A Transition Check Point: Utility CIS Risk Migration Continues

By Bart Thielbar and Christopher Perdue
Contributors: Greg Galluzzi and Lisa Hartley

(This report is an extract from the full report published by Five Point.)
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Utilities realize that keeping their customer information system (CIS) responsive to regulatory and business needs is a challenging endeavor, especially in the context of today’s operating environment. For some utilities, this may mean modifying their existing CIS to achieve additional functionality, for others it may mean the purchase of a componentized solution that addresses specific functionality. For still others, it may mean replacing their system entirely in order to achieve not only today’s requirements, but to accommodate whatever the future may require.

As utilities deliberate on the optimum investment option for their CIS, and in many cases for their other key enterprise systems, they must consider the state of the economy, evolving energy policy and the proliferation of new technologies.

The CIS of both today and the future must be flexible and adaptive to evolving business needs. A general lack of flexibility in many existing CIS stems from older and nearly obsolete technology platforms that were designed and deployed many years before the needs of today’s utilities were understood or even conceived. While these legacy systems have served the industry well for many years, utilities are finding that they are particularly deficient when it comes to integrating with other applications and being able to easily extract data from them for the purposes of web-portals, mobility extensions, business intelligence (BI) and more sophisticated financial reporting associated with billing and credit and collections.

The impacts of the integration, data extraction, business process and aging workforce challenges to legacy CIS has resulted in a recognition by many utilities that their existing CIS cannot be made to support their anticipated business requirements without replacement or modification. This desire for flexibility is causing a discernible uptick in interest to pursue CIS remediation or replacement initiatives. This is likely to result in a slow, but steady stream of CIS packaged software sales and implementation activity over the next several years.

A number of utilities are now facing the decision to fully replace a CIS or remediate it with a bolt-on strategy. This obviously is not an easy decision. CIS replacements have a reputation for being costly, frustrating and exceeding implementation budgets and schedules, only to be followed by a difficult transition period. Fortunately, over the last decade, the dynamic has improved significantly. CIS products have become highly configurable and easier to implement in a manner consistent with a utility’s specific needs. The implementation and go-live processes are more proven, mitigating schedule overruns and the awkwardness of transitioning to a new system.

Recent research that we have conducted reveals a number of interesting CIS implementation trends. We find that utilities are not highly enamored with their
Utilities realize that keeping their CIS responsive to regulatory and business needs is a challenging endeavor, especially for those who utilize legacy systems that are often multiple decades old. Only 12 percent of the utilities in our latest survey were highly satisfied with their current CIS, with utilities especially frustrated by how their current CIS integrates with other utility applications.

This research also shows that utilities are becoming more inclined to seek an on-site CIS implementation. Along with this trend for on-site implementations, we also observe an increasing use of system integrators (SIs) to support CIS replacements.

The future functionality of CIS solutions will evolve as the industry evolves. In the past few years, we have witnessed the rise of dynamic rate structures, web portals, net metering, demand response programs and a host of other programs that impact the CIS at utilities. The next several years are likely to bear witness to even more dynamic changes and innovative approaches. There is a heavy burden on utilities to ensure that their CIS vendor partners have a long-term commitment to the industry and to supporting the functionality that will be required in their unique regulatory jurisdictions. Considering the necessity of CIS to utility cash flow and, consequently, enterprise viability, there are few decisions utility executives will make that compare to the importance of the CIS decision.

**The State of the Industry: A Transition Check Point**

Over the last few decades, utilities have dealt with a wealth of changes impacting their industry, including the introduction of deregulation, stringent energy and environmental policies, fluctuating economic conditions, disruptive technological innovations and ever-changing business norms and regulations.

Even so, utilities are required to persevere, serving customers by reliably delivering their services at predictable and reasonable rates. Key to accomplishing this mission is the utility’s CIS, tracking each customer’s consumption of the delivered commodity—natural gas, water, electricity or waste water—over a given time period, and applying the appropriate rate to create and present each customer with a bill, thereby enabling the utility to generate cash flow and continue as a viable enterprise.

While this may be simple in concept, utilities realize that keeping their CIS responsive to regulatory and business needs is a challenging endeavor, especially for those who utilize legacy systems that are often multiple decades old. In such instances, the utility may elect to replace their CIS, modify the existing code, or pursue a componentized solution that meets a specific functional need that may be required by regulators or the business. Each of these options requires investment—and sometimes a significant investment—in people with the appropriate level of expertise, as well as software and hardware. As utilities deliberate on the optimum investment option for their CIS, and in many cases for
their other key enterprise systems, they must consider the state of the economy, evolving energy policy and the proliferation of digital consumer technologies. To establish a meaningful context for the examination of CIS investment options, each of these issues is discussed in detail in the following sections.

**Economic Conditions**

As we enter the fourth year of the business upturn, the news is guardedly optimistic. After steady job losses in 2009 and three years of uneven job growth thereafter, payrolls have started to climb more regularly. More than 200,000 jobs have now been added in three of the last four months, while the jobless rate has fallen to 7.7 percent, the lowest level since 2008.

Favorable employment data aside, other factors contribute to the guarded optimism. Recent data reflects improvements in manufacturing, non-manufacturing and retail sales sectors. And real gross domestic product (GDP) has now grown in each of the past 14 quarters, as shown in the Figure (1), below, from the Bureau of Economic Analysis (BEA).

