CIS AND THE CLOUD

AGILITY IN THE NEW UTILITY ERA

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With significant shifts in data, technology and customer preferences, utilities are living in a very different world now than when they likely last implemented a new Customer Information System (CIS). It's an increasingly complex world with many new options, which also raises many new questions as utilities look to replace their CIS:

- **How do we ensure our CIS is agile in the rapidly evolving utility marketplace?**

- **What are the opportunities and risks of CIS replacement?**

- **What role can cloud technologies play?**

This paper explores how technology and customer trends are shaping CIS requirements for utilities, and the role that cloud technologies play in ensuring an agile CIS that can handle the changing marketplace.

We surveyed over 200 utilities to understand their opportunities and challenges with new customer demands and technologies, and how well utilities feel their needs are being addressed by their CIS platforms.

Here are some key findings by the numbers:

Nearly every respondent sees new customer demands strongly influencing current CIS platforms.

Every respondent thought that real-time data and analytics would influence their CIS. Other technologies strongly influencing CIS platforms include microgrid integration (62%) and the internet of things (IoT) (49%).

Less than half of utilities believe their CIS is very well prepared to adapt to AMR/AMI. Only a third of utilities feel their CIS is well prepared for real-time data analytics, and just 23% feel well prepared for IoT.

70% of utilities believe that cloud is important for the utility industry.

RESPONDENT DEMOGRAPHICS

- District/Federal **7%**
- Cooperative **23%**
- Investor-owned utilities **45%**
- Municipal **26%**
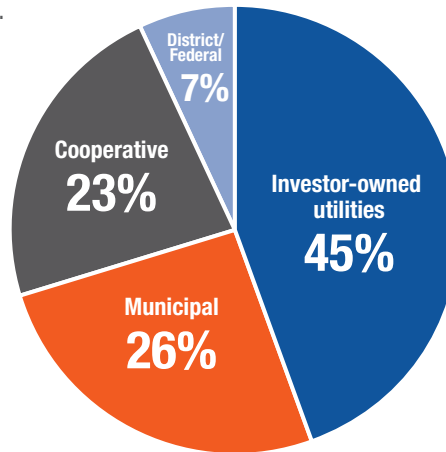
Respondents offer a diverse set of service. Many offer multiple services.

- **95%** Electric
- **30%** Gas
- **22%** Water
- **12%** Waste Water
- **7%** Solid Waste

- 23% serve over two million customers
- 23% serve between 500,001 to two million customers

- 17% Pacific
- 31% North Central
- 21% South Central
- 16% International
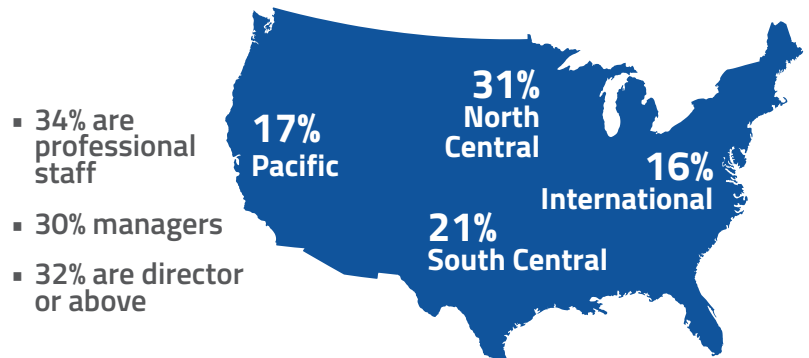
- 34% are professional staff
- 30% managers
- 32% are director or above

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CUSTOMERS ARE DEMANDING MORE FROM UTILITIES—AND CIS

A utility's CIS is critical for engaging and interacting with today's evolving consumer marketplace. With customer expectations constantly increasing across all industries, it is important for utilities to meet customer desires for more options and greater control over their interactions with companies.

