PREPARED DIRECT TESTIMONY OF

CHARLIE SNYDER

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

CHAPTER 3

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

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I.   INTRODUCTION

The purpose of my direct testimony is to discuss the process followed by San Diego Gas & Electric Company ("SDG&E") to evaluate its legacy Customer Information System ("CIS") and its related subsystems. I also explain the risk assessment conducted related to SDG&E's legacy CIS. Finally, I describe the alternatives considered for SDG&E's proposed CIS replacement system and provide the rationale for selection of SAP's Customer Relationship and Billing ("CR&B") application as the new CIS. I also address certain transition issues and the importance of near-term implementation of the new CIS.

II.   EVALUATION OF LEGACY CIS SYSTEM AND RELATED SUBSYSTEMS

SDG&E's legacy CIS is 20 years old – a veritable dinosaur in technology years. As discussed in detail in Chapter 2, the technology and capabilities of this system are rapidly approaching the end of their useful life. The complexity of evolving rates, services and customer demands requires a new, enhanced technology platform from which SDG&E can effectively deliver its customer information needs. In its last General Rate Case ("GRC"), SDG&E pointed out the age of its legacy CIS and noted that evaluation of the legacy CIS and its related subsystems was necessary to determine the forward-looking capability of the legacy CIS system and whether it should be significantly overhauled or replaced.[1]

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[1]   SDG&E predicted that the initial strategy work to make this determination would require a combination of labor and non-labor resources, with a forecasted cost of $2 million. SDG&E 2016 GRC, A.14-11-003, Exh. 153 at SJM-13: 1-13 (Amended Revised Direct Testimony of Stephen J. Mikovits).

1   In March 2015, SDG&E retained Ernst and Young ("EY") to comprehensively

2   assess SDG&E's legacy CIS and create a roadmap for a future-state that would not only

3   serve SDG&E's current business and technology needs, but also provide a solid foundation

4   to meet future needs (the "CIS Strategy"). The starting point for the EY assessment was the

5   understanding that while SDG&E's legacy CIS system and its related subsystems had until

6   that point been capable of meeting the core billing system requirements, it faced challenges

7   in meeting the demands of today's regulatory environment and customer expectations

8   (described in Chapter 2), and the current state presented a growing concern (risk) to the

9   business. The primary goal of the EY assessment was to determine whether the legacy CIS

10   should be (i) maintained (no change),[2] (ii) significantly enhanced, or (iii) replaced.

11   Along with the legacy CIS, the EY assessment evaluated four key subsystems

12   implemented by SDG&E to augment the capabilities of the legacy CIS: (i) the Customer

13   Relationship Management ("CRM") system used to support business processes for energy

14   efficiency, demand response and customer communications; (ii) the Meter Data

15   Management System ("MDMS") used to validate and process register reads and interval

16   data coming from SDG&E's Advanced Meter Infrastructure ("AMI") network; (iii) the

17   Service Order Routing Technology ("SORT") system used to manage field orders and

18   dispatch; and (iv) the MyAccount system used for online interactions with the customer,

19   such as bill presentment and payment, online energy management and other self-service

20   applications.

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[2]   Keeping with the status quo and maintaining the legacy CIS and sub-systems was a non-starter
       given the existence of several critical solution gaps (*e.g.* inability to provide a 360-degree view
       of the customer, delay and resource burden associated with system changes, challenges with
       implementation of structured rate changes, etc.).

1   During this nine-month evaluation, EY: (i) surveyed numerous business and IT

2   resources to gauge solution gaps (*i.e.*, to understand what required functionality was not

3   being provided by the legacy CIS and its related subsystems); (ii) considered multiple

4   options for enabling the required functionality; and (iii) identified two options for more

5   detailed analysis. See *Attachment A - CIS Strategy Solution Gaps* for the solution gaps

6   identified by EY.

7   EY initially identified 22 options to address more than 100 gaps across 15

8   capabilities. Those options were narrowed to eight, which were put into a scoring system

9   that took into account risk, cost, and functional fit. EY ultimately recommended that a

10   number of key customer-supporting applications be moved to a common platform. The

11   main findings of EY's nine-month CIS evaluation effort were as follows:

12   1)   The legacy CIS was generally doing an adequate job of supporting the

13   current business and technology needs of SDG&E. However, future rate

14   complexity and integration challenges with subsystems would require a move

15   to a modern technology platform (as became evident in 2016, after the EY

16   study was completed).

17   2)   The move to a new CIS would involve organizational change management

18   complexities, given employees' familiarity with and knowledge of the

19   existing system.

20   3)   Existing challenges with SDG&E's CRM system, including data model

21   inconsistencies with the legacy CIS and the absence of a 360-degree view of

22   the customer, were identified as "pain points" (*i.e.*, areas of vulnerability) that

23   would need to be addressed to better serve SDG&E customers.

1   4)   The SORT system was approaching the end of its useful life and had support

2   challenges; this led to recommending re-platforming or replacing SORT.[3]

3   5)   SDG&E's MyAccount system provided sufficient basic customer

4   functionality but interface and maintenance issues were causing technical

5   instability and could cause challenges when augmenting with new functional

6   digital capabilities.

7   6)   SDG&E's MDMS was being upgraded and would help provide a better

8   technical platform for the future, but the upgrade would not address all of the

9   future billing needs.

10 Based on its assessment, EY suggested two options for more detailed analysis: (i) replacing

11 the legacy CIS along with the CRM and MyAccount subsystems; and (ii) retaining and

12 enhancing the legacy CIS and MyAccount sub-system and replacing the CRM sub-system.

13 EY concluded that replacing the legacy CIS along with the CRM and MyAccount

14 subsystems was the best path forward.

15   The CIS Strategy team, consisting of EY and SDG&E subject matter experts,

16 considered the alternative approach of retaining and enhancing the legacy CIS and

17 MyAccount sub-system and replacing the CRM sub-system. This solution would have

18 required SDG&E to continue to invest significant capital over the next five years to meet

19 new regulatory requirements. While this approach offered three main benefits – (i) it

20 required lower overall investment compared to the replacement option; (ii) it minimized

21 near-term impact to business operations; and (iii) it allowed changes to be phased in and

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[3]   In 2016, SDG&E approved a capital project to upgrade the old SORT system with the vendor's latest software release. Estimated project completion is 4th quarter of 2017. The order scheduling component will be replaced as part of the overall CIS replacement project.

1 mitigated overall implementation risks that are usually higher with a CIS replacement – it

2 was not a viable long-term solution for achieving the functionality required by SDG&E.

3 The enhancement option would have been far riskier (requiring heavy customization) than

4 the option of replacing the systems with modern technology capable of keeping up with the

5 pace of change. Given this, the EY recommendation supported a process for replacing

6 SDG&E's legacy CIS, including the CRM and MyAccount subsystems.

7 In addition, a succession of regulatory and rate changes in 2016[4] further supported

8 (indeed escalated) the need to replace rather than enhance the legacy CIS. Enhancements

9 alone could not support the rapidly changing business, customer, and regulatory

10 requirements. Further, due to the complexities of implementing these key changes, capital

11 project cost estimates to enhance the legacy CIS have increased, and in some cases doubled,

12 between 2015 and 2016. If the same EY CIS evaluation study had been conducted in 2016

13 rather than 2015, enhancing the legacy CIS would not have been deemed a viable approach

14 based on the lengthy time, complexities inherent in integrating the legacy CIS to the many

15 subsystems, and high costs incurred when implementing system changes.

16 ## III. RISK PROFILE AND RISK MANAGEMENT

17 On an annual basis, SDG&E's Enterprise Risk Management ("ERM") organization

18 facilitates the enterprise risk identification process through interviews and meetings with

19 risk owners and managers to review and discuss potential changes to SDG&E's enterprise

20 risk registry.

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[4] As discussed in Chapter 2.

1   SDG&E's risk management framework is consistent with the Cycla Corporation 10-

2 step Evaluation Method adopted in Decision ("D.") 16-08-018.[5] SDG&E consolidated

3 Cycla's 10-steps into six distinct steps, each of which are outlined below:

4   1. Risk identification;

5   2. Risk analysis;

6   3. Risk evaluation and prioritization using a 7x7 matrix;

7   4. Mitigation plan development;

8   5. Risk-informed investment decisions and risk mitigation implementation; and

9   6. Monitoring and review.

10   SDG&E utilizes a combination of qualitative and quantitative analysis to analyze its

11 risks. The ERM organization facilitates a risk assessment session where risk owners discuss

12 their risk analysis based on the information they have and the risk mitigations in place.

13   Risk evaluation (step 3 above) is the process of comparing the results of risk analysis

14 against impact and likelihood dimensions. SDG&E uses the 7x7 Risk Evaluation

15 Framework ("REF") to evaluate the level of risks and differentiate risks from one another by

16 gauging their frequency of occurrence against their potential impact (see *Attachment B – 7x7*

17 *Scoring Matrix*).

18   The risk score for each risk is then calculated using the following algorithm:

$$\sum_{i=1}^{n} weight_i * frequency_i * 10^{impact_i}$$

19
20 Four evaluation categories are identified with the REF. Each impact category is assigned a

21 weight as follows:

22

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[5]   *See* D.16-08-018.

6

1 - 40% for Health, Safety & Environmental,

2 - 20% for Operational and Reliability,

3 - 20% for Regulatory, Legal & Compliance, and

4 - 20% for Financial.

5 Frequency ratings also translate to certain values with the concept that the higher the

6 frequency, the higher the risk value.

7 **A.   2016 Risk Assessment**

8 As a follow up to the EY study, in May 2016, SDG&E performed a risk assessment

9 on its legacy CIS. SDG&E classified this new risk as "Negative Customer Satisfaction and

10 Service Delivery Impacts Caused by Outdated Systems." This risk exists as a result of not

11 replacing the legacy CIS by the end of 2020, resulting in an inability to bill a significant

12 number of accounts (*i.e*. tens of thousands) for an extended period of time. The primary

13 drivers assumed for this risk were the:

14 - Inability to handle complex rates at scale, both current and future; and

15 - Inability to bill customers accurately and timely.

16 - Other associated consequences that were evaluated included:

17 - Failure for SDG&E to meet future mandated regulatory requirements;

18 - Inability to provide information to customers on rate structures in a timely or

19   accurate manner;

20 - Failure to meet business and technology trends;

21 - Implications of negative customer satisfaction;

22 - Legacy CIS knowledge is an asset that will continue to diminish over time; and

1   •   Inability to incorporate new technology required to modernize future business

2   practices.

3 The assessment team also identified the following potential risk triggers:

4   •   Business and regulatory capabilities not supported by current technologies;

5   •   Inability to support mandated regulatory complex rates (*e.g.*, new renewables

6   rates, hourly pricing, electric vehicle rates, etc.);

7   •   Inability to support mandated regulatory changes at scale (*i.e.*, all residential

8   customers on time-of-use ("TOU") rates);

9   •   Increased regulatory demands that cannot be met;

10   •   Legacy impact due to aging infrastructure;

11   •   Inability to provide new products and services; and

12   •   Increased cost for sustaining/maintaining legacy system.

13   **B.**   **2016 Residual Risk Assessment**

14   In 2016, recognizing that the legacy CIS was nearing the end of its useful life, a risk

15 assessment was performed, utilizing the 7x7 REF, resulting in the following scores:

16   •   Health, Safety and Environmental – **1** (Negligible - No injury or illness or up to

17   an un-reported negligible injury);

18   •   Operational and Reliability - **5** (Extensive - > 50 K customers affected; or impacts

19   multiple critical locations or customers; substantial disruption of service greater

20   than 10 days);

21   •   Regulatory, Legal and Compliance – **4** (Major - Violations that result in fines or

22   penalties, or a regulator enforces nonfinancial sanctions, or significant new and

23   updated regulations are enacted as a result of an event);

1   •   Financial – **3** (Moderate - $1 MM - $10MM);

2   •   Frequency of an Occurrence – **4** (Occasional – Once every 3 to 10 years).

3   Utilizing the risk score algorithm and factoring in the above scores results in the

4 Residual Risk Score, in this case, a score of **4,054**. For 2016, this legacy CIS risk

5 represented the 19th highest risk in SDG&E's risk registry out of 36 enterprise risks.

6   **C.**   **CIS Replacement On-going Risk Assessment**

7   The 2016 risk score was finalized prior to the significant challenges experienced

8 with the legacy CIS and related subsystems described in Chapter 2 (*i.e.*, delayed customer

9 bills and delays in implementing mandated rates). SDG&E is now beginning its 2017

10 overall risk assessment, which will reflect recent events as well as upcoming challenges (*e.g.*

11 Residential TOU Default rollout).

12   Given the challenges SDG&E has been facing with meeting the implementation

13 dates for new regulatory mandates related to new rate options, which have resulted in

14 revenue cycle impacts, SDG&E has conducted additional analysis of the risk associated with

15 its legacy CIS and related subsystems. The significant issues with the legacy CIS became

16 evident with the default of small and medium businesses to new rates in 2016, and the risk is

17 expected to grow exponentially for the defaulting of residential customers to a TOU rate in

18 2018. Although the annual risk registry refresh process evaluates the risks that exist at a

19 specific point in time and typically does not evaluate risks in the future, as part of 2016's

20 risk assessment evaluation, SDG&E performed a risk assessment ("future view") of the

21 legacy CIS's risk profile in 2020 also utilizing the 7x7 REF. The future view Residual Risk

22 Score follows, and is substantially higher than the score obtained in 2016:

- Health, Safety and Environmental – **2** (Minor - Minor Injuries or Illnesses: Minor injuries or illnesses to few public members or employees);

- Operational and Reliability - **6** (Severe - >100 K customers affected; or impacts multiple critical locations and customers; substantial disruption of service greater than 1 month);

- Regulatory, Legal and Compliance – **4** (Major - Violations that result in fines or penalties, or a regulator enforces nonfinancial sanctions, or significant new and updated regulations are enacted as a result of an event);

- Financial - **4** (Major - $10 MM - $100 MM);

- Frequency of an Occurrence - **6** (Regular – 1 to 10 times per year); and

- Residual Risk Score - **645,231**.

SDG&E acknowledges that a future view assessment is subjective, involving assumptions and unknowns; however, it is clear that the Residual Risk Score will continue to substantially increase year by year until the legacy CIS and certain related subsystems are replaced. For instance, in the 2016 risk profile, if the Frequency of Occurrence is adjusted to reflect "once every 1 to 3 years", the Residual Risk Score would be over 12,000 instead of roughly 4,000.

D.   Recommended Mitigation of Residual Risk

SDG&E is currently examining its CIS replacement strategy to determine how to bridge the gap between now and when a full risk mitigation can be successfully implemented. As discussed below, the recommended full mitigation is to replace SDG&E's existing legacy CIS with SAP's CR&B application. Bridging the gap between now and the first quarter of 2021, when SAP's CR&B solution could be fully implemented, will involve

challenges that SDG&E will address using the mitigating approaches identified in Section

VII below ("Transition Period Strategy"). In addition to the future view assessment,

SDG&E also conducted a "mitigated view" risk assessment that assumed replacement of the

existing legacy CIS with SAP CR&B in the first quarter of 2021. The mitigated view

Residual Risk Score follows –

- Health, Safety and Environmental – **1** (Negligible - No injury or illness or up to an un-reported negligible injury);

- Operational and Reliability – **4** (Major - > 10 K customers affected; impacts single critical location or customer; disruption of service greater than 1 day);

- Regulatory, Legal and Compliance – **2** (Minor - Self-reported or regulator identified violations with no fines or penalties);

- Financial – **2** (Minor - $50 K - $1 MM);

- Frequency of an Occurrence - **4** (Occasional – Once every 3 to 10 years); and

- Residual Risk Score – **373**.

