality that allows SDG&E employees to group all customers’ individual accounts together for a summary view.
Batch Rate Comparison (“BRC”)	Provides functionality to the internal pricing group to compare different rate options and plans for groups or segments of customers.

System	Description
Blast Email	Provides functionality supporting outbound email communication for customers who have signed up to receive email notification of rolling blackouts in their specific service area. These alerts are based on information provided by the California Independent System Operator (“CAISO”).
CACTUS	Provides management support of the Converge Summer A/C Savers program.
Centralized Calculation Engine	Provides internal functionality to perform “what-if” analyses and bill impacts related to comparisons of SDG&E rates.
Commercial Online Energy Online Presentment	Provides online energy management tools for commercial customers; which are hosted by third-parties.
Customer Analytics System (“CAS”)	Provides support for basic marketing analytics for the Customer Contact Center (“CCC”).
Customer Assistance Residential Energy (“CARE”)	Provides functionality supporting SDG&E’s CARE programs designed to help customers save money, providing a discount on monthly gas and electric bills for qualifying households.
Customer Data Warehouse	Provides a repository for customer data, such as energy usage, meter information, premise information and general account information.
Department of Water Resources (“DWR”) Power Percentages / Transitioned Bundled Service (“TBS”) Pricing	Provides billing support for DWR charges and customers who are currently participating in TBS.
Dialogue	Provides functionality in the creation and maintenance of the customer’s bill design and layout.
Electric Vehicle Information System (“EVIS”)	Provides (1) internal functionality to manage information for known plug-in electric vehicles and chargers and (2) external functionality for electric vehicle customers to submit a Rate Change Form.
Electronic Bill Payment and Presentment (“EBPP”)	In conjunction with SDG&E’s MyAccount system, provides functionality to allow customers to view their bills and make payments online.
Email Delivery	Provides support for the external processes for delivering emails to customers.
Energy Data Access (“EDA”)	Provides functionality to process interval data aggregation required for third-party interval data requests and reports.

System	Description
Environmental Protection Agency (“EPA”) Tracker - SDG&E	Provides functionality supporting customer self-service bench marking of commercial buildings.
Energy Service Specialist (“ESS”) online claim data form	Provides functionality for ESS to initiate claims requests from customers.
Green Button	Provides on-line functionality for customers or designated third-parties to download and view energy usage interval data.
Home Area Network (“HAN”) Demand Response Control Application (“DRCA”)	Provides supporting functionality allowing the commissioning / decommissioning of HAN devices and enables communication from the utility to those devices.
iAvenue	Provides functionality for SDG&E Account Executives in customer relationship management for Commercial & Industrial (“C&I”) customers.
Knowledge Management	Provides Knowledge / Q&A repository base for ESS’s who work in the CCC.
kWickview	Provides functionality supporting online energy management for Medium and Large Commercial and Industrial (“M/L C&I”) customers.
Marketplace	Provides functionality for the sale of energy related goods under SDG&E branding.
MMI- Mainframe Messaging Interface	Provides functionality for a data link between the legacy CIS and the Service Order Routing Technology (“SORT”) distributed application; resides on the mainframe and handles messages such as the Outage Management System.
Next Best Offer (“NBO”)	Provides basic internal predictive analytics functionality for the CCC and Bill Ready Notification Email.
Online Brochures	Provides functionality that allows ESS’s in the CCC to enter a customer’s request for energy savings related brochures, generate mailing labels for ePayment brochure requests and allows editing of email addresses entered via the Power Energy Notification (“PENS”) application for Emergency Notification.
Order Scheduling System (“OSS”)	SORT application that provides functionality allowing the legacy CIS to see the open dates/times to schedule new service order requests.
Outage Web Site	Provides an external portal for customers to view current planned and unplanned outage information.

System	Description
Payment Entry Processing	Provides functionality at Branch Offices and the Payment Services department to process customer payments and post into the legacy CIS billing system.
Residential Energy Online Presentment	Provides online energy management tools for residential customers, which are hosted by third-parties.
Smart Energy Advisor Desktop (“SEAd”)	Provides a unified, process-centric desktop for the ESS’s in the CCC and Branch Offices. The solution provides a user interface designed to improve the efficiency and effectiveness of the ESS’s, allowing them to coordinate discussions surrounding payment arrangements, next best offers (provides the ESS an offer that the customer may be interested in based upon personalized analytics such as signing up for MyAccount if they are not already signed up), service orders, billing, MyAccount self-service enrollment, rate enrollment, Demand Response program enrollment, Energy Efficiency program enrollment and much more.
Smart Interval Data System	Provides functionality for interval data processing in preparation for billing.
Smart Operational Data Store (“ODS”)	Aggregates meter intervals into billable units that are used by the CIS Bill Calculation application.
Web Trends Smart Source Data Collector	Provides functionality to help analyze online transactions, such as the number of times a specific web page is accessed, etc.

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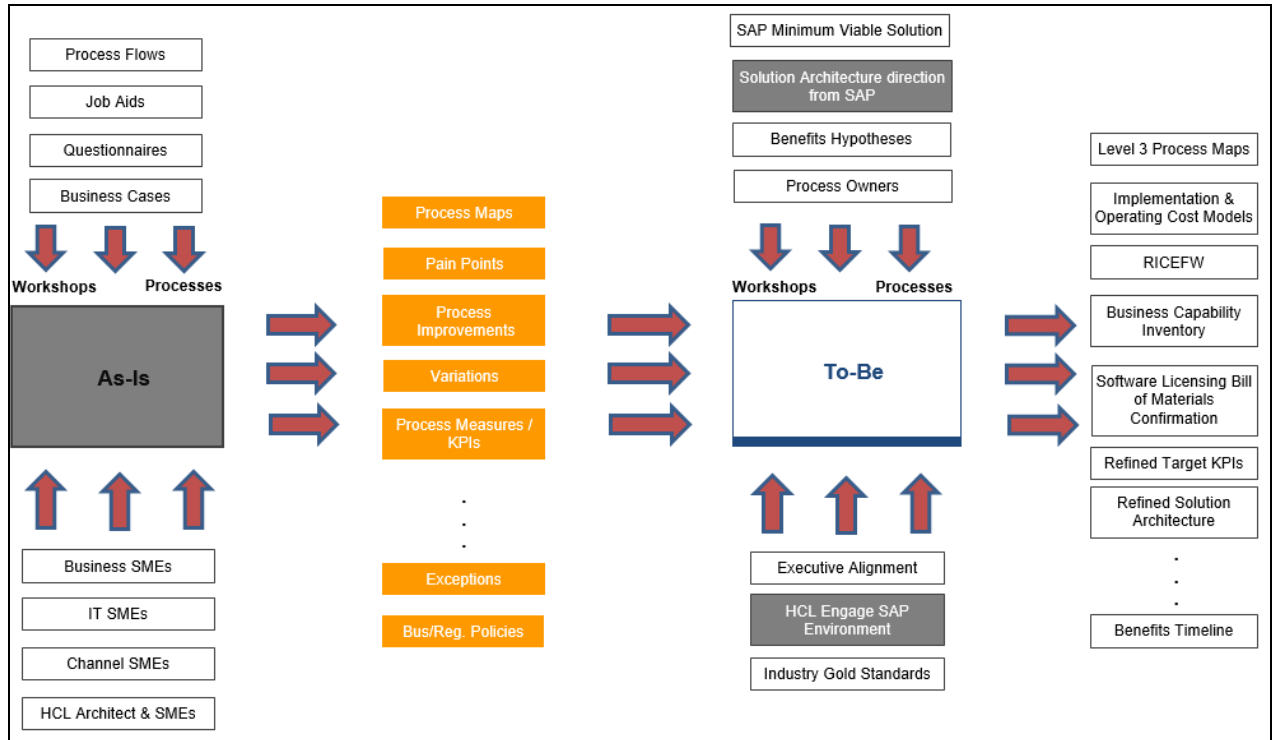
B. Future State Architectural Design

(i) CIS Replacement Planning

As discussed in Chapter 3, SDG&E has retained consulting services vendor HCL America, Inc. (“HCL”) to assist with assessment of the legacy CIS and related subsystems and business processes in order to develop the implementation strategy for the new CIS. SDG&E utilized the following methodology with support from HCL to assess its current CIS business processes and prepare the target operating architecture (see Figure DL-1 below):

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Figure DL-1: Planning Methodology



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4 The process of analyzing the “As-Is” or legacy CIS and subsystems was focused on

5 understanding the current CIS business processes, capturing system and operational pain

6 points, key measures and Key Performance Indicators (“KPIs”), policies, and procedures.