**Figure (1): Quarter-to-Quarter Growth in Real GDP**


And yet areas of the economy still remain a concern. GDP grew at an anemic 0.2 percent in the fourth quarter of 2012. The BEA attributes the deceleration in real GDP growth to reduced defense spending, downturns in inventory investment in manufacturing industries and wholesale trade and lower exports of non-automotive capital goods as well as foods, feeds and beverages.
The BEA report on personal income and outlays for the most recent month shows a 4 percent decline in real disposable income (the biggest decline in 20 years) following sharp gains in December, while the personal consumption expenditures (PCE) eeked out a 0.1 percent month-over-month gain, as seen in Figure (2) below.

**Figure (2): Real Disposable Personal Income and Real Consumer Spending**

Source: U.S. Bureau of Economic Analysis  
(http://www.bea.gov/newsreleases/national/pi/pi_glance.htm)

<table>
<thead>
<tr>
<th>Percent change (monthly rate)</th>
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<tr>
<td>-4%</td>
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Real disposable personal income

Real consumer spending

Things are also not bright on the international front, where business reversals and political uncertainty now encompass much of the ailing euro zone, a situation that has many U.S. exporters proceeding with caution.

These macroeconomic indicators—modest improvements in GDP, slowly improving employment levels and sluggish personal income gains—suggest that state utility regulators will remain under pressure to disallow utility rate increases or keep them similarly modest. Thus, allowed rates of return will be unlikely to rise appreciably. Similarly, utility capital investments and O&M expenses will continue to be closely scrutinized for “reasonableness,” making investor-owned utility investment in CIS challenging.

Though federal economic indicators have created a guardedly optimistic outlook, it is important to look also at state and local government economic conditions as well, as these have a direct impact on municipal utility investment appetites.

Quite understandably, state and local government finances have been hard hit by the fiscal challenges of the economy. According to the National League of Cities (NLC), a recent survey of city finance officers revealed that the fiscal condition of cities weakened in 2012 as municipalities endured the effects of the struggling national economy. Local and regional economies, characterized by struggling housing markets, slow consumer spending and high levels of unemployment, have driven declines in city revenues. In response, cities are cutting personnel and key services, delaying or deferring infrastructure projects and investments, and considering tax and fee increases. This is far from an ideal environment for a CIS investment by a municipal utility.
In fact, capital project deferral is a common response to weakening city finances. The NLC 2012 survey asked about specific spending actions taken in 2012. By a wide margin, the most common responses were instituting personnel-related cuts (48 percent) and delaying or cancelling capital infrastructure projects (33 percent), as shown in Figure (3).

**Figure (3): City Fiscal Conditions**

The modest nature of the economic recovery is reflected in electricity demand trends. The U.S. Energy Information Administration (EIA) forecasts that total U.S. consumption of electricity will decline slightly during 2013 and then grow by 1.1 percent in 2014, as shown in Figure (4).

**Figure (4): Electricity Demand Forecast**
Though commercial and industrial demand is expected to rise in 2013, perhaps as a result of the modestly strengthening economy, EIA projects a demand reduction of 0.6 percent in the residential sector, which it attributes to milder weather conditions. This mixed picture of demand reduction in the residential sector coupled with a slight strengthening in the commercial and industrial sectors reinforces the notion that utility management and regulators alike will closely scrutinize utility capital investment proposals and that capital programs will be carefully prioritized. Investments in CIS will have to compete with other capital investments, and projects that are not a top priority will likely face deferral.

Another interesting dynamic reported by EIA is the significant change in the electric generation supply mix. EIA expects generators in the U.S. to increase their utilization of existing coal capacity, leading to a 6.2 percent increase in coal generation during 2013. This increase is attributable to the increasing cost of natural gas relative to coal, and it raises the share of total generation fueled by coal from 37.4 percent in 2012 to 39.5 percent in 2013. An increase in coal utilization is likely to require significant environmental retrofits, and CIS investments will need to compete for utility capital against these generation fleet-related investments.

Energy Policy

Smart grid projects have been rapidly increasing in number across the United States over the last several years, many focused on the deployment of advanced metering infrastructure (AMI) supporting interval meter reading. Distribution automation and demand response projects are also on the rise. A large part of this increase is due to the disbursement of almost $4.5 billion in American Recovery and Reinvestment Act (ARRA) funding from the federal government stimulus spending that began in 2009.

Congress enacted the ARRA to create new jobs and save existing ones, stimulate economic activity and invest in infrastructure for long-term growth. The ARRA appropriated $4.5 billion to the U.S. Department of Energy (DOE), Office of Electricity Delivery and Energy Reliability (OE), to jump-start grid modernization through the deployment of several smart grid programs and related efforts. This funding is one of the largest federal investments in advanced technologies and systems for the nation’s electric grid.

The Smart Grid Investment Grant (SGIG) program represents the technology deployment portion of the ARRA funds appropriated to DOE-OE for grid modernization activities. The SGIG program is structured as a public–private partnership to accelerate investments in grid modernization. The $3.4 billion in federal Recovery Act funds are matched on a one-to-one basis (at a minimum) with private sector resources—bringing the total investment in SGIG projects to $7.8 billion. DOE used a merit-based, competitive process to select and fund 99
projects that are now deploying smart grid technologies and systems across the power grid, from transmission system to end-use customer, in almost every U.S. state.