Similar to the "future risk" scenario scored above, scoring a risk for a solution that is

nearly four years away is based on assumptions that may change over time. The positive

aspect is that today's known assumptions will only improve as SAP continues to develop

and enhance its CR&B application. Further, as SDG&E continues to assess the legacy CIS

and related subsystems, it is aware that the Residual Risk Score will continue to increase

year by year as it continues to implement structural rate changes at the current pace. The

"mitigated view" risk assessment clearly shows that by replacing the legacy CIS, SDG&E

drastically reduces risks within this area, regardless of the subjectivity of future scoring.

1   In summary, SDG&E's risk assessment strongly supports the conclusion that

2   replacement of SDG&E's existing legacy CIS with SAP CR&B must occur as soon as

3   possible.

4   **IV.   SUMMARY OF MAIN REQUIREMENTS FOR NEW CIS**

5   As discussed in Chapter 2, a modernized billing and customer service platform is

6   necessary to support implementation of regulatory requirements related to clean energy,

7   customer optionality and other State policies, as well as to meet evolving expectations

8   regarding the customer experience. Based upon analysis conducted by SDG&E and its

9   partners (*i.e*., EY and HCL),[6] there are three future CIS requirements that are consistently

10   identified as being necessary by Customer Services and IT operations within SDG&E and

11   that will be achieved with the SAP CR&B solution: (i) a customer-centric platform; (ii) a

12   system that is easily configured and requires minimal customization; and (iii) a system that

13   is designed specifically to process and present large amounts of customer data.

14   **A.   Customer-Centric Platform**

15   A "customer-centric" platform is one that tracks all data related to each customer on

16   an individual basis, as opposed to the "premise-based" approach of the legacy CIS, which

17   tracks data related to a particular premise. To continue to deliver an excellent customer

18   experience, SDG&E requires a customer-centric platform that focuses on tracking customer-

19   specific usage and other information rather than the current premise-based system and

20   supporting subsystems. Having a customer-centric system will enable SDG&E to have a

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[6]   HCL America, Inc ("HCL") is providing consulting services to SDG&E for the purpose of gathering and providing information to refine the legacy CIS replacement business case. HCL assessed SDG&E's meter to cash and supporting processes to help define the scope of the legacy CIS and subsystems replacement as well as contributed supporting material to the supporting Application.

1   360-degree view of its customers (*i.e.*, have all customer information visible in a

2   consolidated location) and to anticipate and provide the options that customers want. While

3   an Energy Service Specialist ("ESS") using the legacy CIS and related subsystems must

4   access multiple systems to assist the customer, which is an inefficient and time-consuming

5   process, the future state should be a unified CIS that readily displays all of the customer's

6   information in a logical and comprehensive manner, with predictive analytics that

7   proactively anticipate what the customer may be calling to discuss. Incorporating this type

8   of predictive analytics will allow SDG&E to respond to customers more quickly and even

9   identify options the customer may be unaware of when contacting SDG&E, resulting in a

10 more efficient process and overall better customer experience.

11   In addition, SDG&E requires a CIS solution that provides its employees with reliable

12 and usable analytics that present useful customer and business insights to drive operational

13 excellence resulting in: (i) better decision-making based on data, (ii) better relationships

14 with customers and business partners, (iii) better enablement of key initiatives, and (iv)

15 better sense of our risks and ability to react to changes in the regulatory environment. This

16 requires ad-hoc reporting capabilities that can be run in a matter of minutes, not days, as is

17 currently the case.

18   **B.   Configuration, Not Customization**

19   The future CIS should be readily and easily configurable and should not require

20 extensive IT customization. As discussed in Chapter 2, the energy industry is changing

21 rapidly, introducing new customer offerings at an unprecedented rate. SDG&E must have in

22 place a CIS that allows it to respond efficiently to new policies implemented by the

23 Commission and does not require extensive time and cost to keep up with regulatory

24 developments. The current state requires months, and in some cases years, of IT

1 customization just to introduce new billing components and rates. As examples, defaulting

2 SDG&E's small and medium business customers to new rates (CPP-D) required over two

3 years to implement (start to finish)[7] and the upcoming GRC Phase 2 implementation will

4 take 22 months (includes multiple releases – December 2017 and July 2018).[8] This is not a

5 sustainable model, which has been made abundantly clear over the past 28 months, as

6 discussed in Chapter 2.

7   CIS system changes must be intuitive, providing staff the ability to make the changes

8 without the need to know complex IT programming languages. CIS system changes should

9 be easily configurable by adding or changing several parameters on a screen. The

10 configuration must also be easily testable to ensure that it is implemented correctly. Finally,

11 the configuration must be designed so that real-time calculations can be simulated and

12 reviewed prior to implementation. This last item is essential for providing customers with a

13 real-time comparison of potential rate options to enable them to make informed decisions

14 and ultimately to save money on their energy bills.

15 **C.**   **CIS Designed for Interval Data**

16   As discussed in Chapter 2, SDG&E's legacy CIS was designed to handle one

17 manually-obtained monthly meter read per customer. Since 1997, the amount of data

18 required to bill customers has grown exponentially. This vast amount of data is required not

19 only for customer billing purposes, but also for online presentment to customers, such as

20 displaying customer's energy usage, monthly bill projections and rate comparisons. To

21 manage the current and growing amount of data, SDG&E needs a CIS that is on a platform

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[7]   *See* Advice Letter 3007-E/2532-G, p. 3 (submitted November 18, 2016 and awaiting
     Commission approval).

[8]   *See* A.15-04-012.

14

designed specifically to store and process a large amount of data. Processing of this data is

an essential function and must be accomplished in a timely manner.

V. CIS SELECTION AND SOURCING CONSIDERATIONS

The risk analysis and conclusions drawn in the EY study make clear that replacement

of SDG&E's legacy CIS and certain related subsystems is critical. As discussed below,

SDG&E proposes implementation of a new SAP-based CIS, with certain functionality

handled through a Software as a Service (*i.e.*, cloud-based) solution. SAP CR&B will serve

as the foundation for SDG&E's future billing and customer service model, allowing new

mandates and customer-driven changes to be implemented quickly using configurations that

do not require deep technical experience. SAP CR&B will allow SDG&E to keep pace with

changes in the technology, regulatory and customer services landscape, facilitating

improved service and operational efficiency.[9]

A. SAP CR&B CIS Solution

There are currently two proven major software vendors that offer CIS solutions for

utilities the size of SDG&E: SAP and Oracle. Although system capabilities between these

two vendor applications are similar, SDG&E has selected SAP CR&B as the foundation of

its next generation CIS solution over Oracle's Customer Care and Billing ("CC&B")

solution. SDG&E currently runs SAP's Enterprise Resource Planning ("ERP") software as

its core financials ledger. Looking at the CIS implementation experiences of other large

utilities that use SAP's ERP software (as shown below), SDG&E concluded that the lowest

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[9] The new CIS system also will be designed to lay a foundation for a future Southern California
Gas Company ("SoCalGas") CIS replacement program. While SoCalGas is not presently ready
to initiate replacement of its CIS, when the time comes for it to do so, it can use the same SAP
CR&B system with each utility's information separated by an SAP company code identifier.
SDG&E and SoCalGas use this same concept today with SAP's ERP system. In addition,
SoCalGas will benefit from SDG&E's expertise, lessons learned and best practices derived from
the SAP CR&B implementation.

risk approach to its CIS transformation was to select SAP CR&B – the SAP CIS product for utilities. As discussed in Chapter 6, SDG&E will also integrate other SAP and SAP vendor partner software solutions within the final CIS solution (see the description of "to-be" architecture in Chapter 6).

SDG&E's main drivers in selecting SAP CR&B include:

- SAP's market leadership has been captured in the June 2016 Magic Quadrant for Utilities Customer Information Systems.[10]

- SAP is a leader in large CIS implementations (see chart below). Its deep experience in this area serves to mitigate risk and to minimize the likelihood of disruptive transition issues.

#	Select Large SAP Global Utilities	Year Live	Number of Customers
1	EDF (ERDF), France	2011	30,000,000
2	ENEL, Italy	2007	30,000,000
3	TEPCO, Japan	2016	26,000,000
4	Centrica, United Kingdom	2016	18,000,000
5	PEA, Thailand	2009	15,000,000
6	Gaz de France	2007	11,000,000
7	E.ON, Germany	2003	10,000,000
8	RWE, Germany	2003	10,000,000
9	Gas Natural, Spain	2009	9,000,000
10	NeoEnergia, Brazil	2008	8,000,000
11	AES Electropaulo	2015	7,500,000
12	PPC, Greece	2015	7,400,000

Source: HCL and SAP (2016)

[10] *Magic Quadrant for Utilities Customer Information Systems*, Gartner, June 2016, p. 3. Gartner notes in connection with this testimony that it does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings or other designation. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose. All statements in this testimony attributable to Gartner represent SDG&E's interpretation of data, research opinion or viewpoints published as part of a syndicated subscription service by Gartner, Inc., and have not been reviewed by Gartner. Each Gartner publication speaks as of its original publication date (and not as of the date of this Application). The opinions expressed in Gartner publications are not representations of fact, and are subject to change without notice.

- SDG&E currently utilizes the SAP ERP application for core financial services; thus, selection of SAP CR&B will leverage the efficiencies in the integration between two SAP systems.

- SDG&E also currently utilizes SAP Business Objects (an application that allows users to view, sort and analyze business intelligence data) and is in the process of implementing SAP's Suite for HANA (high-performance analytic appliance). Thus, the selection of SAP CR&B leverages SDG&E's investment in these other SAP applications, allowing SDG&E to bundle services from a single vendor.

- Most large IOUs that have SAP ERP as a core financials ledger have selected SAP's CIS solution.

#	North American Utility	ERP	CIS	#	North American Utility	ERP	CIS
1	Pacific Gas & Electric	SAP	Oracle	14	BC Hydro	SAP	SAP
2	SEMPRA (US Only)	SAP	Custom	15	PSEG	SAP	SAP
3	Duke	Oracle	Custom	16	Southern Company	Oracle	Custom
4	Exelon (PHI, BGE)	Oracle	SAP, Oracle + Custom	17	Hydro Quebec	SAP	SAP
5	National Grid (US Only)	SAP	SAP*	18	CMS Energy	SAP	SAP
6	First Energy	SAP	SAP	19	NRG/Reliant	SAP	SAP
7	Centerpoint Energy	SAP	SAP + Custom	20	Con Edison	Oracle	Custom
8	Xcel Energy	SAP	Custom	21	DTE Energy	SAP	SAP*
9	AEP	Oracle	Custom	22	Atmos Energy	Oracle	SAP
10	Nextera Energy	SAP	SAP*	23	Entergy	Oracle	SAP
11	Southern California Edison	SAP	SAP Selected	24	Energy East (Iberdrola USA)	SAP	SAP + Custom
12	Direct Energy/Centrica	SAP	SAP + Custom	25	TXU Inc	Oracle	SAP
13	Dominion	SAP	Custom				

Source: HCL and SAP (2016)

- Another major California IOU, Southern California Edison Company ("SCE"), has also selected SAP as its future CIS solution.[11] The fact that two major California IOUs will have an SAP-based CIS solution will help to ensure that SAP's future CIS product features facilitate California's energy policy goals.

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[11] *See*, Southern California Edison 2018 General Rate Case, A.16-09-001, Information Technology (IT), Exh. SCE-04, Volume 3 – Customer Service Re-Platform, p. 14.

Also noted in the June 2016 Gartner report, *Magic Quadrant for Utilities Customer Information Systems*,[12] there exists only a handful of software vendors in the CIS market other than SAP and Oracle. To the best of SDG&E's knowledge, none of these vendors have provided CIS solutions to North American utilities of SDG&E's size. For that reason, they were viewed by SDG&E as involving greater risk and were not seriously considered by SDG&E. As discussed above, SAP is a market leader among CIS providers and that fact, plus the obvious synergies of selecting an SAP-based solution to interact with SDG&E's SAP ERP and other SAP applications, made SAP's CR&B the optimal choice to replace SDG&E's legacy CIS and related subsystems.

Program benefits from this overall proposed CIS solution include: (i) shift from premise-based system to customer-based system; (ii) assist SDG&E to connect with customers by providing a single, omni-channel, seamless customer experience across all such channels (*e.g.*, web, mobile, etc.); (iii) provide better information to improve customer marketing and sales; (iv) offer more flexible billing, payment and collections options; (v) improve ability to produce, consume, and use analytic insights; (vi) eliminate workarounds and allow for standardization to drive process efficiencies; and (vii) eliminate technology obsolescence risk. Chapter 5 outlines key examples of these program benefits.

B.   Software as a Service

As part of its analysis of potential CIS solutions, SDG&E has considered the feasibility of including features based on cloud technologies, also known as Software as a Service ("SaaS"). SaaS is a software distribution model in which a third-party provider hosts applications and makes them available to customers over the Internet. SaaS removes

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[12]   Magic Quadrant for Utilities Customer Information Systems, Gartner, June 2016, p. 3.

1 the need for organizations to install and run applications on their own computers or in their

2 own data centers. This eliminates the expense of hardware acquisition, provisioning and

3 maintenance, as well as software licensing (to be offset by subscription fees), installation

4 and support.

5   Cloud technology is now becoming increasingly prevalent in all industries. Indeed,

6 in a recent study, Navigant Research interviewed over 100 executives and found that over

7 three-fourths of them "are either using or are interested in using cloud-based or SaaS

8 solutions."[13] Where it is efficient and economical to do so, SDG&E is embracing this

9 industry trend and incorporating a cloud-based solution for specific functionalities.

10   While the core SAP CR&B software solution that provides bill processing, rate

11 development and financial functions will remain on premise at SDG&E's data center,

12 SDG&E is considering a cloud solution for the call center application and other software

13 solutions (*e.g.*, CRM and MyAccount), as discussed in more detail in Chapter 6. Under this

14 hybrid model, the core SAP CR&B solution will utilize SDG&E's existing on premise

15 infrastructure while fulfilling quickly changing and adapting customer expectations through

16 configuration (versus customization) of the core processes (*e.g.*, meter to cash). In addition,

17 customers can rely on an SaaS provider to automatically perform updates on cloud-based

18 solutions (*e.g.*, call center application), which reduces the burden on internal IT and business

19 staffs.   Having parts of the CIS solution in a cloud-based SaaS model enables SAP to

20 quickly send and implement new software changes, enhancements, and new features or

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[13] *See Bridging the Divide, Utilities and the Customer Capabilities Gap*, Navigant Research, 2Q 2016, p. 9, https://www.navigant.com/-/media/www/site/insights/energy/2016/navigant-researchopower-ce-capabilities-white-pape.pdf.

capabilities. This will ensure that the overall SAP CIS system is up-to-date and has the full-featured capabilities to provide the best customer experience.

The hybrid model also takes advantage of the SAP CR&B platform roadmap, which will provide new or improved functionality via future software releases (*e.g.*, improved analytics / data mining, enhanced user experience via role based user interactions, business process optimization, etc.), reducing the need for customization. This will eliminate some of the customization complexities outlined in Chapter 2 that resulted in the legacy CIS challenges in implementing changes in a timely and cost effective manner. Please refer to Chapter 6 for additional details regarding SaaS approaches under consideration by SDG&E.

C.   Solicitation of Vendor Partners

In addition to selecting the CIS software application, a new CIS implementation requires support from many vendor partners. SDG&E anticipates it will submit RFPs for the following work streams starting in the second half of 2017:

- **System Integrator ("SI")** – This is the largest work effort required to implement a new CIS. The SI will be contractually obligated to expertly deliver and implement the SAP CR&B solution and other subsystems. This includes defining the needed requirements, building the required integration between SAP CR&B and other systems (see the "to be" architecture discussion in Chapter 6), testing the integrated systems, and ensuring system stability.

- **Project Management Office ("PMO")** – The PMO establishes and maintains project management standards for the CIS replacement programs. This includes, but is not limited to, program governance, documentation adherence and control, and project tracking metrics and timelines. Although the SI can provide PMO

services, a potential conflict of interest is avoided by partnering with another external vendor as the PMO.