7 To perform this evaluation, SDG&E leveraged the assessment conducted by Ernst & Young

8 (discussed in Chapter 3) and performed additional analysis with the support of HCL. Taking

9 into account industry best practices, SDG&E modeled processes based on business value

10 and overall complexity in a “To-Be” (*i.e.*, future) CIS environment in order to identify the

11 target operating architecture as well as IT and operational benefits.

12 (ii) *Target Operating Architecture – CIS*

13 Replacing SDG&E’s legacy CIS requires a thorough analysis of (i) existing

14 architecture that must be retained and integrated into the new CIS; (ii) features that exist

15 within the legacy CIS that must exist within a new CIS; and (iii) currently non-existent

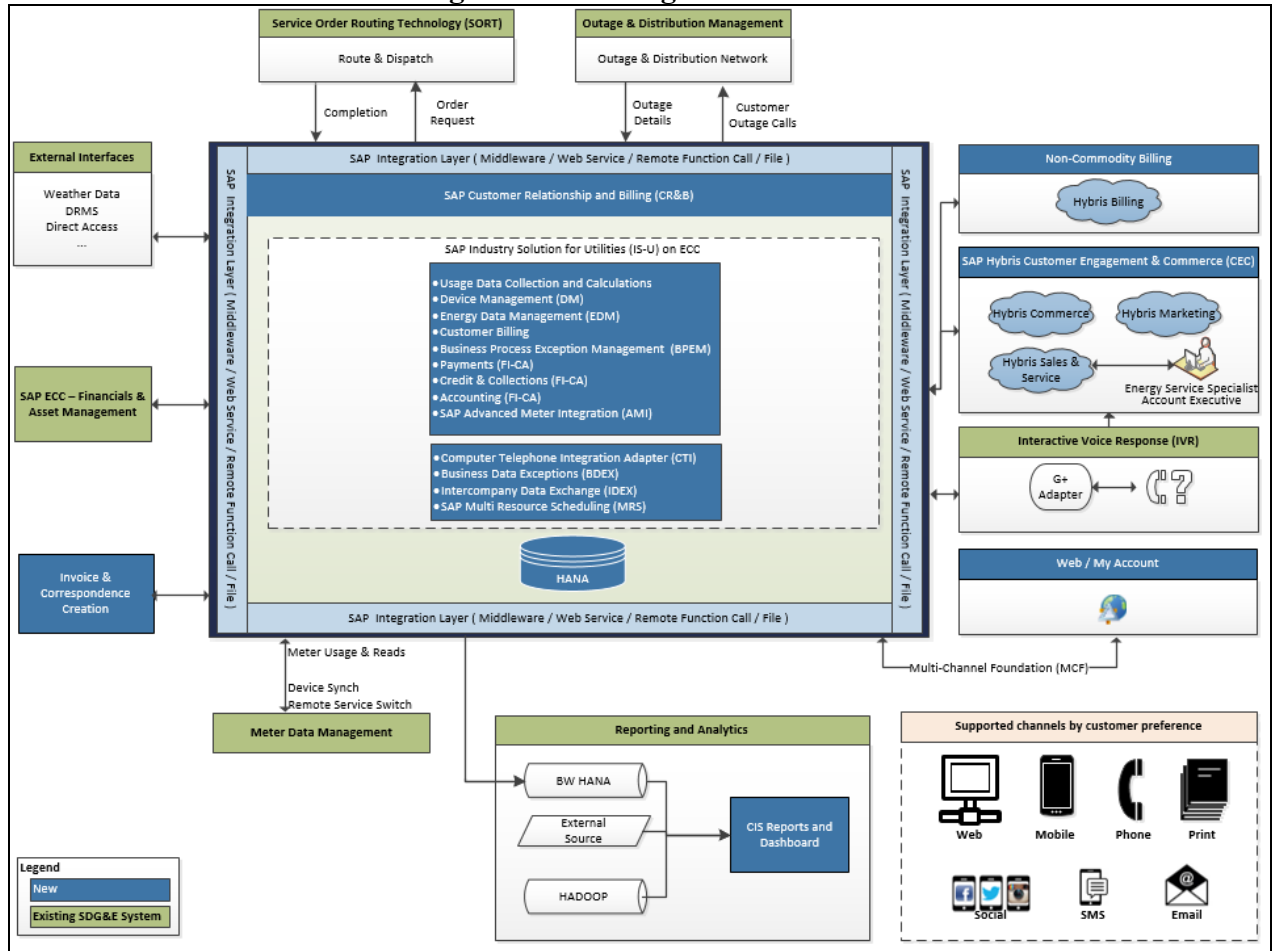
1 features that must exist in a new CIS. In developing the target architecture in Figure DL-2
2 below, SDG&E’s objective was overall simplification. Specifically, it sought to accomplish
3 two outcomes. First, SDG&E sought to reduce the number of applications in the CIS (*i.e.*,
4 to eliminate the decentralized subsystems supporting the legacy CIS) by developing the
5 architecture with feature-rich products that provide the functionalities SDG&E requires.
6 Second, SDG&E sought to establish an architecture that was adaptable and capable of being
7 tailored to meet SDG&E’s functionality needs, but does not require customization through
8 complex programming to implement each new program change.

9 The core SAP CR&B solution is at the center of the “To-Be” target architecture, as
10 reflected in the below diagram. SAP CR&B consists of the individual software modules
11 listed in Section II.B.3 below (SAP solution overview). Surrounding SAP CR&B are the
12 key data interfaces to existing CIS applications/subsystems that will not be replaced (colored
13 in green) and new applications that are either from SAP or SAP partners that simplify the
14 architecture. Approximately 75%¹ of the legacy CIS applications (42 of 56) will be replaced
15 with the SAP CR&B solution. This simplification, along with the flexibility of the SAP
16 product suite, will enable SDG&E to incorporate SAP innovations through regular software
17 upgrades.

¹ See workpaper “DL-CIS Replacement Program - AS IS.”

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Figure DL-2: Target Architecture



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3 (iii) SAP Solution Overview

4 A key component of the SAP CR&B system is the SAP Industry Solution for
 5 Utilities (“IS-U”), which enables business processes specific to utilities. IS-U will be run on
 6 premise with a centralized HANA database for all the CIS SAP products to access. As
 7 reflected in the “To-Be” architecture shown in Figure DL-2, the core SAP CR&B includes
 8 several SAP modules. The individual features of each SAP module are detailed in Table
 9 DL-3 below. The most critical SAP modules included in the core SAP CR&B are discussed
 10 here:

- 11 • SAP Device Management (“SAP DM”) will be used for meters
 12 without Advanced Metering Infrastructure (“AMI”) capabilities (such

1 as analog meters without Smart Meter capabilities) to support key
2 functions such as metering order download, upload, validation,
3 estimation and interpolation. It is also used to track equipment such
4 as meters ensuring that testing and repair functions are properly
5 executed.