Approximately 95% of utilities report that new customer trends will have an influence on their CIS, and more than half of those say they will have a strong influence. (Figure 1) These trends include customer demands for new pricing options, new touchpoints with utilities—from mobile devices to smart thermostats, and new products and services—from energy efficiency to solar programs—which are all almost equally influential on CIS platforms.
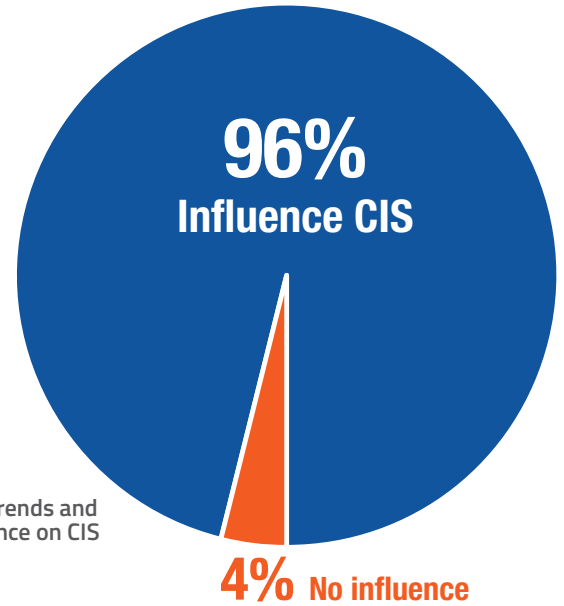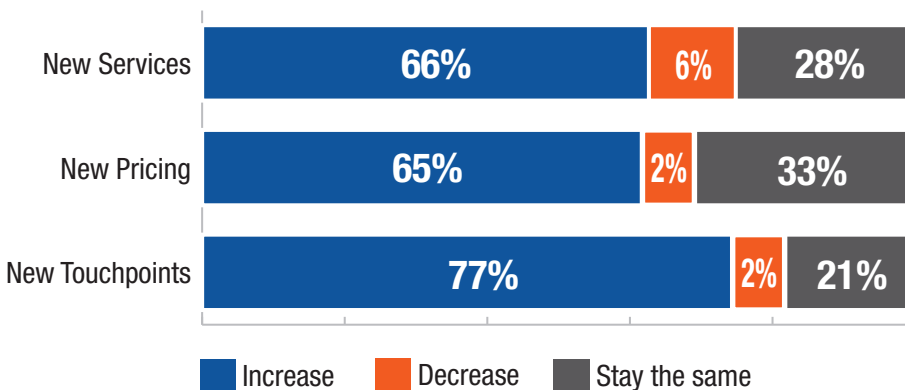
96% Influence CIS

4% No influence

FIGURE 1: Customer trends and their influence on CIS

"As customers become more enabled, empowered, and educated as prosumers, they are going to have more knowledge of the industry and want more choices. They want to have more control of managing their energy usage."

— Public Utility Commissioner from the Pacific U.S.

Not only is nearly every utility finding that these customer trends will influence their CIS, but that the effect is only going to get more profound in the future. Within the next three to five years, 77% of utilities expect new touchpoints to have increasing influence over their CIS. (Figure 2) Nearly two-thirds also expect the influence of new products and services, and new pricing options to increase as well. Agility with CIS will be key for utilities to adapt to growing and changing customer demands.

FIGURE 2: Customer influence on CIS in next 3 to 5 years

	Increase	Decrease	Stay the same
New Services	66%	6%	28%
New Pricing	65%	2%	33%
New Touchpoints	77%	2%	21%

■ Increase   ■ Decrease   ■ Stay the same

"Utilities are in a difficult position. They don't get to define a business model and have customers choose to opt in. They must serve all types of customers and that means allowing the customer to choose how and when they interact with them."