- **Organizational Change Management ("OCM")** – OCM, the process of ensuring successful adaptation to change within an organization, is crucial for a CIS implementation. This is especially true where the change impacts all areas of the organization, as is the case here (see discussion in Chapter 5). Recognizing that a new CIS will cause disruptions in established business processes and operations, OCM activities need to start right away to mitigate the severity of disruptions or obviate them altogether.

- **Quality Control ("QC") Oversight** – SDG&E plans to solicit a vendor partner to provide overall QC oversight (over internal CIS team members and external vendor partners). The QC vendor can provide an independent and unbiased view of all work product and quickly raise "red flags."

Other RFP solicitations such as staff augmentation will be considered once the CIS implementation project completes the pre-planning phase.

VI. PROPOSED IMPLEMENTATION METHODOLGY

SDG&E will follow its existing project life cycle phases (see Figure CWS-1 below) for the CIS replacement project. Within each phase, SDG&E will identify the key activities and deliverables required for the implementation of SAP's CR&B, SAP's CRM and a new MyAccount system. The purpose of the project life cycle phases is to help design the SAP CR&B implementation as efficiently as possible, aiming to optimize time, personnel, and other resources, and to ensure a high quality outcome.

1

Figure CWS-1
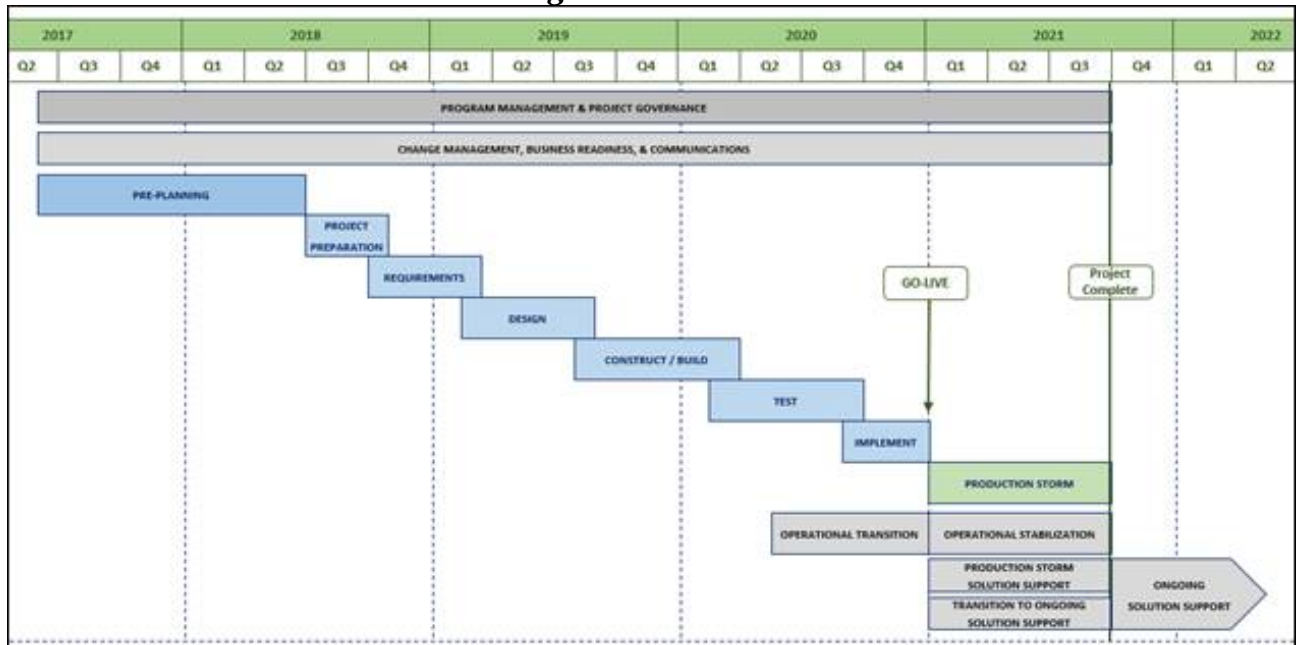
2
3
4   This phased implementation framework provides a proven and robust approach to

5   project management, OCM, solution management, application life-cycle management, and

6   other disciplines needed to implement SAP solutions. See Chapter 6 for a more detailed

7   discussion of each project phase including mapping each phase to the overall project

8   implementation schedule.

9   **VII.   TRANSITION PERIOD STRATEGY**

10   Under SDG&E's proposed implementation timeline, the new CIS would go live in

11   the first quarter of 2021. Thus, there will still be a period of approximately four years until

12   the first quarter of 2021 when SDG&E will need to concurrently maintain its existing legacy

13   CIS and related subsystems. During this time, SDG&E will need to continue to make

14   changes and updates to the existing legacy CIS system and related subsystems to implement

15   Commission decisions and new billing system requirements, such as the need for the

16   defaulting of residential customers to a TOU rate option.

1   As discussed in Chapter 2, SDG&E has historically leveraged the capacity of its

2   legacy CIS to the greatest extent possible and then used subsystems to provide functionality

3   that could not be achieved by the legacy CIS system. During this transition period, SDG&E

4   will continue to apply this approach in working to achieve overall compliance with new

5   requirements as well as to meet its customers' needs; however, SDG&E will also take into

6   account that these changes are temporary and that the new SAP CR&B is the long-term

7   solution and will eventually replace what is developed in the interim. Specifically, to ensure

8   a smooth transition from what is developed in the interim to the implementation of SAP

9   CR&B, any new requirements from approved Commission decisions will be configured in

10   both the interim solution and in SAP CR&B. While this will create some overlap, it will

11   help to ensure that there is a clean transition from the old to the new CIS and that

12   functionality is not lost when SAP CR&B is implemented.

13   Also during the transition period, to meet customer needs, SDG&E will need to

14   continue to provide a high level of support for its legacy CIS. This will include incremental

15   staffing requests in the critical business areas, such as Billing and corresponding staffing in

16   SDG&E's IT department. Once SAP CR&B is implemented and the legacy CIS is retired,

17   any incremental staffing will no longer be required. As such, SDG&E will correspondingly

18   lower its staffing levels and reflect these reductions as benefits that will be recognized as

19   part of SDG&E's next available GRC.

20   To reduce risk during the transition to the new CIS system (see Chapter 6), SDG&E

21   will request a 'freeze period' to its current legacy CIS approximately one year prior to the

22   SAP CR&B implementation date (*i.e.*, starting at the beginning of 2020). In other words,

23   SDG&E will request that any new structural rate changes or other initiatives be deferred for

1   a period of one year to permit transition off of the legacy CIS and related subsystems to the

2   new SAP CR&B system. This is necessary to avoid further complicating an already

3   complex undertaking.

4   **VIII.   IMPLEMENTATION RELATED RESOURCE CONSTRAINTS**

5   Like SDG&E, many other utilities in North America are facing concerns over the

6   ability of their CIS systems to keep up with a transforming marketplace that is creating new

7   strategic challenges and operational pressures. According to the 2015 TMG Consulting

8   Report, "A CIS Survey and Industry Perspective," nearly 58% of North American utilities

9   implemented their CIS systems over 10 years ago.[14] More than 54% of the approximately

10   80 utilities surveyed stated that they would require major modification or outright

11   replacement of their CIS systems to support current and future functionality.[15] Finally, 48%

12   of the group indicated that they expected to replace their CIS system within the next four

13   years,[16] confirming the industry sentiment that large scale changes and investments are

14   needed to deliver the capabilities required for the near future.

15   The utility industry has already begun and will continue to move in the direction of

16   replacing current CIS systems, as SDG&E plans to do. SDG&E must start its CIS

17   replacement program as soon as possible to ensure that the external resources necessary for

18   a successful transition, such as key vendors specializing in this space, are available and

19   engaged. The SI's typically leveraged by utilities for a project of this nature can undertake

20   only so many CIS implementations at once. If SDG&E is too far back in the queue, there is

21   a risk that implementation of its new CIS will be materially delayed and that the problems

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[14]   *See* Attachment C - TMG_A CIS Survey April 2015; p. 11.

[15]   *See* Attachment C - TMG_A CIS Survey April 2015; p. 12.

[16]   *See* Attachment C - TMG_A CIS Survey April 2015; p. 17.

currently being experienced with the legacy CIS system and related subsystems will become

worse. Accordingly, it is vital that SDG&E position itself in the pipeline so that it is able to

meet its goal of a first quarter 2021 implementation.

IX.   CONCLUSION

With the growing complexity of regulatory changes and the need to meet the

demands of its customers, SDG&E has determined that its outdated legacy CIS and related

subsystems must be replaced. Today's dynamic environment requires a CIS system that can

quickly implement system changes to meet mandated requirements and respond to the

evolving demands of customers. SDG&E has chosen SAP's CR&B CIS solution to replace

its legacy CIS and certain related subsystems, including CRM and MyAccount. The pre-

planning and requirements/design phases of the project will determine the final solution sets.

As the market leader among CIS providers, SAP offers a CIS solution that minimizes risk to

SDG&E ratepayers and provides beneficial synergies with SDG&E's existing SAP-based

applications (*e.g*., ERP). Given SDG&E's urgent need to move forward with the

replacement of its legacy CIS system and related subsystems, the Commission should

approve SDG&E's Application without delay.

This concludes my prepared direct testimony.

X. STATEMENT OF QUALIFICATIONS

My name is Charles (Charlie) Snyder. I am employed by San Diego Gas & Electric Company. My business address is 8330 Century Park Court, San Diego, California 92123.

I am currently a member of the Customer Information System replacement team. I began work at SDG&E in January 1996 as a member of the SORT system implementation team. I have held positions of increasing responsibility in the Customer Services organization including managing the Smart Meter Program where my primary responsibilities included overall program management, customer communications, vendor management, deployment, regulatory affairs and financial management. Most recently I was the manager for the Customer Services Program Management Office responsible for implementing key Customer Services system improvements and the introduction of new solutions. I have a Bachelors of Business Administration from National University in San Diego, CA.

I have previously testified before the California Public Utilities Commission.

ATTACHMENT A

Gap Description	Priority	CISCO	CRM	My Act	MDM	SORT	Capability Impacted	Enablement Option
Provide a consistent view of the customer that allows understanding of all customer interactions maintained in other systems across all channels, including campaigns, offerings, program enrollment, rates, and subscription	Critical	x	x	x			Develop Insight	Replace
Need to improve the speed of deploying system changes.	Critical	x	x	x	x	x	IT	Replace
Increase system stability and ensure 24 hour availability by improving interfaces and possibly revisiting system architecture	Critical			x			IT	Both
Provide more frequent integrations with relevant systems (CIS, CRM, Aclara)	Critical			x			Serve Customer	Both
Need to have a customer-centric view in addition to a premise-centric view, with the ability to give customers unique identifiers, roles, preferences, etc.	Critical	x	x	x	x		Develop Insight	Both
Provide guided scripts, job aids, pop-ups, etc. for a user to follow different paths based on the process flow	Critical	x	x				Manage Customer Accounts	Both
Provide the ability to modernize technology to keep up with business changes.	Critical					x	IT	Replace
Need to expand customer communication channels such as text and chat to engage customers the way they expect	Critical	x	x	x			Serve Customer	Replace
Provide overall improvement of billing options, billing rebates, rebills, and billing management	Critical	x					Manage Revenue Collection	Replace
Improve the ability to test rates (test bill) before deploying	Critical	x					IT	Both
Provide the automation of electric and gas rate processing and integration to CIS (auto-rate upload)	Critical	x					Serve Customer	Both
Need improved integration between CIS and financial system	Critical	x					Manage Revenue Collection	Replace
Provide increased configurability of credit processes including credit treatment and aggregation of credit history across multiple accounts.	Critical	x					Manage Revenue Collection	Replace
Provide the ability to conduct mass changes across accounts, customer records, or premises. For instance Zip/Postal code changes.	Critical	x					Manage Customer Accounts	Both
Provide a view of inventory details from 3rd party vendors (adaptive street lights, VGI)	Mandatory	x					Manage Products and Services	Both
Provide the ability to accommodate Interval Pricing Rates.	Mandatory	x					Manage Revenue Collection	Replace

Gap Description	Priority	CISCO	CRM	My Act	MDM	SORT	Capability Impacted	Enablement Option
Overall changes to TOU periods are expected to be more frequent. This includes potential changes during the course of the year depending upon what the grid demands are.	Mandatory	x					Manage Revenue Collection	Replace
More commodity and UDC rate options are expected, resulting in more possible rate combinations.	Mandatory	x					Manage Revenue Collection	Replace
NEM 2.0 will introduce new calculations for customers going on NEM after the existing cap has been hit (2016). SDG&E should expect that there will be multiple versions of the calculation and pricing models depending upon the customer class and type, (e.g. schools may receive different rates than hospitals, etc.)	Mandatory	x					Manage Revenue Collection	Replace
CCA could allow a city or county within SDG&E territory to procure their own power for their residents. The CCA would then pass their charges to SDG&E for billing the customers, very similar to UDC billing under the existing Direct Access model.	Mandatory	x					Manage Revenue Collection	Replace
New rules may be required to address non-by passable charges and switching exemptions.	Mandatory	x					Manage Revenue Collection	Replace
Adaptive street light controls are currently being installed on street lights. Third parties are installing these devices to track energy usage for street lights. This would require a platform for SDG&E to receive and process the interval data from multiple third parties.	Mandatory	x					Manage Revenue Collection	Replace
Provide ability to support rate structures which require interval data (up to 15 minutes)	Mandatory				x		Manage Revenue Collection	Both
Allocate a percentage of generation at different intervals to multiple customers	Mandatory	x					Manage Revenue Collection	Both
Provide the ability for a real-time feedback mechanism for the work performed; ability to have Uber type of model - rate the work performed	Nice to Have	x	X				Serve Customer	Replace
Provide the ability to influence vendors on product direction	Nice to Have	x	x	x	x	x	IT	Both
Provide an improved ability to create and validate premises	Nice to have	x					Manage Customer Accounts	Neither

Gap Description	Priority	CISCO	CRM	My Act	MDM	SORT	Capability Impacted	Enablement Option
Provide the ability to mass create and update meters and equipment	Nice to Have	x					Serve Customer	Both
Provide the ability to support billing for the lease or rental of equipment on the customer's account.	Nice to have	x					Manage Revenue Collection	Both
Provide the ability for in-house calculations for load profiles in MDM	Nice to Have	x			x		Develop Insight	Both
Provide the ability to store and display a list of services and fees applicable for ESPs.	Nice to Have	x					Manage Customer Accounts	Both
Provide the ability for mobilization - Display technology on mobile phone, laptop, etc.	Nice to Have	x					Manage Customer Accounts	Replace
Provide the ability to perform wild card searches	Nice to Have	x					Serve Customer	Replace
Provide the ability for users to work with multiple sessions simultaneously.	Nice to Have	x					IT	Replace
Provide the ability to enter freeform messages on a bill	Nice to Have	x					Manage Revenue Collection	Both
Provide the ability to easily navigate and view parent and child accounts with balances at the child level	Nice to Have	x					Serve Customer	Replace
Provide an accurate segmentation modeling tool	Required	x					Manage Marketing	Both
Need to improve overall CRM system performance	Required		x				Serve Customer	Both
Need to improve real-time analytical capabilities for commission reporting	Required	x	x				Develop Insight	Replace
Provide the ability for improved test environment, hardware, and server environment.	Required			x			IT	Replace
Provide the ability for better Customer Experience Monitoring (UEM) in order to determine what customers are doing in the system such as analytics around logins, bill payments, etc.	Required			x			Develop Insight	Both
My Account needs the ability to support C&I Customers	Required			x			Develop Customer Strategy	Both
Provide more self-service options for customers to process orders, book appointments, and change schedules in real-time	Required	x		x			Serve Customer	Replace
Provide additional capabilities around system and operational analytics and reports. Need to have the ability to publish the data to analytics without performance degradation.	Required				x		Serve Customer	Both
Provide more flexible appointment windows	Required	x				x	Manage Customer Service Requests	Replace