- 6 • SAP Energy Data Management (“SAP EDM”) will be used for
7 interval usage, demand, load shaping, pricing and energy settlement.
8 Both SAP DM and EDM modules will provide the necessary
9 determinants to support rate calculations.

- 10 • SAP Advanced Metering Infrastructure (“SAP AMI”) integration
11 services will be leveraged to interact with SDG&E’s smart metering
12 system to receive metered data and execute remote turn-on/turn-off
13 functions.

- 14 • The SAP billing module allows rates to be configured and is built
15 specifically for utility business processes. Time-of-use (“TOU”)
16 periods, seasonality (*e.g.*, summer or winter prices) and demand
17 response integration are embedded in the SAP billing module along
18 with complex Commercial & Industrial billing rate structure
19 functionality for business services customers. Importantly, as
20 discussed in Chapter 5, the billing module contains the appropriate
21 flexibility to accommodate future rate requirements without the need
22 for extensive customization. The SAP billing module also provides

1 configurable thresholds to ensure billing accuracy and delivers direct
2 integration of data for billing output and online presentment.

- 3 • SAP Financial Contract Accounting (“SAP FICA”) will offer
4 receivables, payments and collections features through a rule-based
5 collection strategy that enables easy deployment of various collection
6 strategies.

7 In addition, aligning with the software industry trend towards subscription-based
8 software delivery models hosted in public or private clouds, SAP is transitioning its product
9 suite to Software-as-a-Service (“SaaS”) offerings through its Hybris product set. These
10 products offer rapid innovation through a quarterly release schedule while still encouraging
11 standardization of business processes, thereby reducing overall CIS complexity and
12 enhancing the customer experience. In addition to the on-premise IS-U software, SDG&E
13 intends to implement the following SaaS products to align the new CIS to SAP’s product
14 support framework and future strategy:

- 15 • SAP Hybris Sales and Service – This solution provides functionalities
16 for the CCC as well as for commercial and industrial or key account
17 management.
- 18 • SAP Hybris Commerce – This solution will provide SDG&E a future
19 capability to quickly and effectively offer goods and services online.
- 20 • SAP Hybris Marketing – This solution offers SDG&E the ability to
21 potentially market goods and services to the customer in a relevant
22 and meaningful way. SAP Hybris Marketing is seamlessly integrated

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with Hybris Sales & Service to simplify customer enrollment, along

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with traditional service calls such as turn-on, turn-off, bill inquiry, etc.

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Table DL-3: Summary of Supporting Software

Supporting Software Function	Supporting Software
CRM for Utilities Customer Management	<p>Software Hybris Sales and Service</p> <p>Functionality</p> <ul style="list-style-type: none"> • Manages business master data (customer/business partner, contract account) and technical master data (connection object, premise, installation, point of delivery, device location). • Business master data contains customer-specific attributes that will apply to their interaction with the utility (i.e., mailing address, payment terms, collection strategy, etc.). • Business and technical master data are integrated and used by various other processes within the CR&B solution (i.e., device management, billing, etc.).
Billing & Invoicing	<p>Software SAP – Utility Solution (IS-U) Billing Energy Data Management (EDM)</p> <p>Functionality</p> <ul style="list-style-type: none"> • Tariff (rates) configuration are managed within the rate structure, which is enabled by EDM. • Billing and AMI are integrated to support standard Enterprise (companywide) Services that enable integration of data with an external MDUS (Meter Data Unification System). Enterprise services supported: <ul style="list-style-type: none"> ○ Time Series Calculation (billing determinants calculation for TOU tariffs). • Invoicing (financial transactions of customer charges) is enabled by the SAP Financial Contract Accounting (FI-CA) module. • Equalized Payment Plans (Budget Billing or Level Payment Plan) functionality is supported by Billing. <p>Software SAP – Business Data Exceptions (BDEx)</p> <p>Functionality</p> <ul style="list-style-type: none"> • Exceptions identified during the above processes are routed to BDEx for error processing.
Meter	<p>Software</p>

Supporting Software Function	Supporting Software
Administration and EDM	<p>SAP – Utility Solution (IS-U) Device Management (DM) Advanced Metering Infrastructure (AMI) Energy Data Management (EDM)</p> <p>Functionality</p> <ul style="list-style-type: none"> • Meter Device inventory, sampling/certification, installation management, meter reading schedule (read frequency) are some of the key processes supported by DM. • DM and AMI modules provide standard Enterprise Services that enable data integration with our current Meter Data Management (MDM), Itron Enterprise Edition system. Enterprise services supported: <ul style="list-style-type: none"> ○ Device management (device creation, installation) ○ Consumption data management (meter readings/interval data retrieval) ○ Meter connection Status ○ Remote disconnect/reconnect ○ Event Management. • Service locations that require interval data for billing purposes will leverage EDM to manage customer profile attributes and interval data. <p>Software SAP – BDEx</p> <p>Functionality</p> <ul style="list-style-type: none"> • Exceptions identified during the above process are routed to BDEx for error processing.
Intercompany Data Exchange (IDEX)	<p>Software SAP – IDEX Solution Set</p> <p>Functionality</p> <ul style="list-style-type: none"> • Full suite/configurable framework for creation of market communication messages for the deregulated utility market (such as Direct Access customers).
CRM for Utilities Contract Management	<p>Software SAP Hybris Sales & Service</p> <p>Functionality</p> <ul style="list-style-type: none"> • Manages and establishes the contractual relationship between the customer and the service location. • Move-in/Move-out processing.
Revenue Management	<p>Software SAP – Utility Solution (IS-U) Financial Contract Accounting (FI-CA)</p> <p>Functionality</p> <ul style="list-style-type: none"> • Financial account management is managed within the FI-CA module within SAP. • All utility financial transactions are managed at the sub-ledger level. As a part of daily batch processing, the sub-ledger postings are grouped/closed using

Supporting Software Function	Supporting Software
	reconciliation keys for posting into the General Ledger (GL). <ul style="list-style-type: none"> The closed reconciliation keys will be used to generate SAP Standard IDOCs (intermediate documents) to transfer billed revenue data by GL account to the SAP main ledger (SAP ERP). SAP IDOCs are standard formats designed to facilitate the data integration of SAP systems.
Analytics	<p>Software SAP – BI SAP HANA Core Data Services</p> <p>Functionality</p> <ul style="list-style-type: none"> SAP BI will report standard utility content for billing statistics. SAP HANA Core Data Services will be utilized for operational reporting. <p>Software BDEx</p> <p>Functionality</p> <ul style="list-style-type: none"> Back office exceptions statistics (<i>i.e.</i>, daily/monthly statistics) functionality. Meter reading/billing/invoicing exception threshold evaluations. Productivity tracking/analysis during exceptions processing.
Collections	<p>Software SAP – Utility Solution (IS-U) Financial Contract Accounting (FI-CA)</p> <p>Functionality</p> <ul style="list-style-type: none"> Collections Strategy supported by BRP+ (Business Rules Framework) enables flexible collections rules for customers. Multiple payment processing functionality is also supported (<i>i.e.</i> cash, check, Electronic Data Interchange, preauthorized payment).

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(iv) *Multi-Channel Framework*

The SAP solution and SAP vendor partner software will support interactions by customer preferences from multiple channels, including print mail, email, short messaging service (“SMS”), web, mobile, phone and social media. Table DL-4 summarizes this multi-channel framework.