— Andrew Jornod, CEO, Vertex

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NEW TECHNOLOGIES DRIVE CIS, TOO

Changes in customer preferences are not the only trends influencing a utility's CIS. Technology changes are driving new demands on today's CIS. The rise of new technologies—from the internet of things (IoT) to distributed energy resource (DER) integration—can help utilities meet rapidly changing consumer trends, but also put a strain on long-used CIS systems that were not built to handle the influx of real-time customer and sensor data.

The most influential technology for today's CIS is real-time data and analytics. (Figure 3) Every respondent agrees that real-time data analytics influences their CIS (100%). The fact that real-time data and analytics rises to the top is significant in that it marks a paradigm shift to utilities that are truly data-driven.

Microgrid integration (98%), IoT (97%), and smart cities (96%) have an influence as well. Other technologies, such as machine learning and artificial intelligence (AI) (89%) and DER integration (89%) have some influence over utility CIS. Overall, a significant mixture of technologies will influence the transformation of utilities' CIS platforms.

As utilities begin to transform their CIS, it is important to gauge how influential these trends will be in the future—and the role of these already influential technologies will only continue to grow in importance. Approximately 82% of respondents expect DER integration to increase in influence over utility CIS in the next three to five years. (Figure 4) IoT (78%), predictive analytics (77%), and AMR/AMI meters (77%) follow closely behind in terms of expectations to increase in influence in the future. Notably, utilities are nearly split when it comes to smart cities' level of influence; almost 43% believe it will stay the same, and 57% believe it will increase.
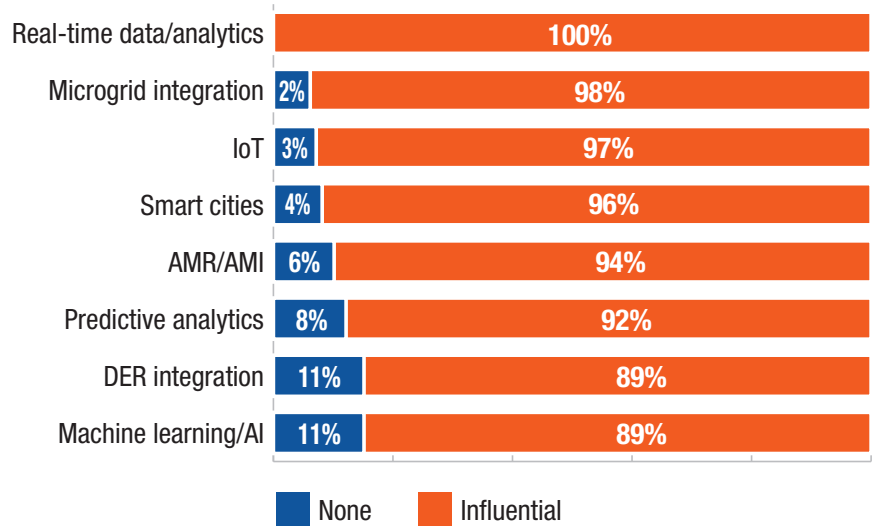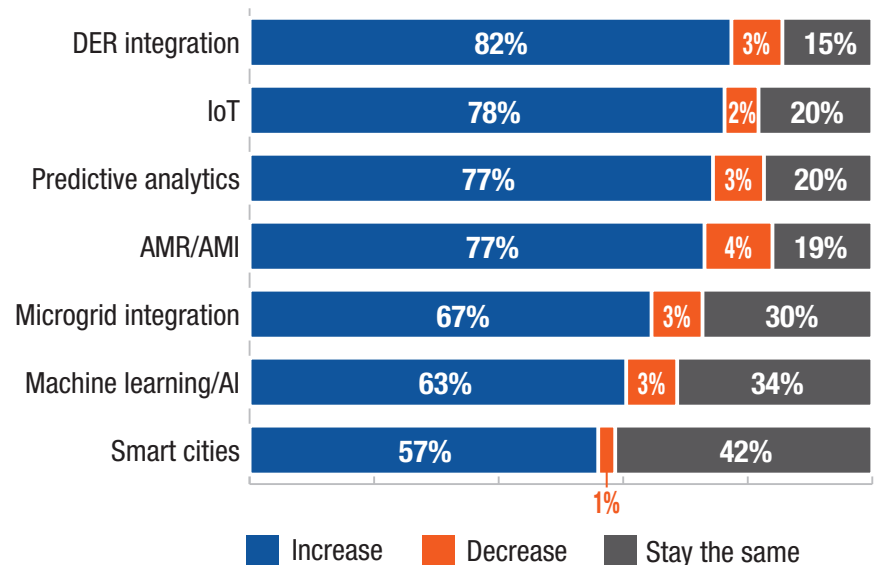
FIGURE 3: Technology influences on CIS
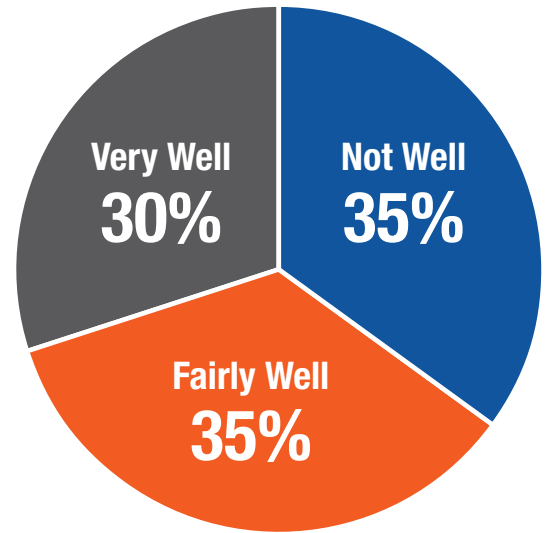