Gap Description	Priority	CISCO	CRM	My Act	MDM	SORT	Capability Impacted	Enablement Option
Provide more robust functionality so customers have real-time information regarding their order including appointment changes, notifications, and other product of service offerings. Have the flexibility to notify through various channels based on customer preference.	Required	x	X	X		x	Manage Customer Service Requests	Replace
Provide better integration with CIS and other 3rd party systems that will allow to capture more data such as GPS locations to enable accurate determination of where workforce and inventory is, information related to customer such as appliances / equipment (type, model, age) at customer facilities for potential upselling / fixing	Required	x				x	Manage Customer Service Requests	Both
Provide the ability for technicians to obtain critical data elements in real time to equip the workforce with the knowledge and awareness to better serve the customers. (Examples are detailed information related to premise/street, fire department details, GPS locations, customer order history, technical information on other products and services that can be offered).	Required	x				x	Manage Customer Service Requests	Replace
Provide the ability for customers to receive more detailed equipment information.	Required	X	X	X		X	Develop Insight	Both
Provide the ability for less complex disaster recovery implementation	Required				x		IT	Neither
Provide the ability for improved data retention, purge mechanisms, and database partitioning	Required				x		IT	Neither
Need enhanced capabilities in MDMS such that MDMS sends information to CIS that is more usable and lower volume.	Required	x			x		Serve Customer	Both
Provide the ability to have a single system to perform initial VEE.	Required				x		Manage Revenue Collection	Both
Need supported systematic approach to cascade CISCO updates to MDMS and back to CISCO. Need supported approach to allow users to move select readings from MDMS to CISCO.	Required	x			x		IT	Both
Provide the ability for logging and monitoring of issues. System should be smart to tell the problem.	Required				x		IT	Both
User friendly MDM GUI that will provide the ability to find and process information at a quicker pace	Required				x		Serve Customer	Both

Gap Description	Priority	CISCO	CRM	My Act	MDM	SORT	Capability Impacted	Enablement Option
Provide an architecture that allows a lot of separation to change or manipulate existing functionality selectively.	Required				x		IT	Both
Provide easily navigated and user friendly account screen for all account types with more consistent view of account	Required	x	x	x			Serve Customer	Both
Provide the ability to serve different customer segments with strategies, recommendations, rate analysis etc. that are specific and cost effective for each segment	Required	x	x				Manage Marketing	Both
Provide the ability to standardize naming conventions so that they will always be spelled the same, for e.g. grocery chains, etc.	Required	x					Serve Customer	Replace
Need to increase integration of self-service applications such as IVR and self service web sites to guide customers to useful or necessary information	Required	x					Serve Customer	Both
Provide the ability to integrate with GIS mapping and common web based API.	Required					x	Manage Customer Service Requests	Both
Provide better reporting/analytical capabilities for compliance meter testing and meter failure analysis	Required	x					Serve Customer	Both
Provide the flexibility to add new attributes and new devices types	Required	x					IT	Both
Allow for the creation of bill review tools and data analysis. Ensure bill accuracy, by automatically identifying and resolving issues before sending out billing statements	Required	x					Manage Revenue Collection	Both
Need to Improve the CIS billing screens to better map to customer screens	Required	x					Serve Customer	Both
Provide the ability for internal business users to configure new self-service rate analysis of bill	Required	x					Serve Customer	Both
Provide the ability to bill customers based upon special circumstances such as special negotiated rates, co-generation, etc.	Required	x					Serve Customer	Both
Provide the ability to offer and allow for customer rate customization (batch rate comparison)	Required	x					Develop Insight	Both
Provide automation of consumption data in more frequent intervals and improved integration and validation with MDMS.	Required	x			x		Manage Revenue Collection	Enhance
Provide a configurable mechanism for handling usage for billing Electric Vehicles, solar, etc.	Required	x			x		Manage Revenue Collection	Replace

Gap Description	Priority	CISCO	CRM	My Act	MDM	SORT	Capability Impacted	Enablement Option
Provide the ability to support multiple read schedules	Required	x			x		Manage Revenue Collection	Neither
Provide increased automation and real-time updates around account payments, payment validation, account termination, refunds, etc.	Required	x					Manage Revenue Collection	Both
Provide increased payment and billing flexibility related to: Payment transfers, Sundry billings, Electronic payment acceptance, New form of payments (Credit card or gift card)	Required	x					Manage Revenue Collection	Both
For active account collections, a fully developed credit treatment path is required which will include customer noticing and a disconnection path	Required	x					Manage Revenue Collection	Replace
Provide a more holistic and organized view of customers and collection history. Allow the ability to segment and analyze different customer segments. Need automated approach to view ageing report	Required	x					Manage Revenue Collection	Both
Provide the ability to process electronically returned checks automatically as well as an on-line view or report of checks that have been returned based upon user configurable criteria such as date, amount, customer class.	Required	x					Manage Revenue Collection	Both
Provide the ability to have an internal credit scoring mechanism to track good/bad customers.	Required	x					Manage Revenue Collection	Replace
Provide the ability change and update credit scores based on various external sources	Required	x					Manage Revenue Collection	Both
Provide the ability for more integrated environment with EDI transactions and invoice/payment processing in a single system, avoiding any reconciliation issues/efforts	Required	x					Manage Revenue Collection	Both
Provide a framework for receiving/sending adds/drops/charges for customers using alternative providers	Required	x					Manage Customer Accounts	Both
Provide improvements around the change of supplier process with more automation (except where manual inputs are required). It includes proactive communication in order to capture why customer are switching.	Required	x					Manage Customer Accounts	Both
Provide the ability to scale to support more customers/suppliers	Required	x					Manage Customer Accounts	Both

Gap Description	Priority	CISCO	CRM	My Act	MDM	SORT	Capability Impacted	Enablement Option
Provide the ability to incorporate feedback from 3rd party vendors about customer activity	Required	x	x				Develop Insight	Replace
Provide the ability to create and track leads for customers (e.g. eligibility verification) that is automated and reports are generated via batch mode as opposed to requesting for reports	Required	x	x				Manage Sales	Replace
Provide ability to maintain manufacturer warranty specifications and products/equipment returns within the system	Required	x					Manage Customer Accounts	Replace
Provide a centralized and secure source for all reporting data	Required	x	x				IT	Both
Provide accessibility to real time data for reports, dashboards, etc.	Required	x	x				IT	Both
Minimize dependence on IT and provide easily configurable dashboards	Required	x	x				Serve Customer	Both
Utilize popular and evolving technology, such as cloud computing and mobilization to allow for integration of emerging technology and energy offerings (solar, wind, electric vehicle, etc.)	Required	x					Manage Revenue Collection	Replace
Need flexibility to configure and change billing, rates, credit, workflow management, and financial scenarios according to customer and regulatory changes	Required	x					Manage Revenue Collection	Replace
Provide the ability for all correspondence to be in one location similar to e-mail. Allow for attachments and search capabilities.	Required	x	x				Serve Customer	Both
Provide the ability for flexible features within a user-defined environment, allowing the authorized user administrator to easily configure the base application. Each of the business groups may want to have their own administrator capabilities controlled through appropriate access restrictions.	Required	x					IT	Replace
Provide the ability for a platform which provides connectivity, scalability, and portability within and across vendor products (must be platform independent).	Required	x					IT	Replace
Some systems that rely on CRM (e.g. My Account) have a Tier 2 disaster recovery rating. This mismatch will cause problems in the event of a disaster.	Required		x	x			IT	Both

Gap Description	Priority	CISCO	CRM	My Act	MDM	SORT	Capability Impacted	Enablement Option
Provide the ability to assign work to individual users (PWQs)	Required	x					Manage Customer Service Requests	Both
Provide the ability to process payment arrangements with little to no manual intervention	Required	x					Manage Revenue Collection	Both
Provide a single and up to date repository for all contact data that can be used to effectively communicate with customers	Required		x				Manage Customer Accounts	Both
Provide customers ability to easily update contact preferences across multiple subscriptions so they can receive timely and consistent messages without receiving duplicates	Required		x				Manage Customer Accounts	Both
Provide the ability for real time billing	Required	x					Manage Revenue Collection	Replace
Provide a responsive and effective segmentation modeling tool	Required		x				Develop Insight	Both
Provide the ability to see customer's credit history when they move premises.	Required	x					Develop Insight	Both
Provides the ability to have user defined fields at the major data entities such as customer, premise, account, etc. (real estate challenges)	Required	x					Manage Customer Accounts	Both
Provide the ability for maintenance windows with 24/7 availability; non-disruptive environment.	Required	x					IT	Both
Provide the ability to have a robust role-based authorization and authentication mechanism (both internal and external).	Required	x					IT	Both
Provide ability to calculate deposit amounts on customer when they transfer service	Required	x					Manage Customer Accounts	Both
Provide the ability to set up a new service quickly without manual data verification	Required	x					Manage Customer Service Requests	Replace
Provide the ability to print service orders quickly without manual entry	Required	x					Manage Customer Service Requests	Both
Provide the ability to integrate CISCO with CLICK	Required	x					IT	Both

ATTACHMENT B

	Impact						
	7	6	5	4	3	2	1
	Catastrophic	Severe	Extensive	Major	Moderate	Minor	Negligible
Health, Safety, & Environmental: Endanger workplace or public safety; impact to surrounding environment; Long-term: 10+ years Medium-term: 3-10 years Short-term: 1-3 years	Fatalities: Many fatalities and life threatening injuries to the public or employees. Immediate, severe, and irreversible impacts to environment	Fatalities: Few fatalities and life threatening injuries to the public or employees. Severe and long-term impacts to environment	Permanent/Serious Injuries or Illnesses: Many serious injuries or illnesses to the public or employees. Significant and medium-term impacts to environment	Permanent/Serious Injuries or Illnesses: Few serious injuries or illnesses to the public or employees. Significant and short-term impacts to environment	Minor Injuries or Illnesses: Minor injuries or illnesses to many public members or employees. Moderate and short-term impacts to environment	Minor Injuries or Illnesses: Minor injuries or illnesses to few public members or employees. Environmental impact is immediately correctable or contained within small area	No injury or illness or up to an un-reported negligible injury. No environmental impact
Operational and Reliability: Disruption to company operations that could impact customers; may be measured in quantity of impacted customers, critical locations, loss of energy flows, and/or duration	> 1 MM customers affected; or impacts an entire metropolitan area, including critical customers; or disruption of service of more than a year due to permanent loss to a facility	>100 K customers affected; or impacts multiple critical locations and customers; substantial disruption of service greater than 1 months	> 50 K customers affected; or impacts multiple critical locations or customers; substantial disruption of service greater than 10 days	> 10 K customers affected; impacts single critical location or customer; disruption of service greater than 1 day	> 1 K customers affected; impacts single critical location or customer; disruption of service for 1 day	> 100 customers affected; impacts small area with no disruption to critical location or customer; disruption of service less than 1 day	< 100 customers affected; impacts small localized area with no disruption to critical location/customer; disruption of service less than 3 hours
Regulatory, Legal, & Compliance: Diminishing relationship and increased scrutiny by regulators or government agencies; ongoing media coverage forces outreach to policy makers/regulators; increasing stakeholder revolt or objections leading to increased oversight; loss of license, exclusivity, or monopoly	Actions resulting in closure, split, sale of the company, or criminal conviction	Cease and desist orders are delivered by regulators; Critical assets and facilities are forced by regulators to be shut down; revoking license, market-based rate authority, or monopoly	Governmental, regulatory investigation (including criminal), and enforcement actions lasting longer than one year; violations that result in fines/penalties and large non-financial sanctions	Violations that result in fines or penalties, or a regulator enforces non-financial sanctions, or significant new and updated regulations are enacted as a result of an event	Violations that result in fines or penalties	Self-reported or regulator identified violations with no fines or penalties	No impact to administrative impact only
Financial : Potential financial loss, including disallowance, legal actions or fines, replacement energy, remediation, damage to 3rd party properties, etc.	Loss > $3 billion Ability to raise capital significantly impacted; or decrease in stock price greater than 25%; or potential insolvency	$1 B - $3 B Ability to raise capital is challenged; or decrease in stock price greater than 15%	$100 MM - $1 B Ability to raise capital becoming more difficult; or decrease in stock price greater than 5%	$10 MM - $100 MM	$1 MM - $10 MM	$50 K - $1 MM	< $50 K

	Frequency/Likelihood						
	7	6	5	4	3	2	1
	Common	Regular	Frequent	Occasional	Infrequent	Rare	Remote
Frequency of an occurrence: How often does the risk event occur	> 10 times per year	1-10 times per year	Once every 1-3 years	Once every 3-10 years	Once every 10-30 years	Once every 30-100 years	Once every 100+ years

ATTACHMENT C

A CIS Survey and Industry Perspective

April 29, 2015

Presented by: TMG Consulting
Connecting Utilities with
IT Solutions

About TMG

TMG Consulting is a 100% utility-focused, **unbiased** IT advisory firm, that offers utilities end-to-end support for all of their enterprise IT investments, including:

TMG's Methodologies: Proprietary, Unbiased & Proven

- Business Process Design
- Studies & Workshops
- Strategic Planning
- Product Evaluation & Selection
- Quality Assurance
- Project Management
- Scope Management
- Resource Management
- Timeline Management
- Budget Management
- Communication Management
- Change Management
- Training
- Testing

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TMG History

Founded in 1992 in response to an industry-wide need for independence in critical information technology decisions

July 2014, TMG Consulting Merges with Langham Consulting

October 2014 TMG launches a refreshed corporate identity.

1992   **2009**   **2014**   **2015**

TMG was acquired by Five Point Partners in February 2009

When Five Point was acquired by Ernst & Young in May 2014, TMG separated from Five Point to continue its long tradition of providing independent advisory services to utilities, energy companies and local government entities

Through the years, TMG has been engaged by approximately 250 clients, to assist with more than 350 projects.