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Table DL-4: Multi-Channel Framework

Function	Supporting Software
Document Management, Document Composition & Presentment	<p>Software SAP vendor partner</p> <p>Functionality</p> <ul style="list-style-type: none"> • PDF invoice composition. • Customer letter composition and presentment online for customer correspondence.
Multi-channel Foundation (MCF) for Utilities	<p>Software SAP MCF</p> <p>Functionality</p> <ul style="list-style-type: none"> • Used for Open Data Protocol (ODATA) services to deliver customer self-service functions such as move-in/move-out, view usage and update customer address.
Online My Account and Mobile	<p>Software SAP Vendor Partner</p> <p>Functionality</p> <ul style="list-style-type: none"> • Leverage the services provided in SAP MCF to deliver an account online function for all customers. • Customer preference management for how to be contacted (such as email, text, phone).

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(v) *Phased or Single Release - Implementation Options*

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SDG&E evaluated the phased (multiple releases, pilots, phasing in by customer groups, functions, etc.) versus single release (all functions and all customer groups at once) implementation approaches. The evaluation concluded that in a complex environment such as exists here, with an aging, highly customized CIS solution that is being replaced, the single release implementation approach is preferable over the multiple release approach, which causes significantly more operational disruption. SDG&E's entire customer base is served by a single legacy CIS system for meter-to-cash business processes which further complicates any phased approach considerations. Because customers routinely move between rates, a phased approach would lead to confusion and the need for manual processes in both the legacy CIS and SAP CR&B systems.

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1 In North America, the recent major CIS implementations (*e.g.*, Washington Gas,
2 Direct Energy,² etc.) predominantly have been single releases. CIS implementations that
3 have been undertaken in phases most commonly have been scenarios where multiple CIS's
4 supported different customer types (*i.e.* residential, commercial, competitive) and the
5 phasing entailed full replacement of individual CIS systems. SDG&E will review and
6 finalize the implementation approach before program commencement.

7 **III. PROJECT SCOPE – RICEFW**

8 A fit gap summary report was created from discovery and solution design exercises
9 facilitated by the “As-Is” and “To-Be” discussions between HCL and the SDG&E teams.
10 The purpose of the report is to identify and document process requirements that may not be
11 implemented by configuration alone, and require additional development. The team adopted
12 a method referred to as the SAP Minimum Viable Solution (“MVS”), which is the minimum
13 SAP functional footprint (*i.e.*, SAP software components, standard configuration) required
14 to support the defined set of core processes and to enable the required business benefits.

15 There are various reasons why standard out-of-the-box SAP CR&B functionality and
16 configuration items will not fully meet SDG&E's needs. Some examples of unavoidable
17 customizations include integrations with other non-SAP solutions within the IT landscape
18 (*i.e.*, interfaces), data migration from the legacy solution into the new solution (*i.e.*,
19 conversions), and incorporation of certain regulatory or compliance requirements (*i.e.*,
20 extensions).

21 The SAP solution allows these and other essential customizations to be satisfied
22 through the RICEFW items to distinguish between the type of development required –

² Two examples of HCL-led implementations.

1 Reports (R), Interfaces (I), Conversion (C), Extensions (E), Forms (F) and Workflow (W) –
2 described below:

3 **Reports:** A report is executable software that reads data from the database and
4 generates information based on the filter criteria selected by the end user, such as an ESS in
5 the CCC. Reports could be a standard SAP report or a custom report.

6 **Interfaces:** Sending and receiving of data between SAP and non-SAP systems (*e.g.*,
7 non- SAP systems such as outage management, field force management, etc.). Each
8 occurrence counts as one (1) interface.

9 **Conversion:** Data that is converted from one system to another. In our case, data
10 will be converted from our current legacy CIS and subsystems to the new SAP CR&B.
11 Multiple mock conversions will take place to identify data quality issues before a final go-
12 live conversion.

13 **Extensions:** Not all requirements can be met with the SAP standard CIS application.
14 Extensions are software code additions to existing functionality within SAP’s standard
15 CR&B application. The goal is to minimize extensions by changing business processes
16 instead of SAP CR&B.

17 **Forms:** A standard correspondence format that SDG&E uses internally or with a
18 customer. Examples include SDGE’s various bill formats and customer notices.

19 **Workflow:** Workflow is a sequence of connected activities resulting in the exchange
20 of information.

21 Items such as custom reports and forms will not result in changes to the core SAP
22 software and all will be developed using features built into the SAP solution specifically for
23 this purpose (which protects the core software and facilitates system updates and upgrades).

1 System Integrators (“SI”) utilize RICEFW as a primary means of developing cost estimates
 2 for integration activities, such as converting a legacy CIS to a state-of-the-art CIS.

3 SDG&E intends to leverage the out-of-the-box features and functions of the SAP
 4 solution by minimizing customizations as much as possible. RICEFW’s will be tightly
 5 managed so that only essential customizations are made. This will be managed through a
 6 strict project governance and approval process that requires all customization requests to be
 7 analyzed under certain criteria (*e.g.*, regulatory, compliance, legal, contractual, and business
 8 critical needs). This process for customizations is key to managing the scope of the CIS
 9 Replacement Program and aligns with both SAP and industry best practice.

10 The CIS Replacement Program estimated RICEFW summary is listed in Figure DL-
 11 4:

12 **Figure DL-4: RICEFW Table³**

Process Area	Reports	Interfaces	Conversion	Extensions	Forms	Workflows	Sub Total
1 – Customer Service		16		27	2	2	47
2 – Programs and Products		11		4	1		16
3 – Analytics							
4 – Device and Field		57		21	4		82
5 – Credit, Collections and Payments		39		31	15	3	88
6 – Finance							
7 – Usage & Billing		44		25	6	2	77
8 - Conversion			57				57
9 - Reports	83						83
10 - Exceptions				12			12
Total	83	167	57	120	28	7	462

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 14 **IV. IT IMPLEMENTATION RESOURCING AND TIMELINE**

15 This section describes various IT project phases from preparation through go-live
 16 and support, along with the anticipated implementation timeline for the new SAP CR&B
 17 solution. The CIS Replacement Program will follow the project life cycle phases below:

³ See, workpaper, “DL-Overall Fit-Gap Summary with RICEFW List.”



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A. Implementation Methodology and Phases

The CIS Replacement Program will use the SDG&E standard project life cycle with an additional pre-planning phase and will incorporate SAP standard activities and deliverables within the implementation methodology. The various phases are outlined below:

Pre-Planning

The pre-planning phase will refine the business capabilities and benefits, perform process prototypes and further define the scope. Key activities include developing data cleansing and conversion strategies. The organizational change management (“OCM”) strategy will be finalized and activities will begin. Finally, requests for proposals (“RFP”) will be developed. This phase of the project will require an average of approximately 20 resources.⁴

Project Preparation

During this phase, the team will conduct initial planning and preparation for the project. This phase will include tasks and deliverables such as establishing the project governance structure and procedures, creating a detailed project plan, onboarding key project resources, and conducting the project kickoff meeting. The overall SAP business process master list (“BPML”) will be created during this phase and will be used to organize requirements groupings in the next phase.

⁴ See workpaper, “DL – CIS Preplanning Resources SDG&E.”

Requirements

The requirements phase will develop detailed specifications to define and document the project needs. The requirements phase will document the detailed current “As-Is” business processes as well as the future “To-Be” business processes. Both functional (business) and non-functional (technical) requirements will be thoroughly documented. This phase will also review the project risks and dependencies (such as the schedule of activities that need to be accomplished for subsequent activities to be started). SAP configuration plans will be determined based on requirement mapping to the SAP BPML. RICEFW’s will be further identified and mapped to business requirements and processes from BPML to ensure traceability and completeness.

Design

The design phase will develop the product design and operating specifications, including architectural considerations for the software and hardware. The business processes will be analyzed at a more detailed level and functional specifications will be developed to determine how the RICEFW’s should be designed. The RICEFW inventory will be confirmed at the end of the design phase. Baseline SAP configuration will be completed during this timeframe. The remaining complex configurations will be planned for the construct phase in conjunction with the plan for completing the associated RICEFW’s.