The SGIG projects launched in early 2010 and the DOE expects all projects to complete equipment installation in the 2013–2014 time frame. According to the DOE, as of March 31, 2012, roughly two-thirds of the total $3.4 billion in federal funds had been expended. Including the investments made by the recipients, the combined level of federal and recipient investment totaled about $4.6 billion, through March 31, 2012.

Looking ahead in 2013, pollution and emissions standards appear to be the most contentious energy policy issue for 2013. While few would argue against the benefits of clean air and water, the energy industry is concerned that new regulations from the U.S. Environmental Protection Agency and others will force the premature retirement of coal-fired generation and create unavoidable grid strain and reliability issues. Specifically, the compliance with Mercury and Air Toxics Standards and Maximum Achievable Control Technology (MACT) Standards could have a significant financial impact this year.

## Outcomes of Merger and Acquisition Activity

Last year saw the completion of three large mergers in the utility industry. In March, Exelon Corp. completed its $7.9 billion takeover of Constellation Energy Group. The combined company creates an energy giant that operates utilities in Baltimore, Chicago and Philadelphia. The merger makes Exelon the largest competitive energy provider in the country. The company now owns approximately 35,000 megawatts (MW) of power generation, including the nation’s largest nuclear fleet of more than 19,000 MW. In addition, Exelon is now the nation’s second-largest regulated distributor of electricity and gas, with more than 6.6 million customers in Maryland, Illinois and Pennsylvania. The three Exelon utilities—Baltimore Gas & Electric, Commonwealth Edison (ComEd), and PECO—remain headquartered in Baltimore, Chicago and Philadelphia, respectively.

In April, Northeast Utilities (NU) closed its $7 billion deal with NSTAR, creating one of the nation’s largest utilities with six regulated electric and natural gas utilities serving 3.5 million customers in three states. The newly merged company will continue to be called Northeast Utilities and NSTAR will become an NU subsidiary in Massachusetts. As a result of merger-related settlements in Massachusetts and Connecticut, NU has guaranteed benefits for customers that include rate credits, rate freezes and continued civic engagement. The company has also pledged further environmental commitments to renewable energy, energy efficiency and electric vehicle development. As a result of the merger, NU expects $780 million in savings over the next ten years in efficiencies, primarily through process improvements, consolidation of systems and drawing on best practices from both companies.
In July, Duke Energy closed its $32 billion merger with Progress Energy. The merger was a marriage of similar multi-state utilities to one. Duke Energy is an important utility when it comes to smart grid, though struggles with state regulators have stalled some of its deployments. However, the company still plans to spend $1 billion over the next five years to implement smart grid technologies. Progress Energy, for its part, is working on a distribution management system aimed at cutting 385 MW of peak load via utility-controlled volt/VAR optimization. Given the struggles that some utilities have experienced with state regulators on their smart meter plans, there could be a shift to more and more of these distribution grid automation projects, which do not involve the utility customer directly.

While there have been a number of high profile mergers, the only electric company currently involved in such an activity is CH Energy Group, which is in the process of being acquired by Fortis of Canada. This transaction should be completed in the second quarter of 2013.

There are a number of reasons why the industry may experience a slow down of merger and acquisition activity. First, as recent acquisitions in the industry demonstrated, completing a merger in the utility industry is almost always a long and difficult process due to the need for approval by numerous regulatory bodies. In fact, many deals have been terminated once it became evident that a state commission would not approve the combination without imposing unattractive conditions. Second, many of the obvious deals have been consummated. Today, the U.S. only has approximately 50 publicly traded electric companies, whereas a quarter century ago, it had roughly twice as many.

Further, given the current valuations of utility stocks, buying a utility would be an expensive undertaking, even though borrowing costs are low.

The Pursuit of Improved Service and Operational Efficiency

Historically, many utilities have considered their customers primarily as ratepayers locked into a static meter-to-cash process. Today, multiple factors such as smart meters, renewable energy, social media, deregulation and growing customer technology sophistication and expectations are changing the perspective of utilities to a more customer-focused approach with a view of the entire customer lifecycle. In addition to the vast amount of data that utilities will be managing as a result of smart meters, AMI is also enabling utilities to develop new products and services, such as demand response solutions, prepayment programs and home energy management tools.

Because of the introduction of these new solutions, customer education and engagement has become a topic of frequent discussion in utility, regulatory and public policy circles. The need to inform and engage utility customers about
smart energy is a widely accepted industry maxim and generally viewed as a prerequisite for identifying consumer benefits and harnessing demand-side resources that are in customers’ control.

Using customer communications to create awareness of grid modernization efforts is an important, early step in the process of enabling and motivating customers to use smart energy programs and services. Awareness of their utility’s smart energy efforts is a practical, if incomplete, indicator of customers’ readiness to engage in such programs.

In addition to the solutions made possible from smart grid technologies, mobile devices and applications are also having a significant impact on utilities. The increase and shift in communication channels and mobile device transaction capability implies that utilities will ultimately need a multi-channel management capability to engage with their customers, providing a seamless, consistent and satisfying experience.

This connectivity is providing utility customers with empowerment and a compelling desire to live life “on-demand,” with convenience, security, speed and elegant simplicity. It is also enabling a “digital lifestyle” that allows consumers to control their possessions and environment when they want, where they want and how they want. While utilities acknowledge these trends, in many cases they face the challenge of operating with aging and near obsolete technology platforms. A large portion of the industry is operating on a legacy platform that includes a custom, one-of-a-kind CIS, developed to meet specific utility needs and requirements that were identified 20 or more years ago.