Current & Recent Projects
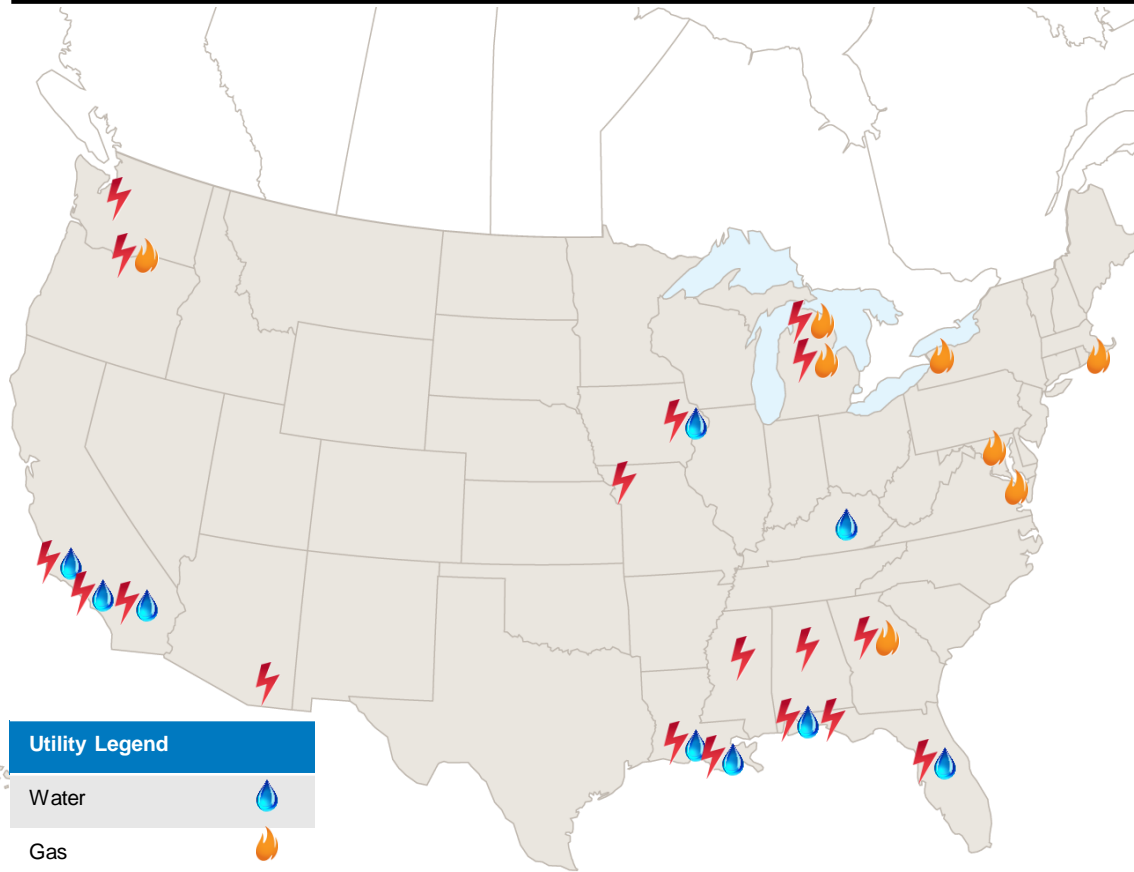
Utility Legend

Water	💧
Gas	🔥
Electric	⚡
Electric & Gas	⚡🔥
Electric & Water	⚡💧

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Company	Project Type	# of Customers
Arizona Public Service	Selection	1,200,000
Burbank Water & Power	Test Mgmt, Oversight and Mgd Svc	65,000
ConEd	Planning	3,800,000
KCPL	Planning & Selection	800,000
LADWP	Project Planning & Audit Support	1,500,000
Lafayette Utilities	Project Oversight & Integration	75,000
Louisville	Planning, Selection & Oversight	300,000
Madison Gas & Electric	Application Planning	200,000
Muscatine	Selection, Oversight & Test Mgmt	22,000
National Fuel	Planning, Selection & Oversight	750,000
New Orleans	Selection, Test Mgt, BPR, Oversight	120,000
OCU	Project Oversight	190,000
PGE	Meter to Cash Market Study	833,000
Piedmont Natural Gas	App Planning	1,000,000
Riviera	Planning, BPR, Selection & Oversight	69,000
Seattle	Business Case & Project Oversight	450,000
Southern Company	Planning & Business Case	4,300,000
US Gas & Electric	Project Oversight	165,000
Utility of Long Beach	Selection	225,000
Washington Gas	Planning and Selection	1,100,000
We Energies	Planning	2,300,000

Your Presenters

Greg Galluzzi, Executive Vice President

- CIS expert
- Experience working on over 200 energy service and utility industry projects at over 100 client sites
- Over 30 years of utility / energy service industry and IT project experience, and has participated in the majority of TMG's 300-plus projects
- comprehensive knowledge of IT and solution procurement, analysis, design, QA and installation

Bart Thielbar, COO

- Expert in the challenges facing the energy service and utility industry:
- Led several successful system implementations and conversions
- Well versed in the challenges and opportunities inherent to information technology initiatives
- Published author and frequent speaker on issues related to energy service and utility automation
- Holds his Certified Information Systems Auditor (CISA) designation from the Information Systems Audit and Control Association (ISACA)
- Former utility CIO

Two Segments to our Presentation

- **Industry Perspective and Survey of ~80 Utilities**
- **Project-Based Data from 28 CIS Initiatives**

External Forces Changing the Industry

Energy Policy Act 2005
- Supply side incentives to lower greenhouse gases
- Incentives for demand response, time of use rates, net metering, etc.

Energy Independence & Security Act of 2007
- Incentives for green power production
- Incentives for energy efficiency programs

American Recovery & Reinvestment Act of 2009
- Commonly referred to as "Smart Grid Grants"
- Jump started achievement of vision contemplated in EPA of 2005 and EISA of 2007

State Regulation/ Initiatives
- Enabling customer participation in energy supply/net metering
- Enabling Natural Gas Expansion/Fracking

Technical Advancements
- Move from analog to digital
- Emergence of advanced analytics

Changing Customer Expectations
- Multi-channel, multi-device, anytime/anywhere communication
- Environmentally aware and, in some instances, participate in energy production

Squeezing Customer Service Organizations and Exposing Weaknesses In Legacy CIS

Impacts of these Chances

- Nearly every utility recognizes that these changes greatly impact CIS.

- With that said, utility actions have been somewhat interesting to observe.

- Some aggressively pursue modernization effort, others keep deferring and some are inching more closely.

- For those who don't work with it every day, changing CIS, either through modification or replacement, can be a scary undertaking.

- The right answer is, of course, always unique to each utility.

Replace

Modify

Defer

Punt

Why is CIS so Important?

- Foundational technologies enable operational and customer technologies.
- Without robust foundational technologies in place, functionality needs to be developed to mimic core needs at operational and customer level, which results in application portfolio complexity.
- Things like security and analytics cross all domains.

Voice of the Customers

Age of the CIS in the Industry
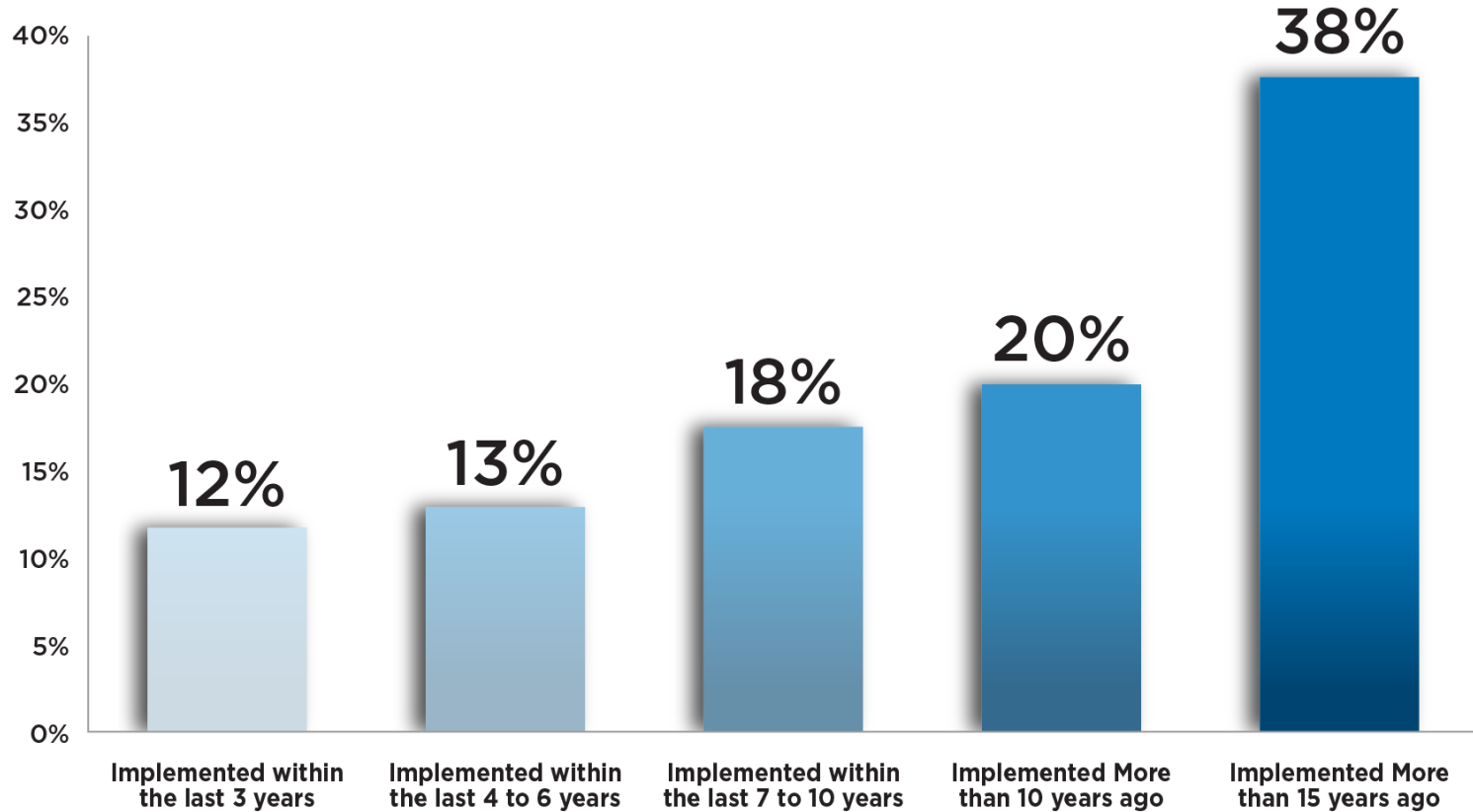
Ability to Support Current & Future Functionality
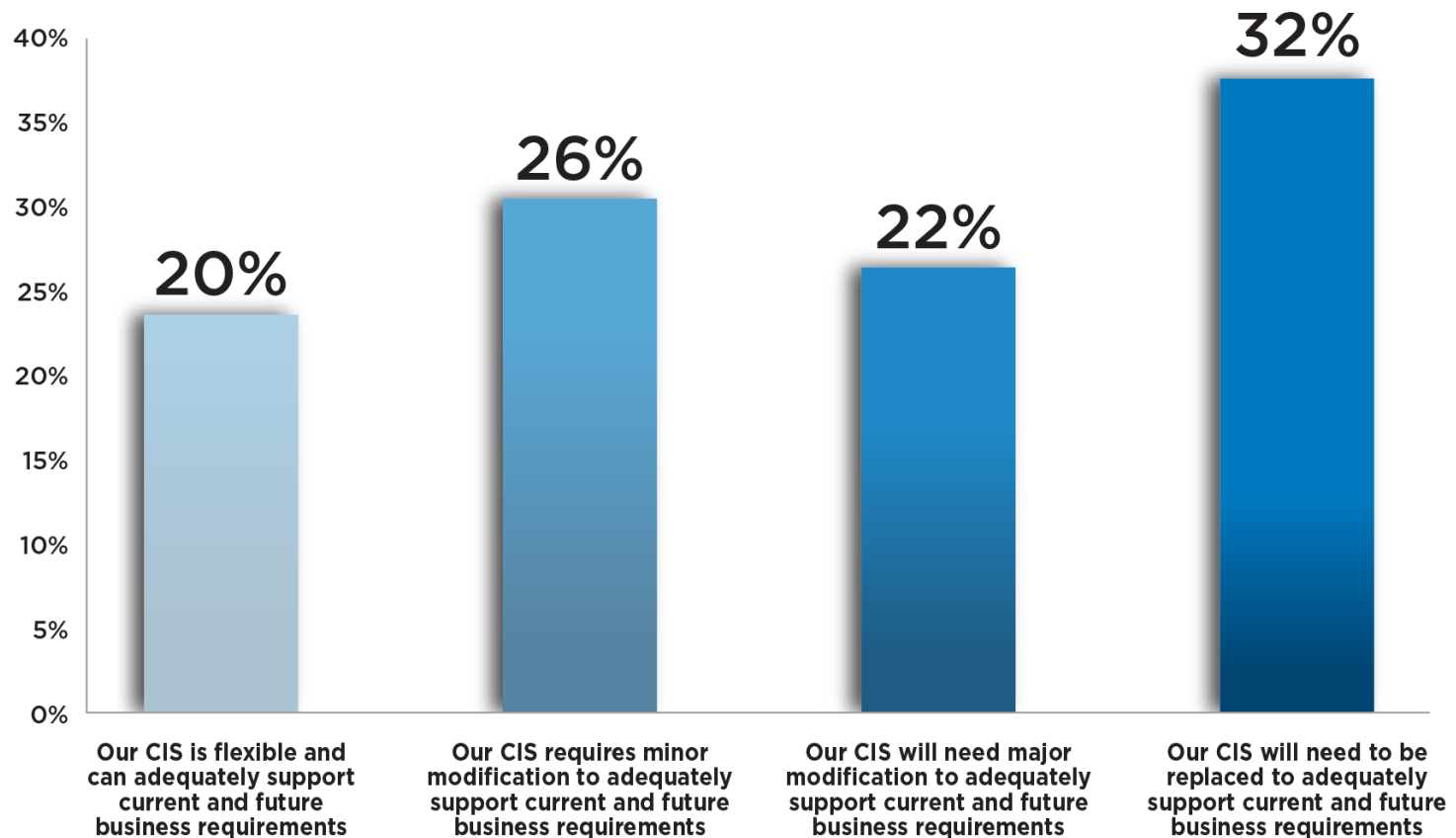
A whopping 54% indicate either major modification or outright replacement will be needed to support current and future functionality.

Satisfaction with Aspects of CIS
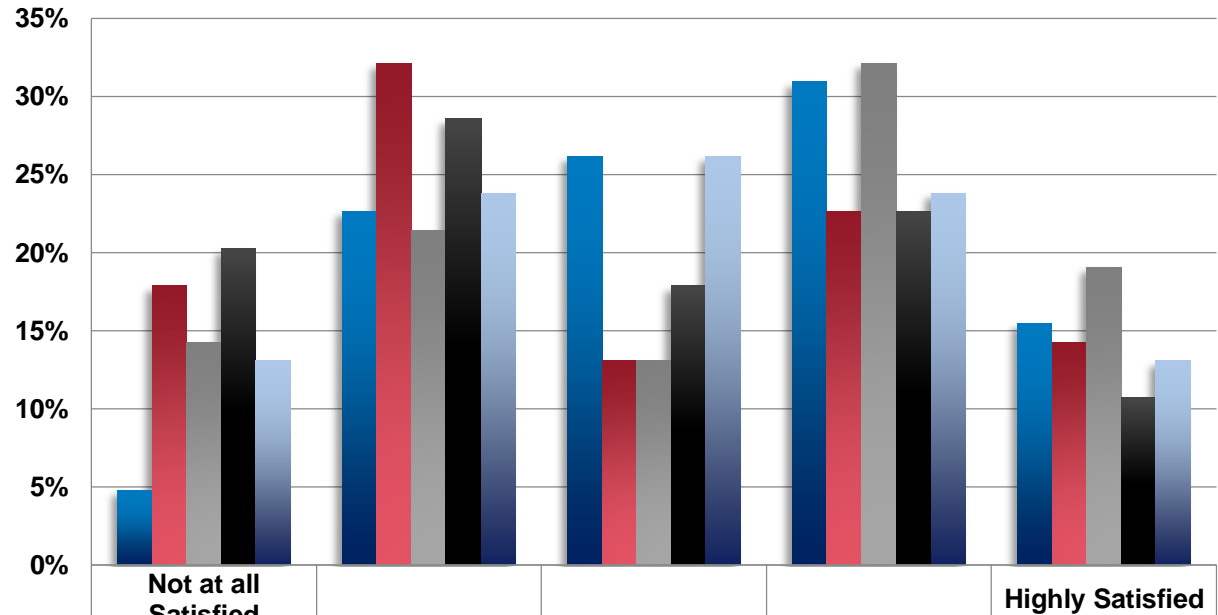
	Not at all Satisfied				Highly Satisfied
■ Cost to Maintain and Support	5%	23%	26%	31%	15%
■ Ability to Modify to Support Changing Business Requirements	18%	32%	13%	23%	14%
■ Ability to Support Growth	14%	21%	13%	32%	19%
■ Ease of Integration with Other Applications and Processes	20%	29%	18%	23%	11%
■ Availability of Qualified Businesss and Technical Resources to Support	13%	24%	26%	24%	13%