Construct/Build

The construct phase will complete the steps necessary to build a product that meets the requirement specifications and system design specifications. The phase will also complete the deliverables necessary to prepare for testing the product and for training personnel to use and support the product. SAP development of RICEFW’s and software

1 configuration will be completed during this phase. The first full scale test conversion will
2 also be completed during this phase.

3 Test

4 The test phase will test and verify the end-to-end (start-to-finish) functionality of the
5 product. It also will verify that all requirements have been implemented and meet quality
6 standards. Execution of test cases to ensure that each requirement is implemented and each
7 product component is performing to specifications will be in scope for this phase. The
8 success of each test case will confirm that the application is working as intended. The first
9 test implementation procedures will be completed during this phase to rehearse and prepare
10 detailed cutover (transition) plans for the actual implementation go-live. SAP performance
11 testing will be completed using testing tools to simulate inbound call volumes. Full scale
12 batch processing will be tested using parallel production data from the legacy CIS to support
13 bill comparison accuracy.

14 Implementation

15 The purpose of this phase is to complete the final preparation for the go-live. A final
16 system parameter review will ensure the configured production environments perform at
17 intended levels. On successful completion of this phase, the team will be ready to go live
18 with the new SAP CR&B system and perform all production conversion and implementation
19 procedures.

20 Production Storm

21 In this phase, the system will be in a live production and operation mode. The
22 system will be actively monitored and production problems will be triaged and addressed.
23 The system will be operated by the personnel that have been involved in implementing the
24 project. By the end of the phase, the long-term support of the new system will transfer to an

1 ongoing support group comprised of resources that may have been on the project and/or new
2 resources that have not been on the project. New resources that have not been on the project
3 will receive knowledge transfer, project documentation and artifacts, or various metrics
4 gathered during the project. New resources will be brought in months before the Production
5 Storm phase completes to allow a sufficient transition period so that the team can operate the
6 SAP CR&B solution.

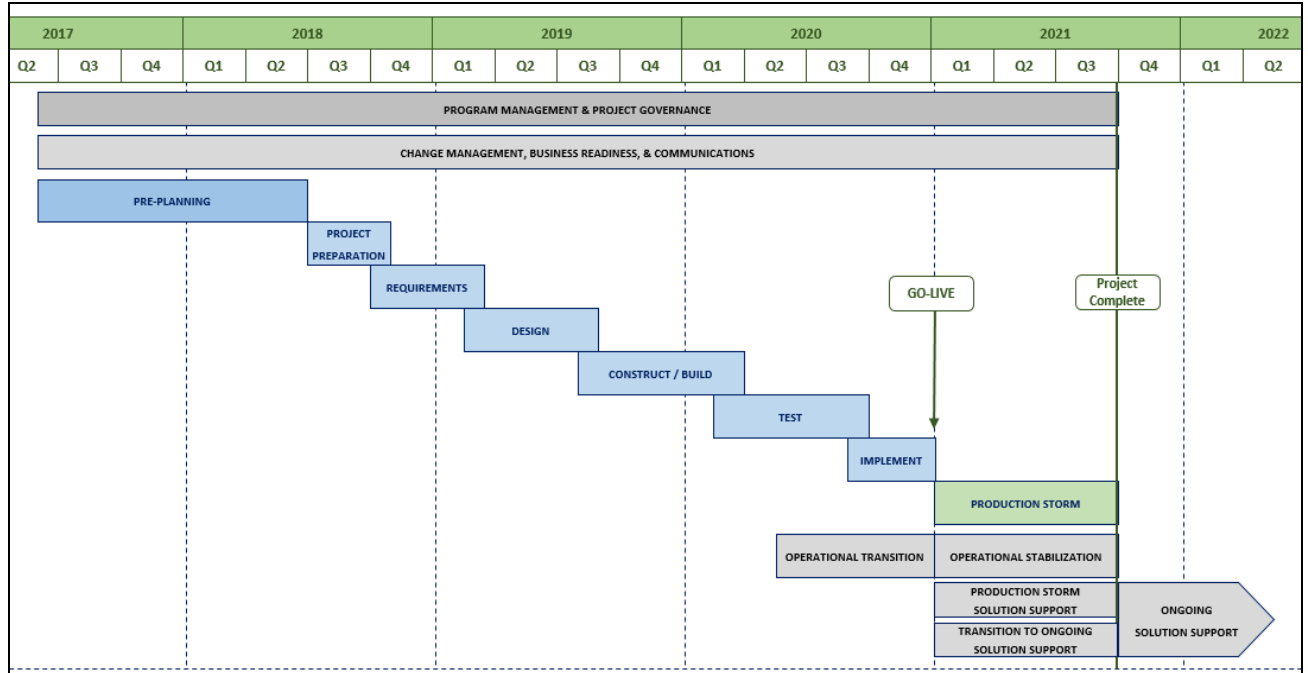
7 **B. Implementation Timeline**

8 SDG&E has partnered with HCL to assess and recommend the implementation
9 schedule for the new CIS solution. With its extensive experience in leading and
10 implementing SAP CR&B implementations of similar complexity at utilities of a similar
11 size, HCL has recommended an implementation schedule of 30 months (from Project
12 Preparation through Go-Live) and SDG&E is anticipating 9 months of post go-live
13 stabilization (Production Storm), for a total of 39 months. The timeline below in Figure DL-
14 5 displays SDG&E's projected phases.

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Figure DL-5: Implementation Timeline By Phase



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3 **C. Implementation Resourcing Plan**

4 The CIS Replacement Program will be staffed with a mix of SDG&E and non-
 5 SDG&E labor. SDG&E resources will fulfill roles as subject matter experts, project
 6 governance, information security, quality assurance, organizational change management,
 7 training, legacy data migration developers, and infrastructure support. In addition, the team
 8 will be supplemented with third-party resources to fill key roles, such as functional and
 9 technical experts from SAP and quality assurance and user acceptance team leads.

10 An SI with industry best practice experience will be brought on to advise and
 11 implement this large scale effort. The SI will bring project management, functional,
 12 technical, analytical and change management expertise. The SI will conduct activities such
 13 as leading blueprint workshops to document overall design and architecting and configuring
 14 the solution. They will provide their experience, methodologies, and SAP-specific expertise
 15 to support all phases of the project. SDG&E has not yet selected the SI for this project.

1 Figure DL-6 provides SDG&E’s proposed team resource roles and descriptions. Figures
 2 DL-7, DL-8, and DL-9 present SDG&E’s proposed average and peak internal, third-party,
 3 and SI staffing levels.

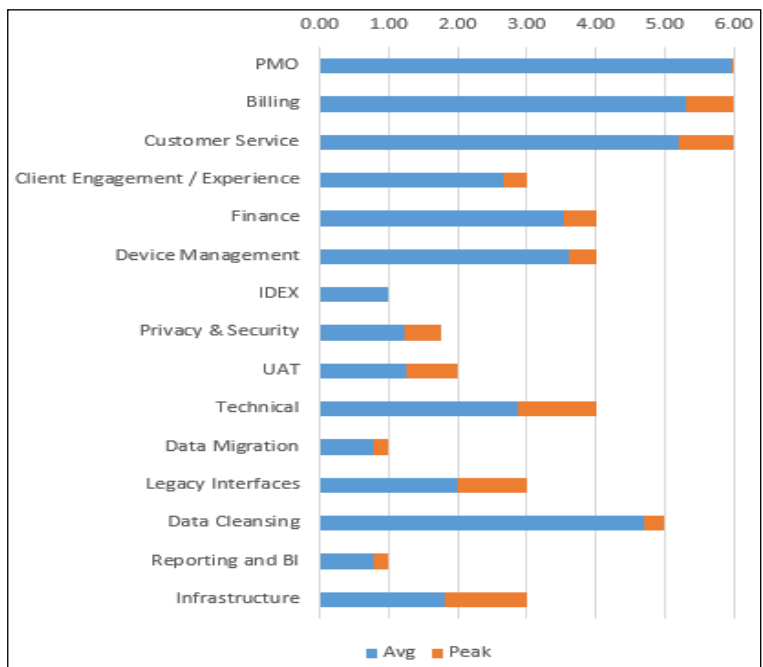
4 **Figure DL-6: Implementation Team Descriptions**