**CIS Outlook**

Drivers for utility CIS replacement have always been difficult to assess due to a confluence of complicated business issues. Determining the right time to upgrade or replace a CIS is one of the more challenging decisions utility executives make. They take great care to make the best decision possible and, at times, that decision making process may take years. Nonetheless, they are decisions that must be made. For some utilities those decisions occur early and easily and for others they occur later and after much consternation. Recent research indicates, however, that CIS-related decisions are occurring in sizeable numbers.

Several important data points help shed light on the CIS market’s direction over the next few years. First, many utilities are operating with older systems. A recent survey we conducted of more than 50 utilities revealed that 12 percent of respondents had a CIS that was installed more than 20 years ago, and another 28 percent had a CIS that was installed more than 10 years ago, as shown in the following figure.
Thus, 40 percent of responding utilities are using CIS systems that predate the Energy Policy Act of 2005, the Energy Independence and Security Act of 2007 and the American Recovery and Reinvestment Act of 2009. The impact of these laws, and others like them, continue to influence and shape the utility-customer relationship in profound ways, accentuating drivers for change. Regulatory requirements and customer expectations have grown considerably, underscoring the critical nature of decisions on when and how to replace a CIS.

Additionally, the current smart grid era has introduced significant changes to how utilities interact with customers, the types of initiatives they must support and, of course, increased the need for robust integration between the CIS and other operational systems, such as AMI. This is likely to be one of the primary reasons why 39 percent of responding utilities reported replacing their CIS in the past five years.

The CIS of today and the future must be flexible and adaptive to evolving business needs. Our research confirms that this need for flexibility is one of the primary drivers for the robust level of CIS remediation that is currently underway in the industry, especially among investor owned utilities (IOUs). In recent years we have observed that municipal utilities, particularly water utilities, have also been quite active in pursuing CIS replacements, but the weak economy’s pressure on municipal budgets has begun to hinder pursuit of these projects.

The lack of flexibility in many existing CIS stems from older and nearly obsolete technology platforms that were designed and deployed many years before the needs of today’s utilities were understood or even conceived. While these legacy systems have served the industry well for many years, utilities are finding they are particularly deficient when it comes to integrating with other systems or easily
extracting data from them for the purposes of web-portals, mobility extensions, business intelligence (BI) and more sophisticated financial reporting associated with billing and credit and collections.

In such a dynamic and changing environment, it is little wonder that legacy CIS is strained. As the following figure shows, our research reveals that utilities do not have a high degree of satisfaction with their current CIS, especially as it relates to maintenance and support and the ease of implementation, modification and integration.

**Figure (6): Satisfaction with CIS on 5 Point Scale**

Further, the current and anticipated changes to the industry will provide additional pressure for utilities to address dated and inflexible legacy CIS. The trending investment in AMI; demands associated with smart grid initiatives, such as demand response programs and net metering; increased interactions with new and niche technologies, such as smart phone applications and sophisticated energy management systems; and more robust communication with customers about energy usage and outage restoration are likely to create significant operational pressures at utilities that lack a CIS capable of supporting these myriad functionalities.

Of particular concern among utilities is the issue of supporting the variable rate structures (e.g. time of use rates) enabled by smart meter investments. While utilities have traditionally used rate designs (such as flat rates or tiered rates) that do not convey the time variability of energy costs, smart meters are enabling utilities to offer more time-based rate programs. The results of our survey reveal that a staggering 81 percent of utilities now consider the ability to support variable rate structures as a critical functionality when selecting a new CIS.
Time-based rate programs come in many forms and offer various levels of prices that may differ according to the time of day, day(s) of the week, and month(s) of the year. There are a number of different types of variable rate structures that are being offered by utilities, including:

- **Time-of-use (TOU) rates**: TOU pricing typically applies to usage over broad blocks of hours (e.g., on-peak = 4 hours for summer weekday afternoons; off-peak = all other hours in the summer months) where the price for each period is both constant and predetermined. TOU rates are primarily implemented to provide incentives for shifting the timing of the consumption (from peak hours to off-peak hours) by making it cheaper to purchase energy in off-peak periods and more expensive to do so in on-peak periods.

- **Real-time pricing (RTP)**: RTP rates typically apply to usage on an hourly basis (but could apply to usage on as little as a 5-minute basis), where the price differs each hour of each day. RTP rates are primarily implemented to provide financial incentives for customers to shift consumption from on-peak to off-peak periods.

- **Variable peak pricing (VPP)**: VPP is a hybrid of TOU and RTP where the different periods for pricing are defined in advance (e.g., on-peak = 4 hours for summer weekday afternoon; off-peak = all other hours in the summer months), but the various price levels established for the on-peak period varies according to the costs of delivering energy. VPP rates both change the timing of a customer’s consumption (i.e., shifting from peak hours to off-peak hours) and reduce a customer’s consumption over a certain number of hours on a limited number of days when certain conditions occur (e.g., extremely high costs or system emergencies) by making it much more expensive to purchase during on-peak periods on these limited days.