If Utilities Could Change

14% Core Functionality

28% Ease of Modification

16% Core Technology

17% Cost to Support

25% Ease of Integration with Other Systems
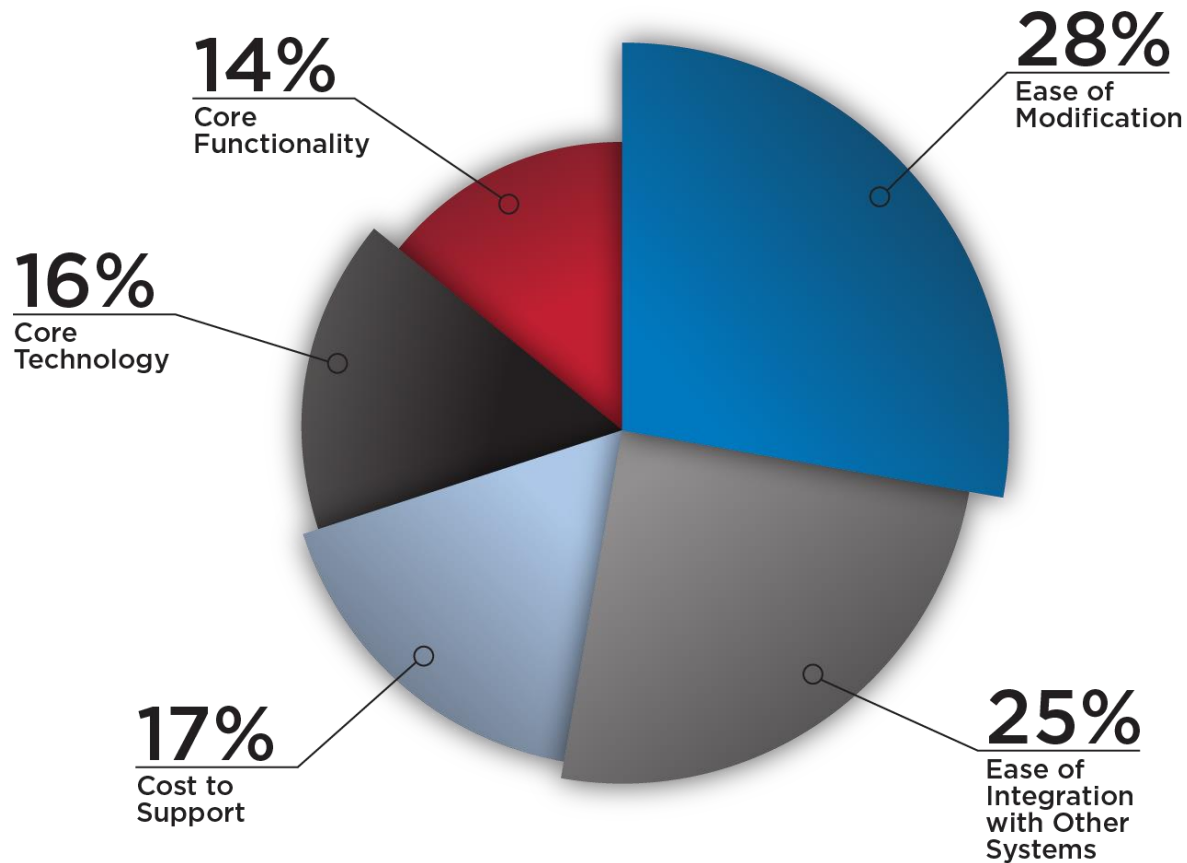
Ease of Modification and Ease of Integration are areas of significant concern with legacy CIS.

Weakest Where Needed Most

Commercial customers often account for approximately 60% of a utility's revenue, yet CIS is most deficient when serving them.
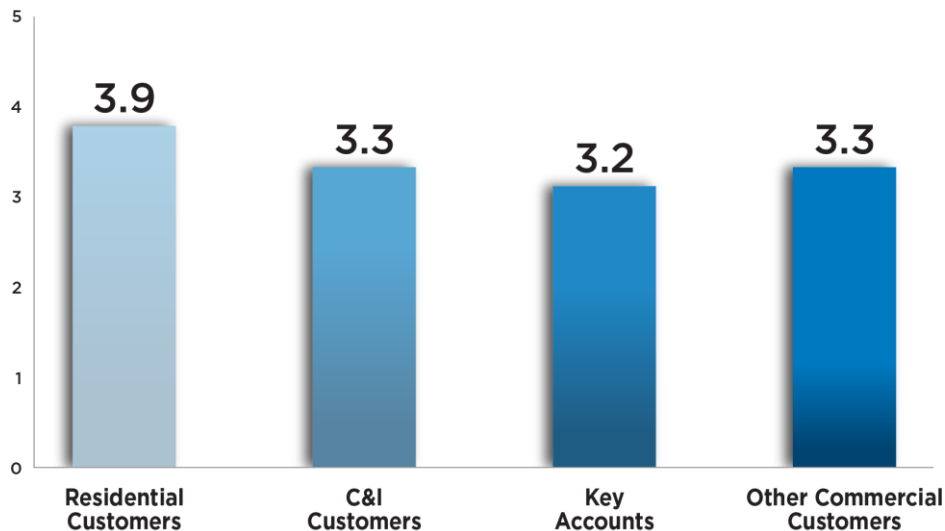
Comments from respondents:

"Very few self service functions are available for business users. Most require IT assistance."

"Legacy system performs core functions, but lacks CRM."

"Covers most of the bases with routine residential accounts, but not so good with business, multi-location, property managers, etc."

"Without our custom front-end and customer portal applications, we would not be nearly as effective in servicing our customers."

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Satisfaction with CIS Software Provider

Highly Satisfied 18%

32%

31%

14%

Not at all Satisfied 5%
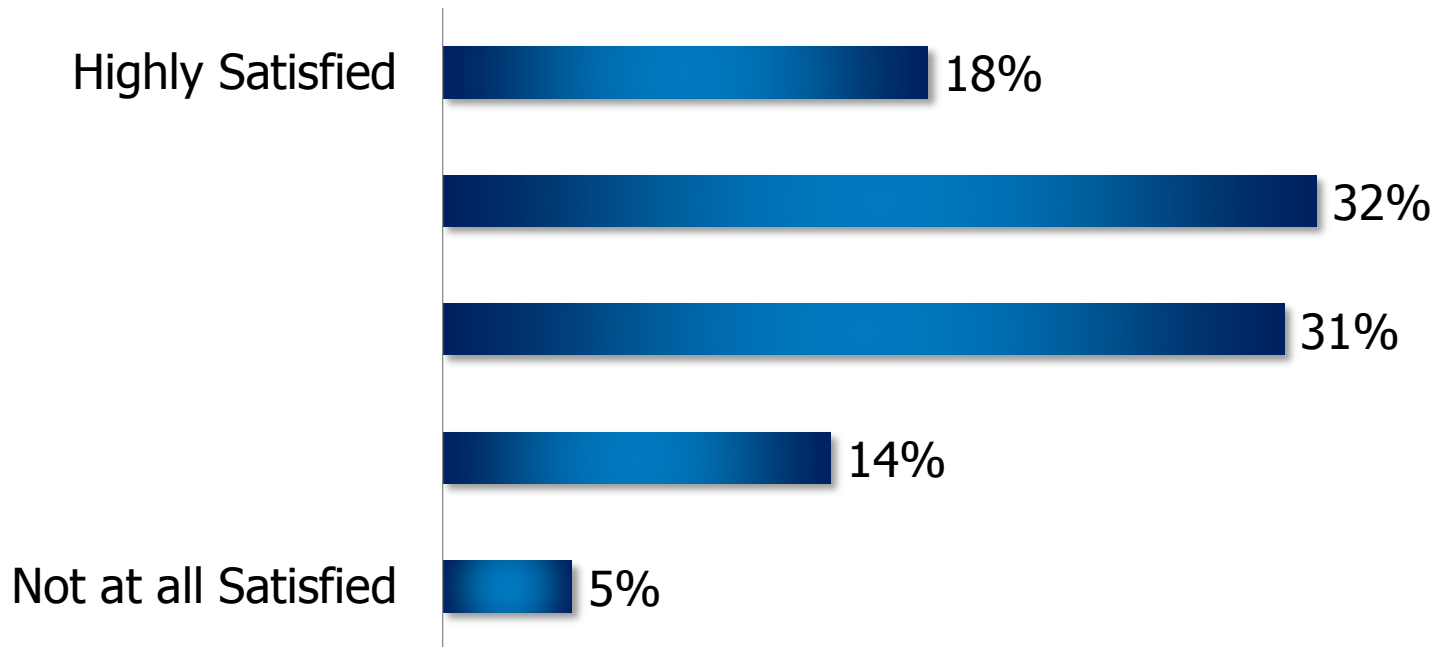
Frustrations mentioned above are not being pinned on software providers.

My Take? Everyone knows the world is changing and that products of yesteryear were not designed for todays challenges.

Future Changes

We anticipate replacing in the next 7 or more years — 12%

We anticipate replacing in the next 5-6 years — 10%

We anticipate replacing in the next 3-4 years — 17%

We anticipate replacing in the next 1-2 years — 31%

We don't anticipate replacing in the foreseeable future — 30%
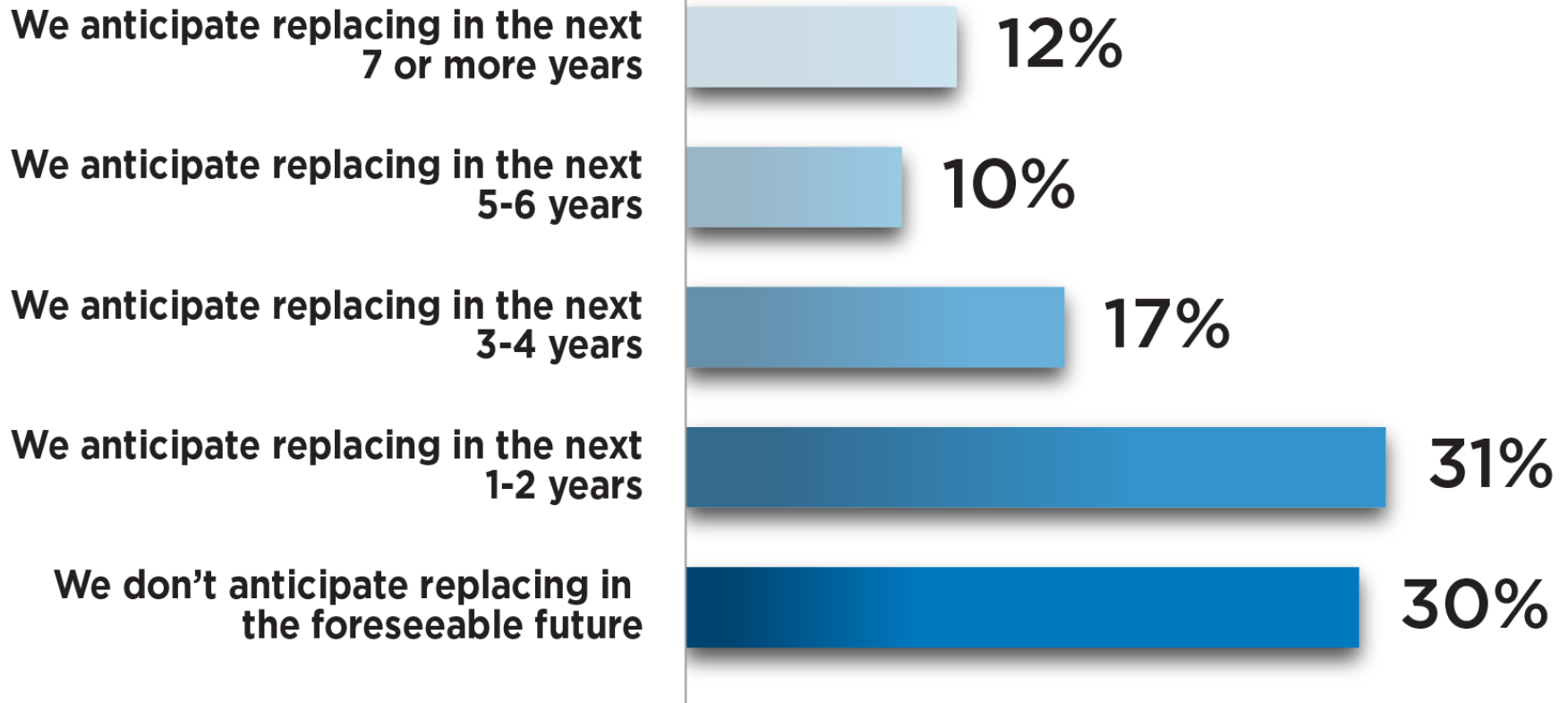
48% of utilities anticipate replacing within the next 4 years.

Replacement Activity and Data

Analysis of 28 Recent CIS Projects

- Today's presentation will focus on 28 recent CIS projects:

Customers	Services Provided		Work Phase
8,100,000	Electric, Gas	⚡🔥	Planning
7,000,000	Electric, Gas	⚡🔥	Selection
6,500,000	Electric, Gas	⚡🔥	Planning
4,400,000	Electric, Gas	⚡🔥	Planning
4,000,000	Electric, Gas	⚡🔥	Planning
2,200,000	Electric, Gas	⚡🔥	Planning
1,500,000	Electric, Gas	⚡🔥	Installation
1,500,000	Electric, Water	⚡💧	Post Installation
1,400,000	Gas	🔥	Planning
1,300,000	Electric	⚡	Selection

Analysis of 28 Recent CIS Projects, *continued*

Customers	Services Provided		Work Phase
1,200,000	Electric, Gas	⚡🔥	Post Installation
1,100,000	Gas	🔥	Installation
1,000,000	Electric, Gas	⚡🔥	Post Installation
1,000,000	Gas	🔥	Planning
850,000	Electric	⚡	Selection
750,000	Gas	🔥	Installation
650,000	Electric, Gas	⚡🔥	Installation
650,000	Electric, Water, Wastewater, Solid Waste	⚡💧🗑️	Installation
650,000	Electric, Gas	⚡🔥	Planning
600,000	Gas	🔥	Post Installation

Analysis of 28 Recent CIS Projects, *continued*

| Customers	Services Provided	Work Phase
500,000	Electric ⚡	Post Installation
450,000	Electric, Water ⚡💧	Post Installation
300,000	Water, Wastewater 💧🗑	Selection
300,000	Electric, Gas ⚡🔥	Planning
245,000	Electric, Gas, Water, ⚡🔥💧🗑 Wastewater, Solid Waste	Post Installation
140,000	Electric ⚡	Post Installation
100,000	Water, Wastewater, Drainage 💧🗑	Post Installation
82,000	Electric, Water, Wastewater, Solid Waste ⚡💧🗑	Post Installation

Profile of These 28 Utilities

- These utilities service a combined count of 48 million customers (last years survey involved 35 million customers)

14%
Municipal Water
(last year 14%)

68% Investor
(last year 67%)

11% Public Power
(last year 5%)