FIGURE 4: Technology influence on CIS in next 3 to 5 years

To know these trends are influential is important, but to be prepared for them is critical for utilities going forward. How prepared are today's CIS systems to handle these changes?

Whether addressing new pricing options, new services or new touchpoints, fewer than one in three utilities feel very well prepared to take on new customer demands. (Figure 5)

Along with customer trends, technology trends are very influential on utilities' CIS. Many utilities have taken steps to integrate new technology solutions into their operations. However, even with technologies that many utilities have been working with for years, utilities still don't feel their CIS is prepared for them. Less than half of utilities believe their CIS is very well prepared to adapt to AMR/AMI. (Figure 6) And the confidence that utilities have in their CIS's ability to adapt to other new technologies continues to slip from there. For example, only a third of utilities feel their CIS is well prepared for real-time data analytics, and just 23% feel well prepared for IoT.

"What's really mind-boggling to me is that utilities collect so much data but they really don't know what to do with it. They are responsible for reliability and safety, but that sometimes cause a barrier for new technology because of risk evaluation."
— Public Utility Commissioner from the Pacific U.S.

FIGURE 5: CIS preparedness to adapt to customer trends

Very Well **30%**
Not Well **35%**
Fairly Well **35%**

FIGURE 6: CIS preparedness to adapt to technology trends

	Not well	Fairly well	Very well
AMR/AMI	6%	46%	47%
Real-time data/analytics	15%	52%	33%
DER integration	13%	56%	31%
Predictive analytics	19%	53%	28%
Microgrid integration	18%	56%	27%
IoT	22%	55%	23%
Smart cities	24%	58%	19%
Machine learning/AI	31%	55%	14%