- **Critical peak pricing (CPP)**: When utilities observe or anticipate high wholesale market prices or system emergency conditions, they may call critical events during a specified time period (e.g., 2pm–6pm on a hot summer weekday) for which the price for energy during these time periods is raised. CPP rates are primarily implemented to reduce a customer’s consumption of energy over a certain number of hours on a limited number of days when certain system conditions occur.

- **Critical peak rebates (CPR)**: When utilities observe or anticipate high wholesale market prices or system emergency conditions, they may call critical events during previously specified time periods (e.g., 2pm–6pm summer weekday afternoons). The price for energy during these time periods remains the same, but the customer is refunded at a single, predetermined value for any reduction in consumption relative to what the utility deemed the customer was expected to consume. CPR is primarily implemented to reduce a customer’s consumption of energy over a certain number of hours on a limited number of days when certain system conditions occur.
Discussions with CIS vendors and utilities about the impact of AMI and smart grid on CIS also reveal a growing interest in prepayment services—a specific customer offering which can be better delivered via smart meters collecting interval consumption data. In another recent survey conducted on the topic of pre-paid solutions, 88 percent of utility professionals indicated that they have customers who would welcome a prepaid program.

Figure (7): Prepay Metering Program

I believe that some of the customers who are served by my utility would welcome a prepay metering program:

- True: 88%
- False: 10%
- No response: 1%

This perceived customer preference is reinforced by our recent survey querying utilities about the functionalities that would be most critical for any new CIS. Of the responding utilities, more than 30 percent indicated prepayment services would be a critical functional requirement in a new CIS. Many utilities have found offering prepayment services a way to derive quick and tangible benefits from an AMI deployment. Customers such as landlords and property managers have reportedly been particularly interested and enthusiastic regarding the prepay option.

Variable rate structures and prepayment services are just a few of a growing number of products and services which legacy CIS systems can often only support after time consuming, complex and expensive system modifications. Besides prepayment, utilities have also identified the following needs from their CIS:

- Built-in business intelligence
- Multi-channel, multi-device communication, supporting a single system of record for all customer communications
- Non-revenue products and services such as demand response, energy efficiency, or net metering
- New, adaptable credit and collections services, such as those used when dealing with the increasing numbers of historically credit-worthy customers who have become delinquent with the economic downturn

Writing new code to modify a highly customized, proprietary CIS raises another issue of considerable concern to utilities. Personnel familiar with the architecture, design, and operation of these systems and therefore with the talent and skill to manage and maintain them, are becoming scarce. Many will soon retire, some have already retired.
The impacts of the data extraction, business process and aging workforce challenges to legacy CIS are reflected in the results of our survey. Fully, 74 percent of responding utilities reported that their existing CIS could not be made to support their anticipated business requirements without modification or outright replacement. Of those, 19 percent anticipate an outright replacement, 28 percent anticipate major modifications and 27 percent believe only minor modifications will be necessary. Only 26 percent of responding utilities judged their CIS well equipped to meet the business requirements for the foreseeable future. In such an environment, change seems inevitable.

As mentioned, with the recognition that the CIS may be inadequate to address their ongoing business needs, utilities are evaluating the option of a full CIS replacement with a commercial-off-the-shelf (COTS) application versus a remediation strategy. One such strategy involves integrating new modular applications to add complementary functionality that meets current business requirements and integrating them to the legacy CIS. This approach is often referred to as “bolt-on” functionality.

Further complicating CIS-related decisions is the rapid evolution of technology, leading to fears about short-term obsolescence of a long-term capital investment. Accordingly, a number of utilities consider the bolt-on strategy as a preferred, interim course, allowing them to forestall a full replacement and its attendant high capital investment as well as high risk. In our view, this may be a reasonable approach and may result in a 3 to 5 year life extension of the CIS, though utilities are encouraged to carefully weigh the complexities associated with this strategy.

For example, a bolt-on approach can have the potential to become unwieldy and unmanageable. Bolting on too many piecemeal applications, some custom developed and some COTS, and developing point-to-point integrations for each can be “reinventing the wheel” and may lead to what is essentially another customized, hard-to-maintain CIS, exacerbating the underlying problem, and therefore, ultimately leading to a full system replacement. Although the bolt-on approach may be quite sensible for supporting a pilot program, it might not be appropriate for a program of scale. And at some point, employing numerous
bolt-ons can inhibit the ability to achieve a single view (often referred to as a 360-degree view) of the customer. In this case, a CIS replacement could be a more optimum choice.

Thus a utility’s decision on whether to remediate or replace will vary based on near-term/long-term goals, its capital priorities and the pressure to progress to, for instance, dynamic rates and/or prepay programs.

Despite these potential pitfalls, market interest in CIS remediation remains strong and options are growing in the market. Vendors such as Hansen Technologies, Vertex, Cognera and others, offer modular applications with customizable interfaces to enable an easier and more efficient implementation of new functionality while also mitigating the potential for costly, inefficient customizations.

We have also observed that consideration of the bolt-on option is leading to some fundamental questions about CIS’ role as the master system of record for critical data, which adds a layer of complexity to the decision on whether to replace or remediate. Where should the meter asset data reside? Where should meter reads reside? Where and how should work orders be generated? The choices include disparate systems such as the AMI head-end, the Meter Data Management (MDM) system, and the Enterprise Asset Management (EAM) system, just to name a few. In fact, a number of utilities are now choosing to split out formerly traditional parts of the CIS and spread them across two or more systems. As an example, meter reads can be stored in the MDM and then brought into the CIS to produce and present a customer bill.