7% Cooperative
(last year 14%)
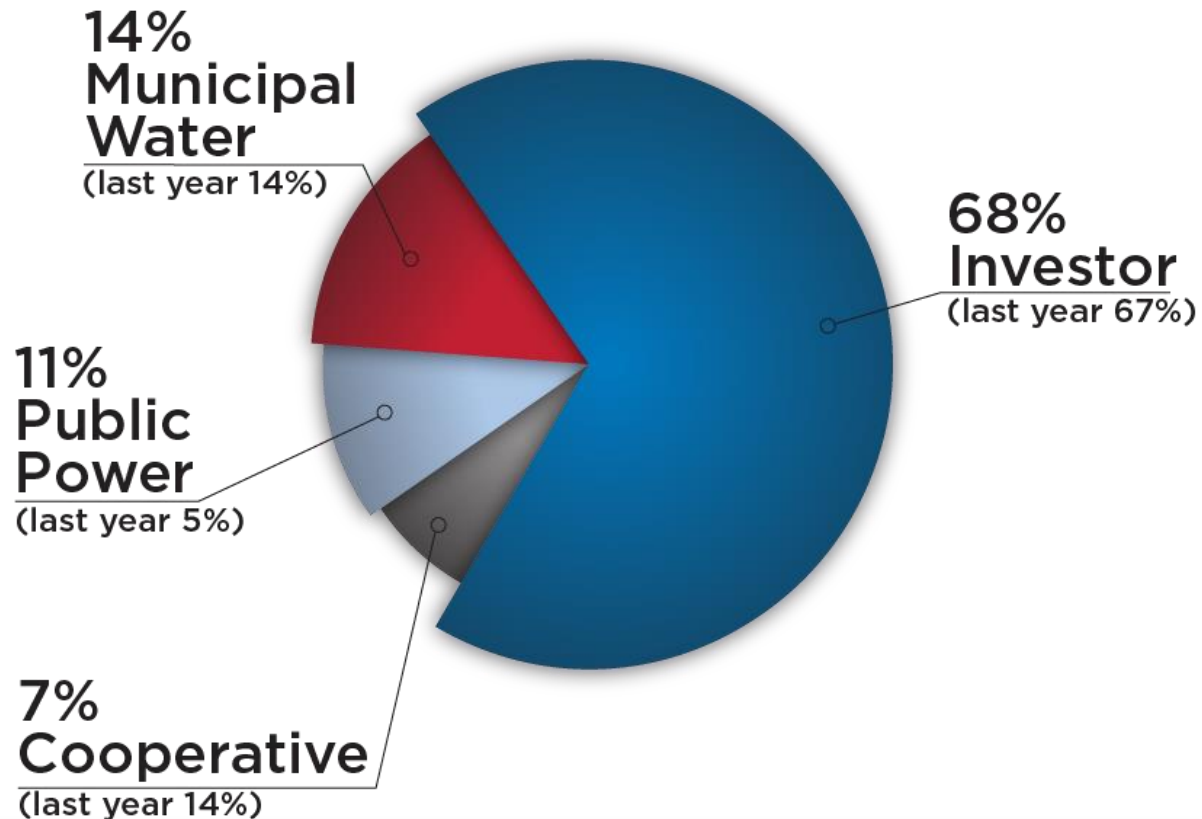
Significant activity from IOUs continues, slight increase in public power and cooperatives. About the same level for municipal water.
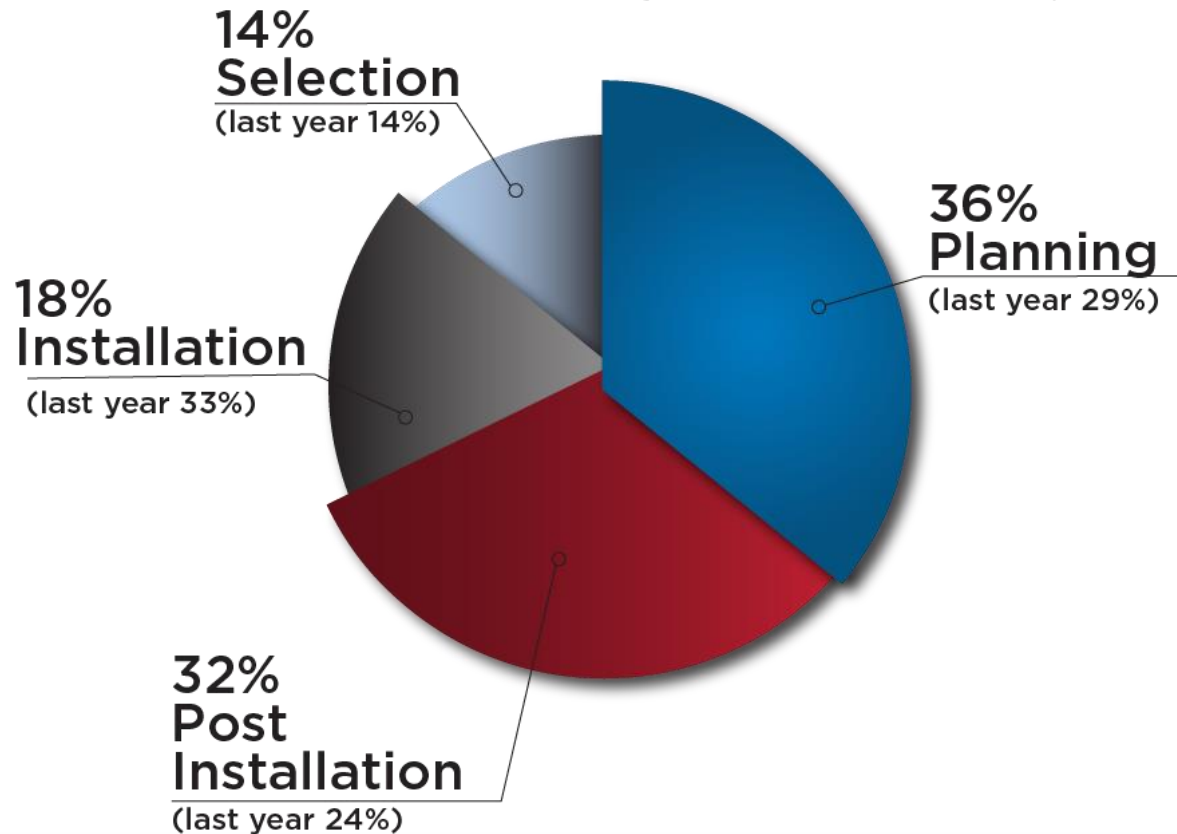
Profile of These 28 Utilities

- These utilities provide 57 utility services (33 last year) to their customers including electric, natural gas, water, wastewater, solid waste and drainage.

20%
Water
Multiple
(last year 44%)

40%
Combined
E&G
(last year 43%)

40%
Single
E or G
(last year 13%)
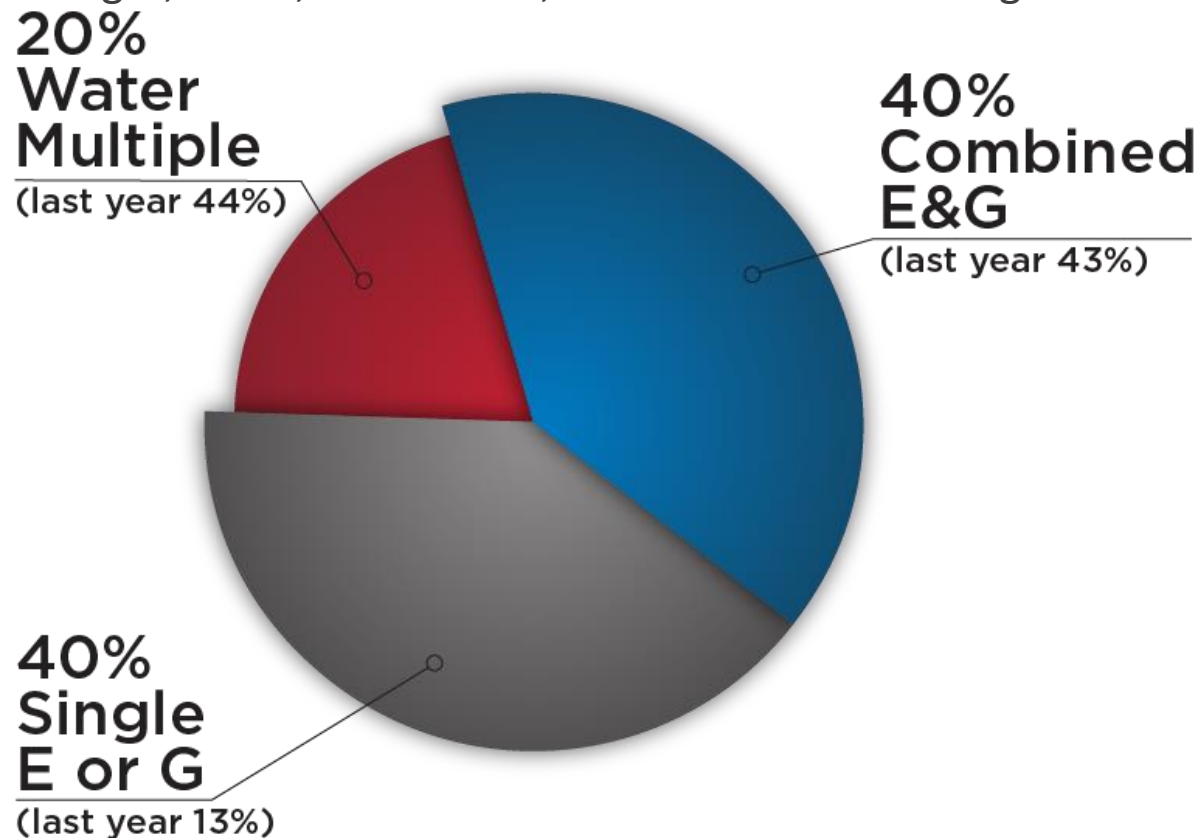
Participation by water utilities continues to fall significantly while standalone electric or gas utilities has grown. Combined electric and gas utilities stayed about the same as last year.

Profile of These 28 Utilities

- 50% of these utilities are in a planning or a selection phase of work. The other 50% are doing installation or post installation work.


14%
Selection
(last year 14%)

36%
Planning
(last year 29%)

18%
Installation
(last year 33%)

32%
Post Installation
(last year 24%)

A number of utilities have engaged in front-end planning and selection projects, while many continue to install solutions.
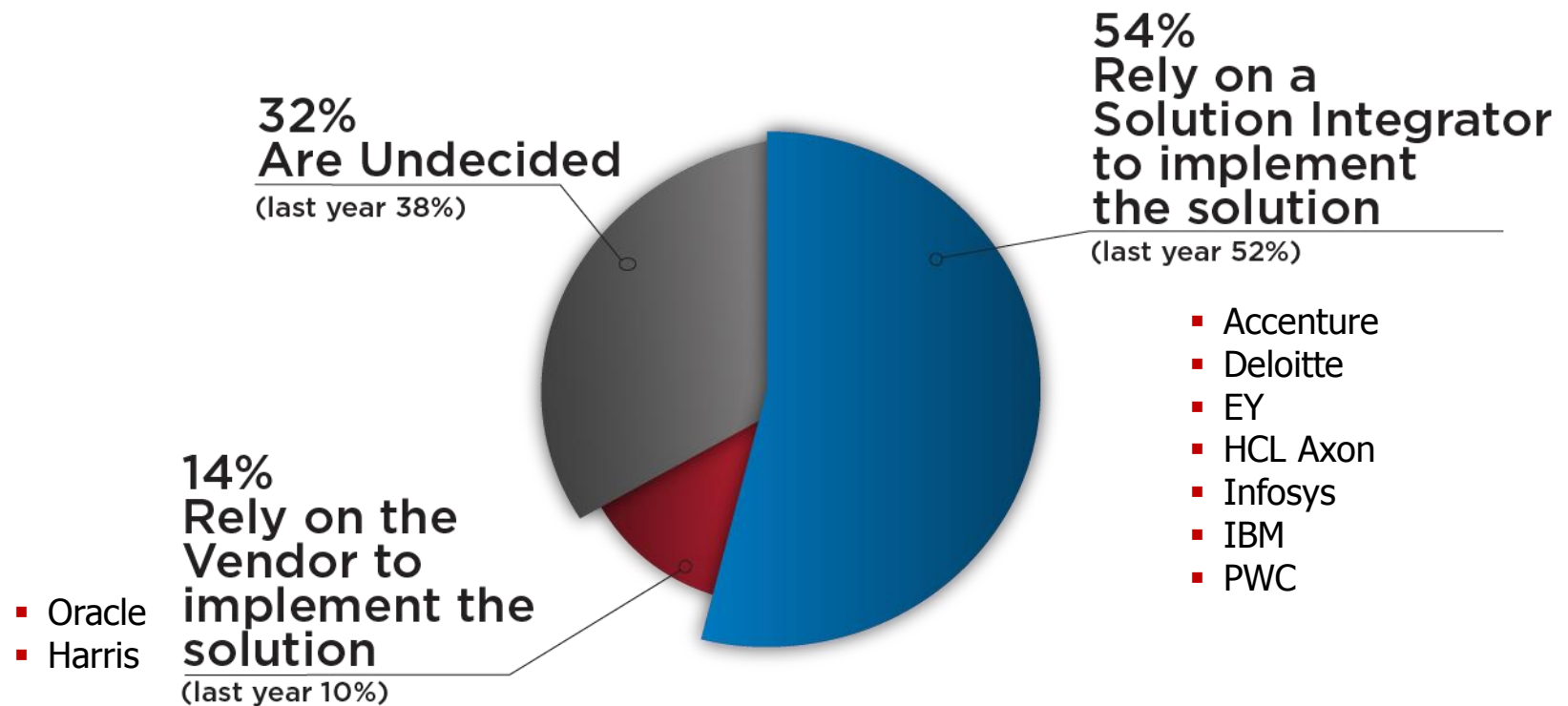
Profile of These 28 Utilities

● These utilities are operating the following CIS solutions:

38%
Legacy
(last year 33%)

67%
Oracle
(last year 43%)

5%
Harris
(last year 5%)

24%
SAP
(last year 19%)
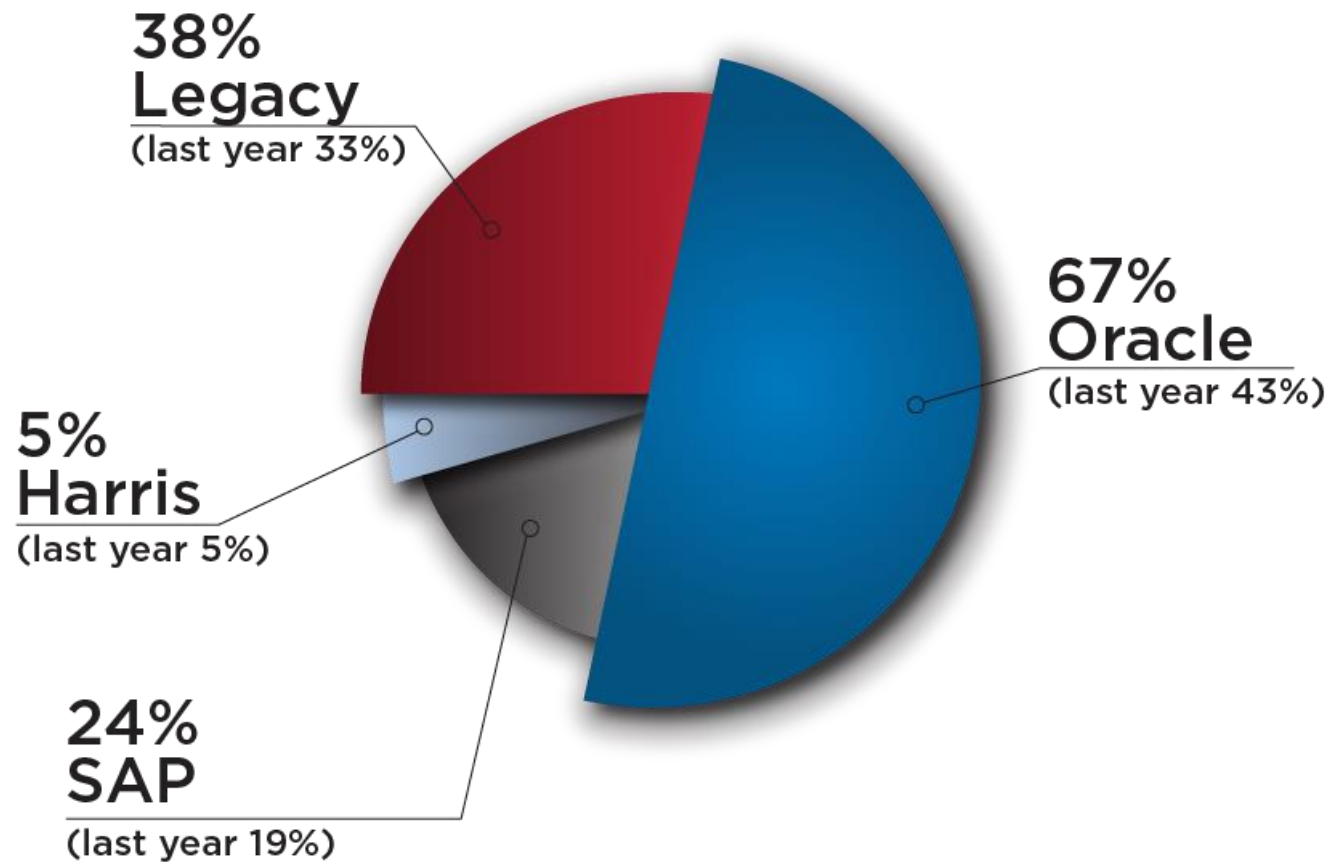
The leading products continue to be offered by Oracle and SAP

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Profile of These 28 Utilities

- 14% of the utilities are relying on the vendor to implement the solution while 54% are using the services of a solution integrator.