Team	Description
Project Management Office (“PMO”)	Provides planning and governance over each of the project work streams. Includes management of resources, tasks, scope, and budget.
Billing	Provides expertise in areas such as invoicing, complex billing, AMI integration, rate structures, bill formatting, and bill calculation.
Customer Service	Provides customer service expertise in roles such as contract management, Interactive Voice Response (“IVR”) specialists, contact center specialists, account executive experts, and customer service field interfaces.
Client Engagement/Experience	Specialists in the area of User Interfaces (“UI”) and User Experiences (“UX”). Knowledgeable with customer interactions, web design, mobile functionality, and social channels.
Finance	Specialists in the high volume financial transactions such as billing, receivables management, payment reconciliation, integration with accounts chart, and financial reporting.
Device Management	Provides expertise in managing devices, such as meters, home area network components, demand response components, etc. Functions include managing inventory, programming, controlling, and monitoring.
IDEX	IDEX experts are able to configure the SAP system to exchange data with third-parties for programs such as Direct Access, Community Choice Aggregation, etc.
Privacy and Security	Information security roles ensure proper setup and management of user authentication and authorization. Customer privacy roles ensure that identifying customer information is used only when required, obfuscated when retained, and disposed of appropriately.

Team	Description
Functional Integration	The role of functional integrators is to ensure that multiple systems work together seamlessly to provide fully functional business processes. Examples are integrations with human resource systems, relationship management systems, inventory systems, meter reading systems, etc.
Testing Center of Excellence	This role provides resources, expertise, processes, and procedures for testing of the SAP CR&B system. This includes maintaining testing scripts, environments, data, error tracking, etc.
User Acceptance Testing (“UAT”)	This function includes team leads and testing team members that actively and thoroughly follow the test scripts to ensure the SAP CR&B system is working as planned.
Technical	Technical work such as product configuration, integration development, interface development, release management and Basis (SAP infrastructure configuration and administration).
Data Conversion	Mapping of data from legacy system to new CIS system. Creation of programs to extract the data from the legacy system, transform the data, and load the data into the new CIS system.
Legacy Interfaces	Develop interfaces from the new SAP CR&B to the current legacy systems.
Data Cleansing	The data in the legacy system will need to be reviewed for completeness and correctness. This function evaluates the legacy system, makes corrections to the legacy system processes, and revises the data in the legacy system to make the conversion to the new SAP CR&B system as seamless as possible.
Reporting and BI	This function analyzes the reporting needs of the legacy system, analyzes them for applicability to the new system, understands the reporting requirements for the new SAP CIS system, and develops the reports, dashboards and analytical approaches for the new SAP CR&B system.

Team	Description
Infrastructure	This function installs the hardware and software for the SAP CR&B system, which involves selecting servers, storage, network, power, and cooling components for the data center. System requirements, along with requirements for high system availability and disaster recovery, are considered when selecting the components.
Lead	The lead role requires a combination of project management skills and functional area knowledge. A lead typically oversees a specific functional area, such as CRM, Billing, or Service Orders, and requires sufficient knowledge to make directional decisions.
Engineer	The engineer role requires technical knowledge of the infrastructure components, operating system components, and integration components. The engineer is capable of defining, building, and administering the technical solution.

Figure DL-7: SDG&E Internal Implementation Resources⁵

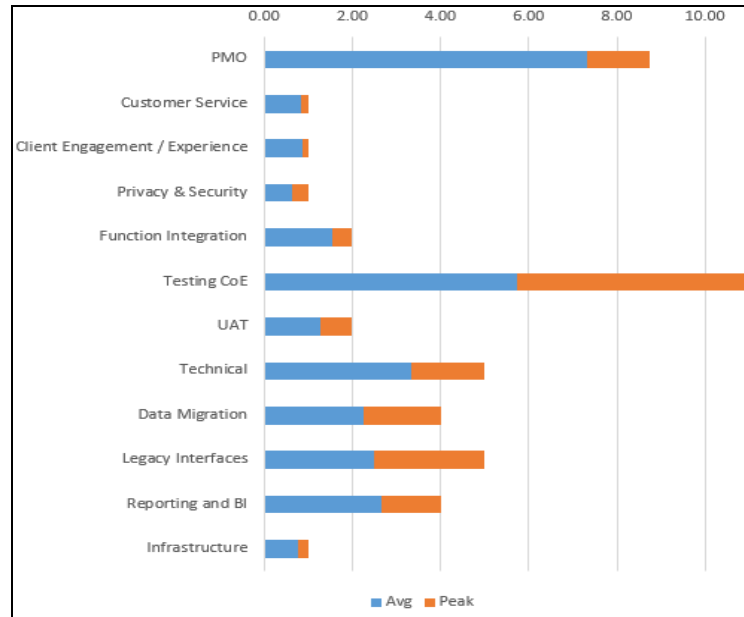


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⁵ See, workpaper, “DL – CIS Implementation Team Resources SDG&E.” Excludes project OCM and training resources reviewed in Chapter 5.

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Figure DL-8: SDG&E Third-Party Implementation Resources⁶

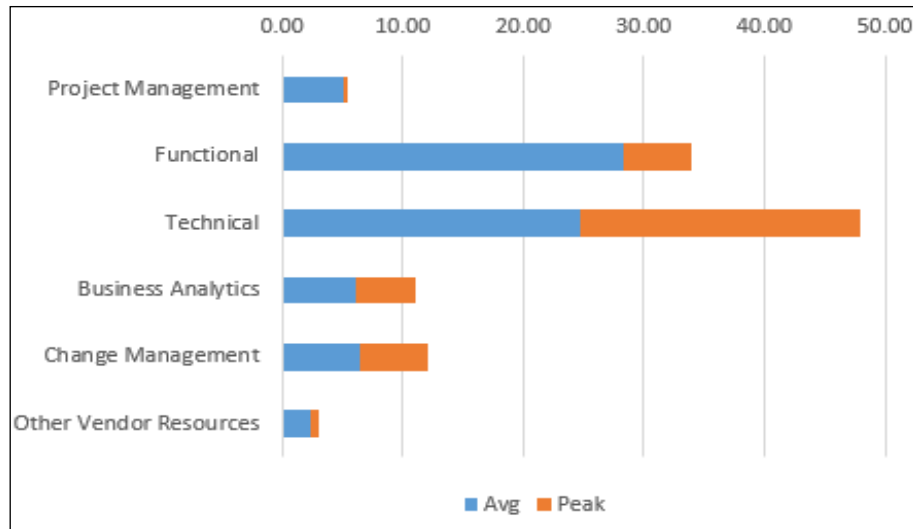


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Figure DL-9: SI Implementation Resources⁷



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⁶ *Id.*

⁷ See workpaper, “DL – CIS SI Implementation Team Resources SDG&E.” Excludes project OCM and training resources reviewed in Chapter 5.

1 **D. Production Storm Solution Support Resource Plan and Transition to**
2 **Ongoing Solution Support Resource Plan**

3 Once the project completes the implement/go-live phase, the project enters the
4 Production Storm or stabilization period. There will be two sets of resourcing plans
5 described during the Production Storm period which are intended to cover (1) stabilization
6 activities (Production Storm Solution Support Plan); and (2) ramping up non-project
7 resources to create the long-term ongoing solution support team (Transition to Ongoing
8 Solution Support Plan). SDG&E envisions that the long-term ongoing solution support team
9 will include some members transitioning from the implementation project.