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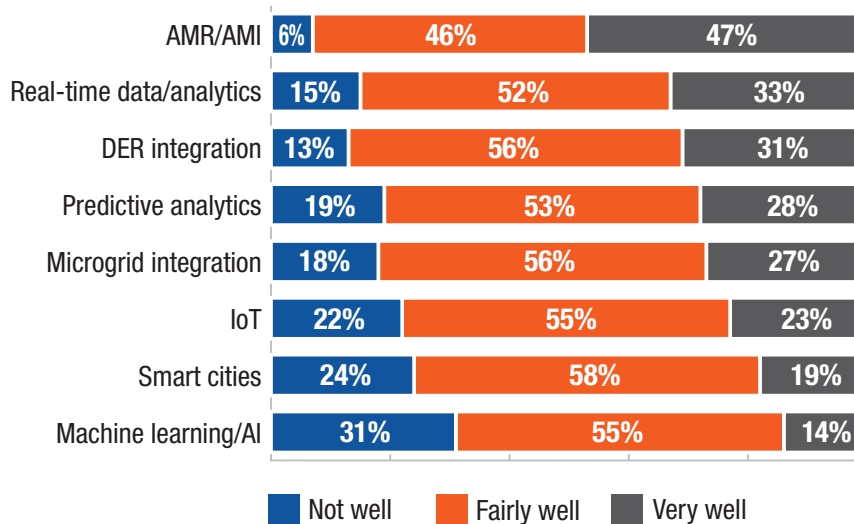
Planning for the changes in customer and technology trends starts today, but many CIS platforms have been around for years. Just 9% of survey respondents have a CIS platform under a year old. (Figure 7) What about everyone else? Up to 75% of utilities are running a CIS 10 years old or less and only 25% are running a CIS older than 10 years. More than half of respondents operate CIS platforms that are over ten years old. Even with the younger CIS platforms of some utilities, many respondents still seem ill prepared to take on current customer and technology demands, which will only increase in influence in the future.

While adapting to new trends is important, upgrading a traditional CIS platform can be a daunting task for many utilities. Cost is the leading concern for utilities looking to replace a CIS platform (64%). (Figure 8) However, data migration (57%) is also a relevant concern for today's utilities in a data-driven marketplace. Integration (46%) and business value (31%) are also influential when utilities choose a CIS platform.

FIGURE 7: Age of CIS platform
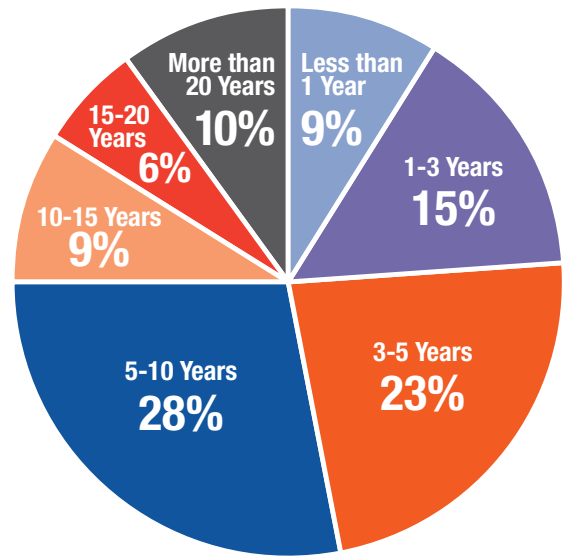
FIGURE 8: Top concerns for replacing CIS platform
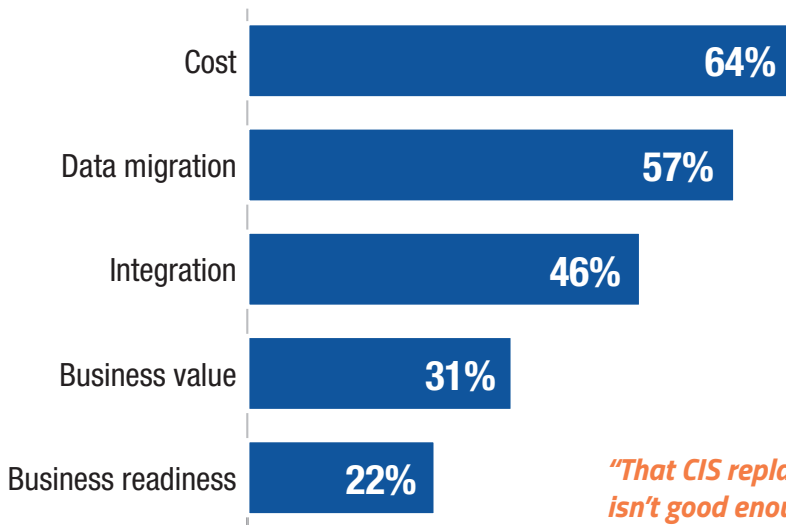
"That CIS replacement projects remain a daunting task simply isn't good enough. Established software providers and system integrators are failing their customers. To approach these projects the same way as they have been done for the last 20 years and expect the outcome to materially improve is, at best, naive."