CIS Deployment Trends

CIS replacement projects can be quite complex. These projects involve decisions about the appropriate deployment model and the third party resources that support and assist a utility with implementation. Our research reveals a number of trends associated with CIS deployments.

Cost and Duration

CIS replacements have a reputation for being costly, frustrating and exceeding implementation budgets and schedules, only to be followed by a difficult transition period. Fortunately, over the last decade, the dynamic has improved significantly. CIS products have become highly configurable and easier to customize to a utility’s specific needs. The implementation and go-live processes are more proven, mitigating schedule overruns and the awkwardness of transitioning to a new system. Some CIS products are structured to support different implementation approaches ranging from a “big bang” full replacement, to a staged effort, where specific functions can be migrated to a new system over time. (E.g.; initially, just billing can be implemented, followed by call center support and later, credit and collections.)
As a result, we believe that both the real cost and risk of a CIS deployment is subsiding, leading to an improved perception of project viability. Leading utility CIS providers such as SAP, Oracle, Ferranti and Itineris, as well as the various Harris companies, can be credited for their efforts toward improving implementation processes and lowering the associated risks.

Some industry observers caution that the difficulties stemming from a CIS replacement project are often less in the implementation of the software and more a result of a failure to understand the new business processes the software can create. While the flexibility of a new CIS enables a variety of potential options and changes, there are always business ramifications to consider.

A utility decision for replacing its CIS requires a review of how it will impact existing personnel levels and functions. Does the utility have adequate staff to maintain the legacy system, implement the new system and manage the transition from one to the other? How is the customer call center staff impacted? These Organizational Change Management (OCM) questions—and others like them—are important considerations for utilities as they embark on a CIS replacement strategy. A fundamental and careful understanding of the business process being created is critical.

We recently queried 21 utilities about their perception of recent CIS replacement projects in an effort to gauge utility views of project success. The upshot: most implementations are considered successful, with a significant improvement on a year over year basis of projects receiving an “A” grade. Significantly, no projects received an “F” grade in either 2011, 2012 or 2013, at least so far.

Figure (9): CIS Project Data for These 21 Utilities

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>48%</td>
<td>(On time, on budget, exceeded user expectations) (Last year 39%)</td>
</tr>
<tr>
<td>B</td>
<td>19%</td>
<td>(Taken longer, more money, but exceeded user expectations) (Last year 33%)</td>
</tr>
<tr>
<td>C</td>
<td>24%</td>
<td>(Taken longer, more money, and only met some user expectations) (Last year 15%)</td>
</tr>
<tr>
<td>D</td>
<td>10%</td>
<td>(Taken longer, more money, and did not meet user expectations) (Last year 13%)</td>
</tr>
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Most implementations are considered successful.

Source: Five Point
(04-01-2013 Five Point 2013 Survey Data - ver sp.ppt)
In our view, the use of SIs by most utilities underscores the importance of a vendor forming an SI network and suggests that those vendors with a well-developed and rather extensive SI network may have an advantage in the market over other vendors who have less established SI relationships.

Use of System Integrators vs. In-house Deployments

In addition to selecting a vendor to provide a replacement CIS packaged product or bolt-on applications, utilities also consider the option of using third party support for procurement, project management and implementation. We have assessed trends in this area and find that utilities are increasingly inclined to work with system integrators (SIs) to implement a replacement CIS.

Assessing market activity, we also observed that while the larger utilities (300,000 and greater accounts) had most commonly worked with SIs to implement CIS, this behavior has moved down market. Today, utilities with 100,000 accounts and up intend to work with SIs, saying they are willing to trade the increase in project cost for better management of project risk. We attribute this movement to the size and complexity of today’s CIS implementation projects, which typically involve more applications than just CIS. We have seen an increasing number of projects involving implementation of CIS combined with Enterprise Asset Management (EAM), Meter Data Management (MDM), Work Management, and Mobile Workforce Management.

In our view, the use of SIs by most utilities underscores the importance of a vendor forming an SI network and suggests that those vendors with a well-developed and rather extensive SI network may have an advantage in the market over other vendors who have less established SI relationships.

As shown in the following figure, the survey results also show the increasing role of industry consultants to not only advise on CIS procurement, but to also plan and provide oversight of a CIS implementation project.

Figure (10)

If/when your utility moves to replace CIS, will you likely use (please select all that apply):

- Other: 10%
- My utility is likely to do everything within house resources and assistance only from the CIS vendor: 34%
- A consultant to help oversee the implementation: 36%
- A consultant to assist with system selection: 40%
- A system integration firm for implementation: 40%
In-house vs. Outsourcing

Today, utilities choosing to replace their CIS or even to deploy one or several bolt-on applications have several options to consider, including in-house implementation, an outsourced system hosted by a third party, a managed services arrangement or a cloud-based system.

Our recent research confirms that the most popular option currently is to implement the system in-house, meaning to implement the system on utility-owned servers, located on utility premises, as shown in the following figure.

Figure (11): 2013 CIS Survey Data
If/when your utility selects a new CIS, would you be more inclined to:

Source: Five Point
(2013 CIS Survey Graphs.ppt)

While purchasing and installing the CIS in-house was by far the most popular process to implement a CIS, outsourcing was the second-most popular approach. Though only 17 percent of the survey respondents indicated a preference for an outsourced solution, that segment has grown rapidly from last year when only 11 percent preferred outsourcing.