**32%
Are Undecided**
(last year 38%)

**54%
Rely on a
Solution Integrator
to implement
the solution**
(last year 52%)

- Accenture
- Deloitte
- EY
- HCL Axon
- Infosys
- IBM
- PWC

**14%
Rely on the
Vendor to
implement the
solution**
(last year 10%)

- Oracle
- Harris

In this survey utilities serving a customer base of over 100,000 (last year 140,000) tend to use a solution integrator.

Profile of These 28 Utilities

- 75% of the utilities are operating the CIS within an internal data center, while 25% are operating in a hosted environment.

25% Operate the CIS within a hosted environment
(last year 19%)
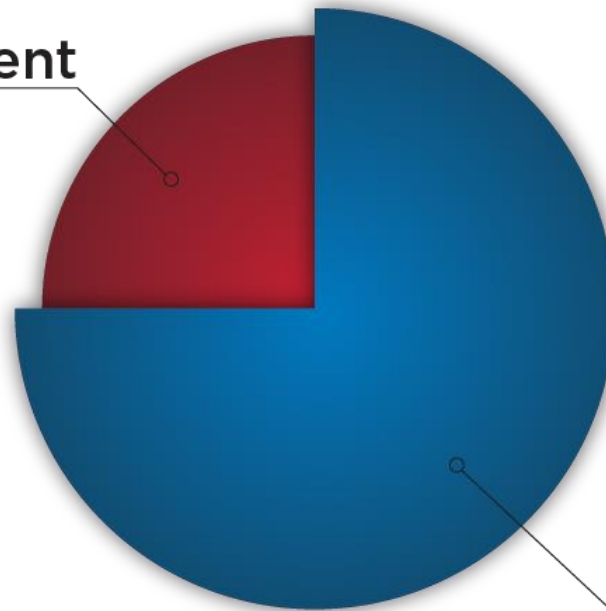
75% Operate the CIS within an internal data center
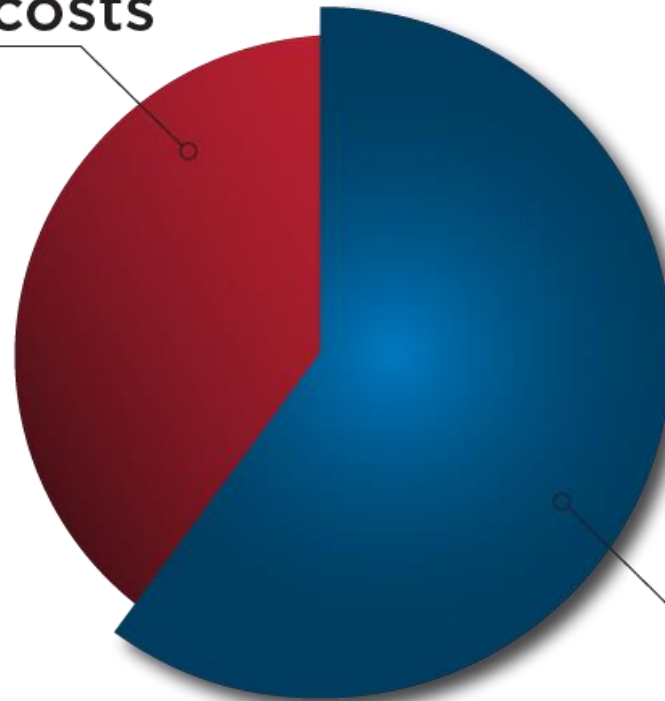(last year 81%)

This survey indicates a continuing trend toward operating within a hosted environment however, the majority operate within an internal data center.

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CIS Project Data of these 28 Utilities

- These 28 utilities spent an average of $62.00 per customer on a new CIS solution (last year $65.00 per customer).

$22 per customer
for utility costs
(last year $20)

$40 per customer
for vendor costs
(last year $45)

CIS Project Data for these 28 Utilities

🔴 The vendor expenditures are segmented into two categories, first installation services, and second license fee. The installation services average $36.25 per customer. The license fee averaged $3.75 per customer.

$3.75
per customer
for the CIS license
fee
(last year $4.00)

$36.25
per customer
for vendor hardware
and installation
(last year $41.00)
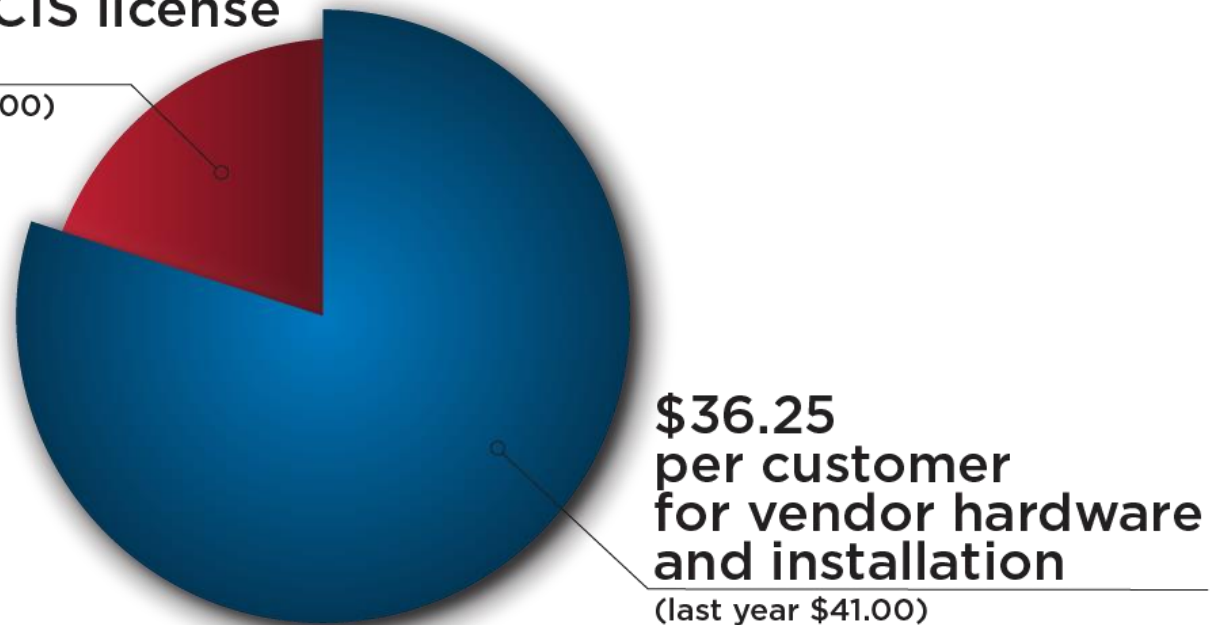
The introduction of larger utilities into the survey resulted in a lower software license fee and installation services.

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CIS Project Data for these 28 Utilities

- The combined utilities had an average planned go-live timeframe of 26 months. Installation timeframes are slightly lower than last years survey which averaged 28 months.

7%
Planned for a 10
to 17 mo. installation
(last year 10%)

41%
Planned for a
30+ month installation
(last year 38%)

52%
Planned for a 21
to 29 mo installation
(last year 52%)

0%
Planned for a
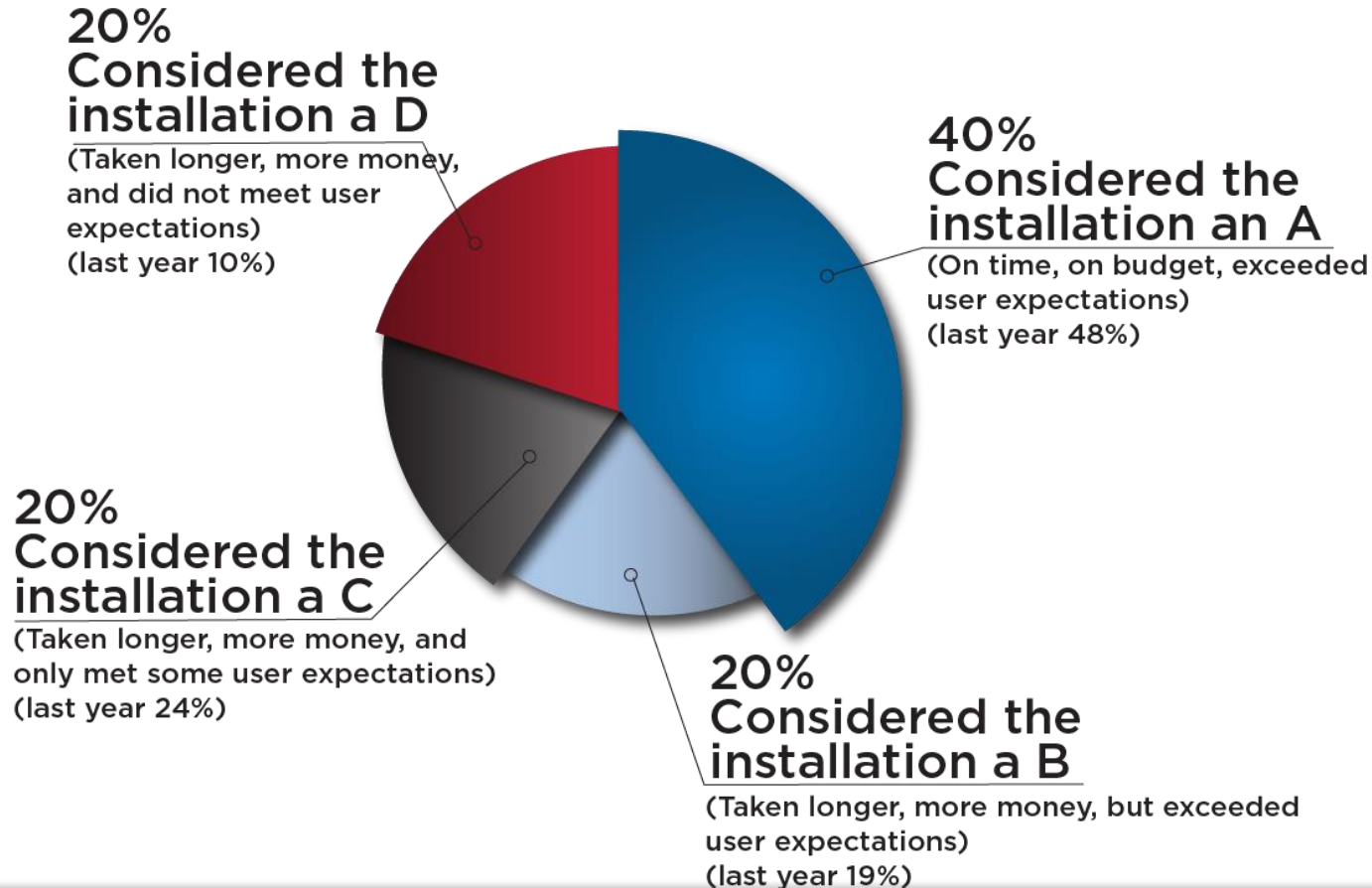**18 to 20 month installation**
(last year 0%)
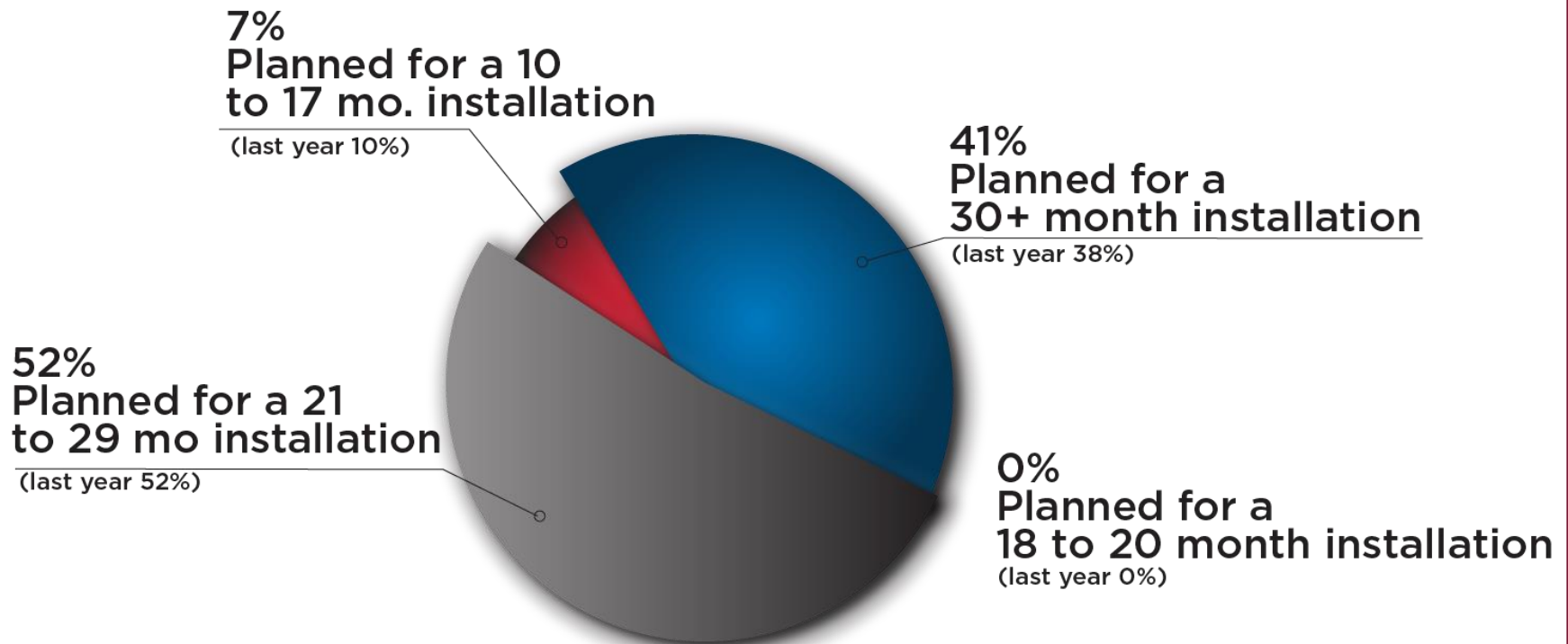
71% of the utilities followed a big bang approach.

The installation of multiple systems and phases increased the timeframe.

30

CIS Project Data for these 28 Utilities

🔴 Most implementations are considered successful.

20%
Considered the installation a D
(Taken longer, more money, and did not meet user expectations)
(last year 10%)

40%
Considered the installation an A
(On time, on budget, exceeded user expectations)
(last year 48%)

20%
Considered the installation a C
(Taken longer, more money, and only met some user expectations)
(last year 24%)

20%
Considered the installation a B
(Taken longer, more money, but exceeded user expectations)
(last year 19%)

At this time 60% of the projects are on track for a successful implementation. This metric measures where a utility is within the process, e.g. planning, procurement, implementation, and post implementation.

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TMG's Pricing Guidelines

- The following represents TMG's general pricing guidelines for the installation of a new CIS product solution.

Pricing Category – Per Customer	Min	Max
Vendor Base Installation Costs include: hardware, software, services, expenses and contingency. Note: this is per metered service.	$20	$30
Utility Installation Costs include: payroll, benefits, marketing, project supplies, project room, training room, temporary services, etc.	$10	$30
Solution Integrator Costs include: additional services (e.g. PMO, BPA) to implement the base CIS product and/or extended CIS products.	$15	$40
Extended CIS Product Costs include: costs associated with software components that extend the capability of the base CIS e.g. bill print, EBPP, BI, CRM.	$10	$20
Total Per Customer Price	**$55**	**$120**

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Thank You for Participating!