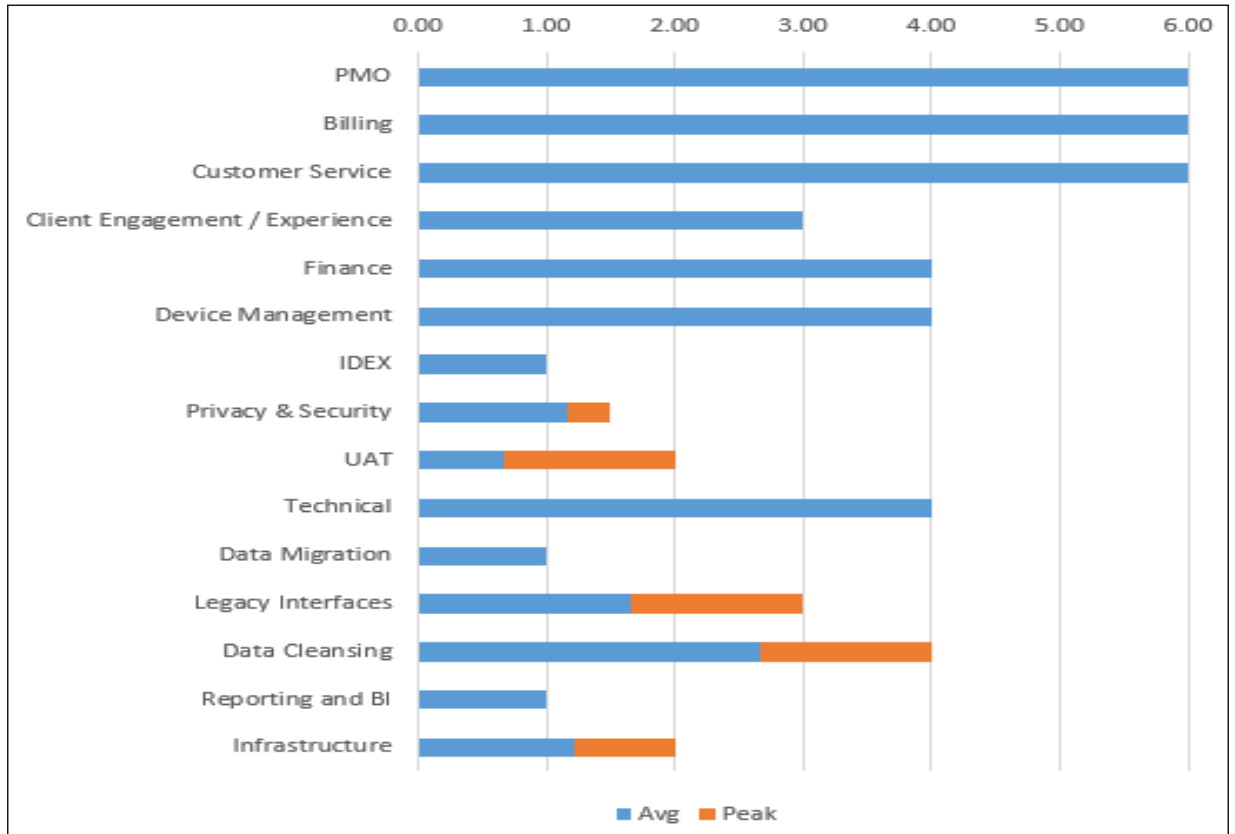
10 The Production Storm Solution Support Plan described below covers resourcing
11 requirements during the Production Storm period that will actively monitor any production
12 problems and perform any necessary triage. This Production Storm Solution Support Plan
13 leverages resources who were actively working on the project implementation and
14 thoroughly understand the solution. It includes both SDG&E and SI resources, and the
15 resourcing plans end once Production Storm is complete.

16 The Transition to Ongoing Solution Support Plan addresses the long-term needs for
17 the SAP CR&B solution. It specifically covers the ramp-up of resources that have not been
18 involved in the implementation during the period before the end of Production Storm,
19 allowing these resources, both internal and external, to gain the knowledge required to
20 support the solution post-Production Storm.⁸ Figures DL-10, DL-11, DL-12, DL-13, and

⁸ While SDG&E has created an illustrative model for ongoing support resourcing to calculate the overall cost of ownership as presented in the direct testimony of Witness Atkinson (Chapter 4), the costs and resources will be updated in a future SDG&E General Rate Case (“GRC”) aligned with the timing of the post Production Storm period.

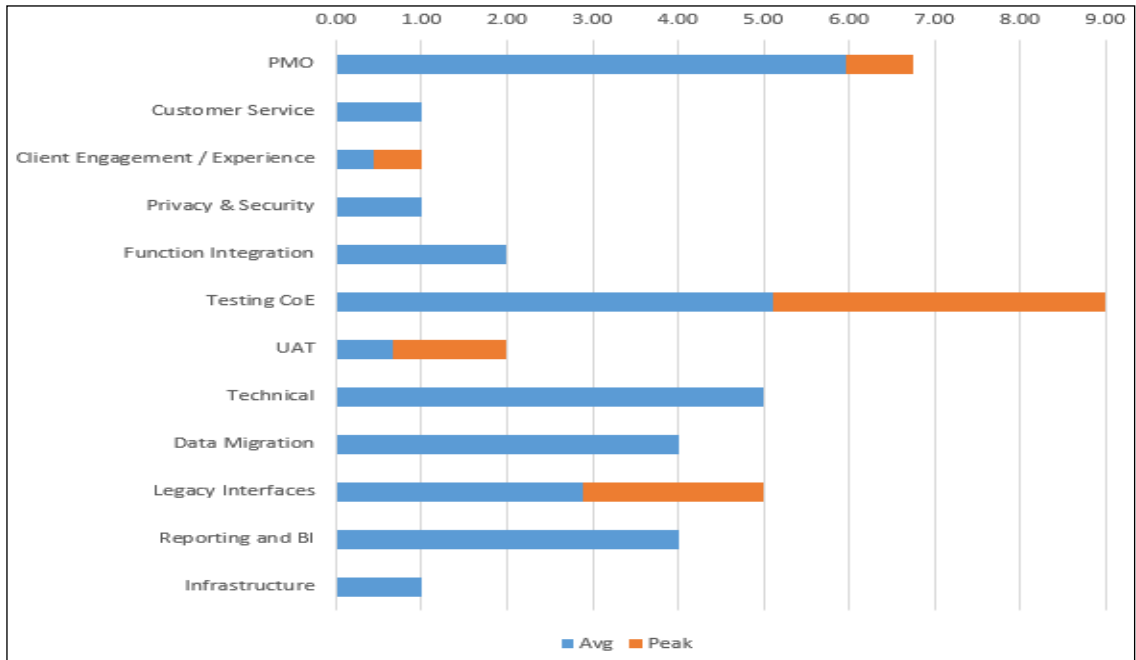
1 DL-14 depict SDG&E’s proposed resource plans for both Production Storm Solution
2 Support and the Transition to Ongoing Solution Support teams.