In our discussions with utilities, the hesitancy to outsource appears to be based on utility difficulties in enforcing service level agreements. Utilities also perceive the risk of a diminished customer experience under an outsourced arrangement. Ultimately, it seems to come down to an issue of control, with utilities preferring to run the customer touch processes in-house and more closely control the customer experience. Some utilities have relayed that this philosophy of control extends to their business process outsourcing practices and that customer call
centers are moving back inside the utility. Vendors have noted that while utilities seem to prefer that a complex enterprise system like CIS be implemented in-house, they still consider outsourcing certain targeted applications, such as prepayment, especially during an initial deployment period. Retailers, on the other hand, appear to view outsourcing arrangements more favorably, particularly during the initial years of market entry or until their customer base reaches a critical mass.

While only 3 percent of the survey respondents indicated an intention to deploy their CIS with a third party managing the system, a type of hybrid in-house/managed services model appears to be developing. Vendors serving mid-sized utilities have observed some of their customers are moving toward contracts with the vendor to provide disaster recovery services and potentially run and manage selected processes for them. Other CIS vendors serving investor-owned utilities have commented that their clients carefully determine what processes should be managed services and what should be a licensed software implementation with an eye toward the O&M expense versus capital asset equation and how the rate treatment of these will impact their bottom line.

While our survey showed that only 5 percent of the responding utilities were considering a cloud-based CIS, this did represent an increase from last year when only 2 percent were considering such an option. Many in the industry question whether the cloud model is truly meaningful for a CIS with its multiple interfaces to other enterprise systems such as meter data management, project accounting, work management, and asset management. Instead, the cloud model seems better suited for processes that would use a single database and standardized, repeatable processes such as credit checking or even outbound calls. While we do expect cloud-based solutions to evolve and improve, it may be a few years before a true cloud-based CIS solution is available on the market.

**The Future of CIS**

The limitations of legacy systems and emerging business needs have motivated utilities to examine CIS strategies and the options of replacement or remediation. Utilities need systems that can easily integrate with other applications, accommodate newer dynamic rate structures and provide support for multi-channel customer relationships while at the same time continuing consistent billing accuracy.

Hovering over such decisions is a more fundamental value question in an era of rapid technological change—particularly for utilities and regulators conditioned to expect multiple decades of useful life for a major investment. What is the new CIS life expectancy? Many customized legacy systems served their utilities well for more than 30 years. Yet the pace of change in technology, business cases and regulatory attitudes raises the question of longevity. The challenge is to rationally determine a cost-to-lifecycle expectation in an era of rapid change.
Our discussions with CIS vendors reveal a confidence that their systems are far more future-proofed than the custom systems of the past. But in the current era of rapid change on so many fronts, those same vendors also suggest that something closer to a 20-year life expectancy may be more realistic. Vendors also suggest that they will continue to offer regular upgrades to their existing, supported products. Should utilities continue to implement those upgrades, there is ample reason to believe that the CIS systems of today may be able to serve utilities for many decades.

For newer systems the burden of keeping the system current now lies with the CIS vendor, not the utility. With this shift in the risk of system obsolescence, vendors must make a commitment to a continuing investment level in their CIS platforms, making iterative improvements, mostly on the application level. Though utilities then face ongoing periodic upgrade effort, which carry some cost and risk, that path over time appears far less expensive and complex than a full scale CIS replacement of an older legacy system with a new packaged software system.

A number of interesting implications arise from the shifting of the cost and risk associated with CIS from the utility to the vendor. For example, the shift can free utilities to focus less attention and resources on back office software functionality and more on their core business operations. As the industry becomes more complex and utilities take on new business responsibilities associated with their smart grid technology investments and the associated communications network, this should be a welcome transition. However, as vendors assume the risk for the ongoing functionality of a packaged CIS, they assume a greater long-term financial burden. Utilities will need to seek out vendors that they believe will be financially committed in terms of capital and talent to the sector over the long-term. To achieve the necessary financial scale to meet that commitment, the CIS vendor community may experience additional consolidation and a subsequent decline in the number of available products.

**Conclusion**

The future functionality of CIS solutions will evolve as the industry evolves. In the past few years, we have witnessed the rise of prepayment services, dynamic rate structures, web portals, net metering, demand response programs and a host of other programs that impact the CIS at utilities. The next several years are likely to bear witness to even more dynamic changes and innovative approaches.

These changes have led many to believe that robust CIS market activity is likely to continue for quite some time. Utilities that are unable to interact with customers in a manner consistent with regulatory and customer expectations will struggle and need to invest in more robust CIS capabilities. We see evidence of this today following major outage events, as well as lag time in supporting new regulatory mandates.
Legacy systems simply do not support the requirements of this environment. For utilities that have not yet moved to more modern technology, the question is really “when” the 40 percent of utilities with an aged CIS will join the 60 percent of utilities that have already made that transition. In our most recent survey, 29 percent of responding utilities indicated that replacement will occur within the next three years, with the remainder indicating that it will occur in the next five years.

If utilities follow replacement in a manner consistent with their survey responses, our industry will have largely completed a migration to modern CIS before the end of this decade. While that pales in comparison to the rapid movement in some industries, we need to recognize that the transition will have occurred within 13 years of the Energy Information and Security Act of 2007 and within 11 years of the ARRA grants.