— James Riley, Chief Strategy Officer, Vertex

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Customers and new technologies generate data like never before. Gathering, storing, and analyzing massive amounts of data is becoming increasingly difficult for companies across all industries—customer trends like new touchpoints create several data streams just for one customer. A cloud-based CIS solution is one option for utilities when looking to replace an outdated CIS, but how do utilities feel about using a cloud-based CIS?

Regarding a cloud-based CIS, the majority of survey respondents agree it is a viable solution to handle their needs. 70% of respondents agree cloud-based technology is an important trend for the utility industry. (Figure 9) Furthermore, nearly 60% agree cloud technologies could be an option for their CIS. Overall, utilities see value in a cloud-based technology for a new CIS. A Public Utility Commissioner from the Pacific U.S. says, "We're in a new innovation age, but we're moving into the virtual age. The virtual age is about harnessing new technologies, and that's where cloud comes in."

FIGURE 9: Utility agreement regarding cloud-based CIS

The cloud is important for the utility industry — **70%**
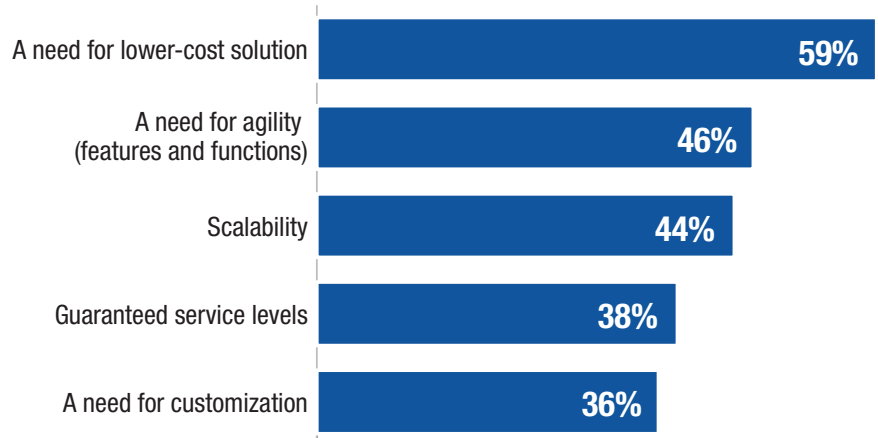
The cloud could be an option for our CIS — **58%**

"Cloud solutions are attractive for a lot of reasons. It gives us a lot more flexibility and capability. Our cloud solution can grow to meet our needs as we move forward."
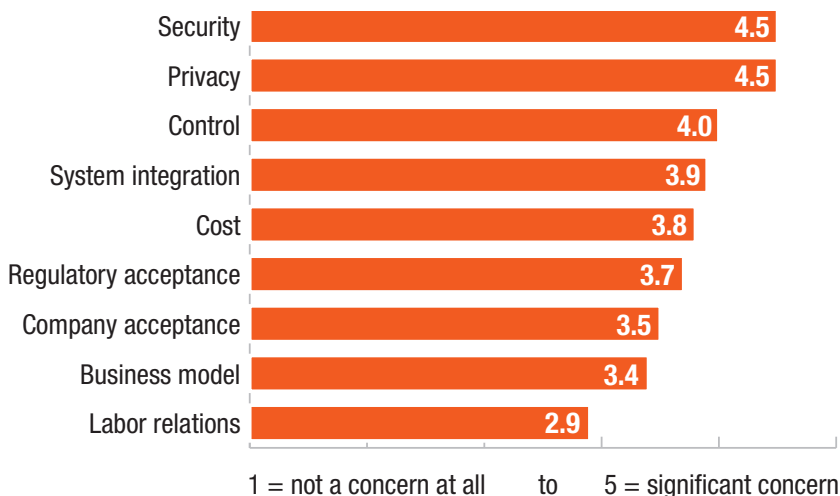
— Dave Craven, Director, Union Gas