3 **Figure DL-10: SDG&E Internal Production Storm Support Resources⁹**
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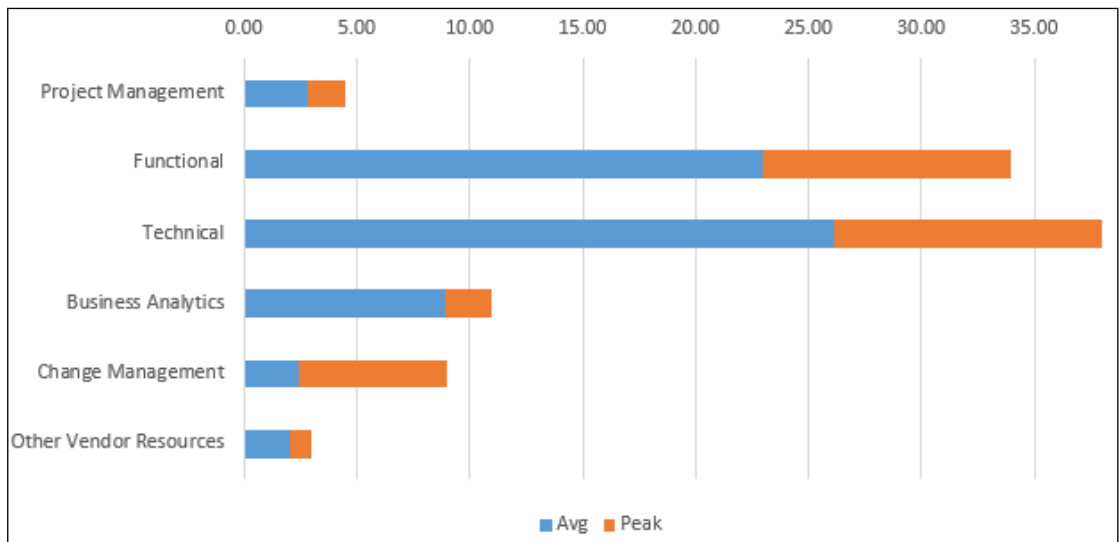


⁹ See workpaper, “DL – CIS Implementation Team Resources SDG&E.”

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4 **Figure DL11: SDG&E Third-Party Production Storm Support Resources¹⁰**



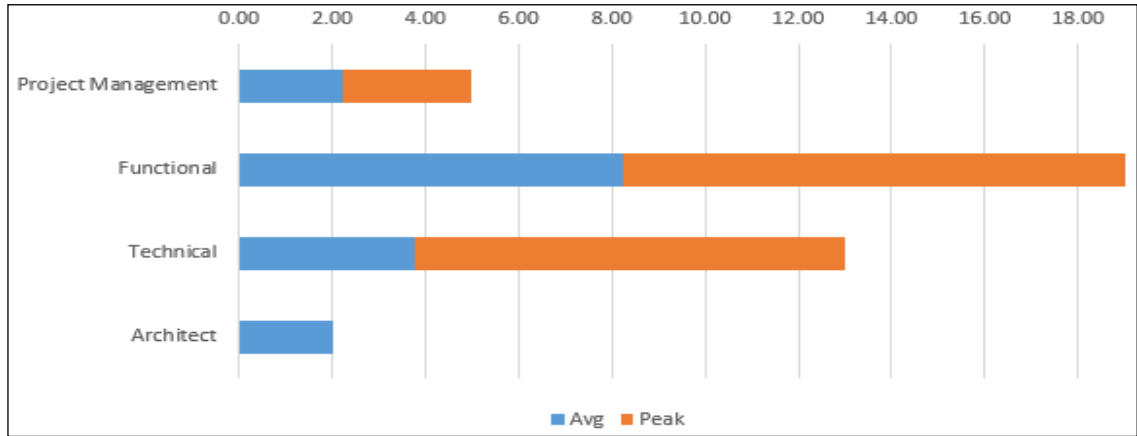
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22 **Figure DL-12: SI Production Storm Support Resources¹¹**



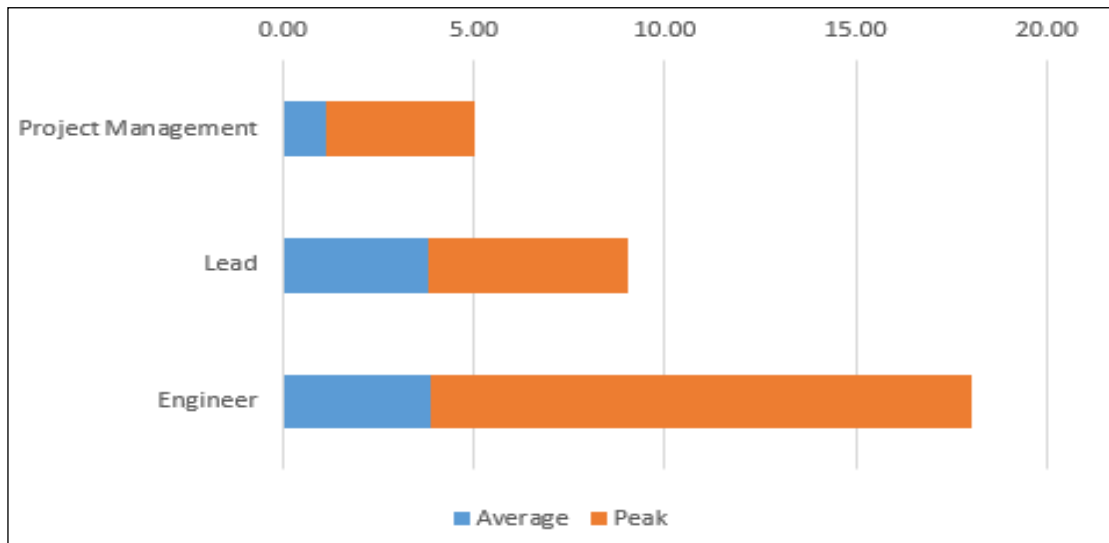
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¹⁰ *Id.*

¹¹ See workpaper, “DL – CIS SI Implementation Team Resources SDG&E.”

1 **Figure DL-13: SDG&E Internal Transition Resources for Ongoing Solution**
2 **Support¹²**
3



17 **Figure DL-14: External Transition Resources for Ongoing Solution Support¹³**
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36 **V. CONCLUSION**

37 My testimony provides an overview of the IT implementation for the CIS
38 replacement project. It covers efforts to improve and refine the overall system architecture
of SDG&E’s Customer Services application portfolio, including an overview of the future

¹² See workpaper, “DL – Support – Transition Resources (M31-M39) SDG&E.”

¹³ See workpaper, “DL – Support -MSP Transition Resources (M31-M39) SDG&E).”

1 state system architecture, the functionality that will be transitioned to the new SAP CR&B,
2 the RICEFWs, and the resourcing and timeline required for the IT implementation.

3 This concludes my prepared direct testimony.

4

1 **VI. STATEMENT OF QUALIFICATIONS**

2 My name is Daniel Linder and my business address is 8330 Century Park Court, San
3 Diego, California 92123. I am currently an IT Program Manager on the Customer
4 Information System Replacement Program at San Diego Gas and Electric Company
5 (“SDG&E”). I began work at SDG&E in February 2009 as an IT Project Lead. I led the
6 project team for the Smart Pricing online presentment of smart meter consumption data and
7 peak time event rebate implementation. I then moved onto managing the enterprise program
8 governance team which created efficiencies and processes for the IT Project lifecycle. My
9 responsibilities also included the implementation of an IT Financial Planning system built in
10 the SAP Business Warehouse. In my most recent prior position, I was the IT Program
11 Manager responsible for the SDG&E Customer Services portfolio on the IT side.

12 Prior to SDG&E, I specialized in technical and managerial roles in the IT field for
13 companies such as food manufacturer General Mills, a high-tech firm, as well as multiple
14 years of consulting in the financial services industry. In one of those consulting roles, I
15 successfully led the systems integration and planning effort for the replacement of back-
16 office systems for a financial services company. I obtained a Project Management
17 Professional (“PMP”) certification from the Project Management Institute in November
18 2015. In 1993, I graduated from Minnesota State University, Mankato with a bachelor of
19 science degree in computer science.

20 I have not previously testified before the California Public Utilities Commission.