The market, of course, will continue to turn as those utilities with 10-year-old systems today will have 20-year-old systems a decade from now. Fortunately, prominent vendors with foresight are already working to address that issue through the development of new deployment models, such as cloud based solutions, as well as ever-improving functionality and more efficient upgrade paths. Such future protections are some of the many benefits of pursuing packaged software solutions from proactive and stable CIS vendors. Thus, future CIS projects will be more about upgrades and less about major modifications or replacements.

Those readers who may have additional questions or inquiries regarding this report or the CIS market in general are encouraged to email us at sra@fivepoint.net.
Vendor Profiles
## Oracle Utilities Customer Care & Billing V2.4

### Product Description

**Basic Description**
Oracle Utilities Customer Care & Billing is a complete billing and customer care application for utilities serving residential, commercial, and industrial customers. It addresses both customer and financial data management while handling receivables functions like payment processing, budget and multi-party billing, and credit and collections.

**Underlying database**
Oracle

**Underlying OS**
AIX, HP-UX, Solaris, Linux and Windows

**Primary hardware supported**
Oracle Sun, IBM, contact vendor for more information

### Market Focus

<table>
<thead>
<tr>
<th>Feature</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated utility operations</td>
<td>✓</td>
</tr>
<tr>
<td>Competitive retail operations</td>
<td>✓</td>
</tr>
<tr>
<td>IOUs</td>
<td>✓</td>
</tr>
<tr>
<td>Cooperative utilities</td>
<td>✓</td>
</tr>
<tr>
<td>Municipal, PUD, or other government structure utility</td>
<td>✓</td>
</tr>
<tr>
<td>Electric, gas, water, wastewater utilities</td>
<td>All</td>
</tr>
</tbody>
</table>

**Size of utility (in number of end use customers)**
8K to 13 M end use customers

### References

**Number of utilities using this product**
More than 150 CC&B installations completed or under way, worldwide

**Representative utility accounts**
PG&E, Colorado Springs Utilities, Hydro Quebec, San Jose Water Company, ENSTAR Natural Gas Company, Baltimore Gas & Electric, Lee County Electric Cooperation, Las Vegas Valley Water District, Jacksonville Electric Authority, Montana-Dakota Utilities

### Delivery Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>License-based model</td>
<td>✓</td>
</tr>
<tr>
<td>Hosted Model</td>
<td>✓ (via 3rd parties)</td>
</tr>
<tr>
<td>SaaS Model</td>
<td>✓ (via 3rd parties)</td>
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</tbody>
</table>

### Product Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of use, minimal training</td>
<td>Intuitive user interface, online help, and prewritten scripts to handle the most common customer service scenarios</td>
</tr>
<tr>
<td></td>
<td>Shorten call times and cut down on call backs by giving call center staff complete and immediate access to customer account histories</td>
</tr>
<tr>
<td></td>
<td>Set of browser-based tools used to develop custom UI and extend the application without the need for database changes or heavy-duty programming allowing for configurable solutions to optimize business processes</td>
</tr>
</tbody>
</table>
### Rating & Billing
- Powerful rating and billing engine that can perform complex calculations to produce bills with various sets of charges (e.g. internally-rated charges, pass-through charges, etc.)
- Multiple product definition and pricing options make this a very powerful offering
- Functionality to manage time-series data and transform this data for use in complex billing scenarios (e.g. TOU Billing, Critical Peak Pricing, etc.), enabling companies to keep up with the evolving market

### Credit and Collections
- Receivables Management includes Payment Processing and Credit and Collections/Overdue Processing
- Billing Overdue Processing functionality that is flexible enough to independently collect on virtually any individual item
- Users can create an unlimited number of customer profiles for establishing tolerances and can establish overrides for special cases.

### Flexible payment options
- Offers a choice of bill and payment methods including email, internet, cash deposit, direct debit and postal service
- Advanced online payment features to streamline the process of accepting different types of payments from CIS to non-CIS payments, including payments in alternate or multiple currencies

### Improve the Customer Experience
- Personalized interactions
- Real-time access to information across multiple channels
- Maximize value at every interaction point
- Fast and consistent resolution for customer issues

### Scalable
- Scale readily from thousands to millions of customer accounts

### Integrated Customer Solution Suite
- Numerous pre-packaged integrations with other Oracle applications such as Customer Self Service, Mobile Workforce Management, Meter Data Management, Outage Management and Business Intelligence

### Lower total cost of ownership
- Performance tools to maximize the value of operational products
- Utility Reference models (documented standard business processes)
- User Productivity Kits (prebuilt, interactive and customizable, self-paced learning kits)
- Management Packs (Oracle Enterprise Manager - focused on software lifecycle management)
- Configuration tools

### Smart Grid
- Addresses new billing/rating requirements for Smart Grid initiatives
- Complex billing
- Net metering
- Event billing (such as electric vehicle charging stations)
- Prepaid metering using AMI
- “What if” rate analysis
- Rebate processing for conservation programs
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Address all correspondence to:
Five Point
Advisory Services Division
200 Galleria Parkway, Suite 1475
Atlanta, Georgia 30339

Telephone: (800) 830-4959 or (404) 260-1599
Email: sra@fivepoint.net
Website: www.fivepoint.net

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