As far as why utilities see the value in cloud-based CIS, most utilities look for the cloud to lower costs (59%), however, they take many traits into account. (Figure 10) Utilities also highly value a need for agility (46%) and scalability (44%), which reflects the pace of change happening in the utility industry, and the need for CIS platforms to be able to adapt and thrive. Dave Craven, Director at Union Gas, notes time saved as another advantage. "Our solution provider takes on the responsibility of how to get the upgrades done and how to get the backups done. Our organization doesn't have to spend time worrying about those things because they provide us with those services."

FIGURE 10: Important traits for cloud-based CIS

A need for lower-cost solution — **59%**

A need for agility (features and functions) — **46%**

Scalability — **44%**

Guaranteed service levels — **38%**

A need for customization — **36%**

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As utilities look to cloud-based solutions to lower costs while becoming more agile and scalable, they must consider important concerns. When utilities consider a cloud-based technology as a CIS solution, their primary concern is security. (Figure 11) Other top concerns are privacy (4.5), control (4.0), and system integration (4.0). While there are concerns about security and privacy, there is growing evidence that cloud solutions offer greater security than on-premise solutions, and the utility industry would benefit from greater education about this topic. Ultimately, utilities need to be able to trust their solution provider. Dave Craven, Director at Union Gas, highlights this point. "One of the initial challenges is just trust. The fact that you can no longer see your server and not physically touch the hardware is a big change. It's different, but you need to be able to maintain trust. Your vendor really needs to be there and provide your organization that level of trust and prove they can fulfill your needs."

FIGURE 11: Top concerns regarding cloud applications

Concern	Rating
Security	4.5
Privacy	4.5
Control	4.0
System integration	3.9
Cost	3.8
Regulatory acceptance	3.7
Company acceptance	3.5
Business model	3.4
Labor relations	2.9

1 = not a concern at all   to   5 = significant concern

"That security and privacy are the top concerns about cloud tells me that more needs to be done to educate utilities. With increasing sophistication and frequency of cyber attacks, there is a strong argument that your applications and data are safer in the cloud."

— Andrew Jornod, CEO, Vertex

Utilities are looking to improve customer experiences to create an energy marketplace beneficial to both consumers and suppliers—and an outdated CIS can impact a utility's ability to take advantage of new technologies and best interact with their customers. Implementing a cloud-based CIS is one way to incorporate and adjust to new trends coming at utilities. When looking for a cloud-based technology CIS platform, utilities should:

- **Understand your customers' preferences.** If an organization is looking to improve customer experiences, it first must understand its customers' preferences. When looking to upgrade to a new CIS, utilities should first identify what traits and experiences are most important to customers, and how a new CIS platform will be able to handle those demands.

- **Prepare for continued technology change.** Technology is always changing. If your customers are using new technology, then chances are you should be, too. Utilities must ensure their technology solutions work with evolving customer and grid technology needs. Cloud-based technology can provide ways for utilities to continue to upgrade their infrastructure to meet changing requirements and demands.

- **Customize your solution.** Different utilities value different CIS traits. To ensure a new CIS will benefit your organization, ensure your service provider's platform addresses your organization's top needs and priorities.

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