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Clearing a Path to the Cloud:
U.S. Regulator Perspectives on Cloud Technologies

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Regulatory Perspectives on Cloud Technologies

While utilities are starting to embrace cloud technologies, as determined in On Cloud Now, a study we undertook in early 2016, often the decision is not theirs alone to make. Regulators' rulings on whether public utilities' investments in cloud technologies can be capitalized are central to paving the way for accelerated cloud adoption.

Our first utility cloud survey of 100 electric, water, and gas utility executives found that 45% of those utilities were already using cloud technologies—defined broadly as applications and computing resources delivered as services over a network connection instead of through in-house resources at the utility—with another 52% planning to do so.

Building upon the results of that first study, we sought out the thoughts of another group integral to the utility investment equation: utility regulators. We subsequently surveyed 76 U.S. regulatory staff and commissioners, and discovered corroboration of the paradigm shift indicated in our first study: Both utilities and regulators recognize that the cloud will become an integral part of utilities' processes and operations.

Our survey results indicated that many regulators understand the cloud's benefits, and are starting to show more formal support as they figure out their role in enabling investment in cloud technologies. This paper takes a deeper dive into the ways in which regulators see value in the cloud, both for utilities and for their customers.

Armed with the wealth of information gleaned from both studies, we have also prepared a brief playbook to aid utilities in taking a proactive approach to optimizing their individual strategies for leveraging cloud technologies. You'll find it, and further recommendations, at the end of this paper.

In this paper, you'll learn:

- Why U.S. regulators see benefits in utilities using cloud technologies
- How regulators plan to support investment in cloud technologies by utilities
- Recommendations for furthering regulator support for the cloud
- Approaches for utilities to evaluate the best path forward for their own cloud strategies

KEY FINDINGS BY THE NUMBERS

74% of respondents report **improved flexibility** as a top benefit of the cloud.

69% of U.S. regulators support capitalizing cloud-based software.

MOST REGULATORS THINK THE CLOUD IS AN IMPORTANT TECHNOLOGY TREND, BUT ONLY

33% of respondents have a specific and comprehensive strategy for **utility cloud investment**.

Nearly **80%** of regulators think that they should play at least some role in determining whether utilities use cloud.

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Regulators Are Focused on Cloud

This study clearly shows that regulators are already embracing cloud technology investment by utilities. Survey respondents agree that the cloud is an important technology trend, and that the cloud will be critical to the future success of utilities. *(Figure 1)*

While some regulatory bodies are just beginning to wrap their heads around cloud technologies, clear cloud strategies for regulators may not be far off. Approximately 33% of regulators surveyed say that their organization has a specific and comprehensive strategy for cloud technology already, and many more regulators are making plans to more formally address cloud technologies. Half of respondents said their staff currently has a team focused on better understanding the cloud, and an additional 19% have plans to focus staff efforts on understanding the role of cloud technologies in utilities. *(Figure 2)*

These numbers indicate that U.S. regulators are in fact getting ready for cloud technology investments.

Figure 1. Please share how much you agree with the following statement regarding cloud technologies and investments. Figure shows percent of respondents that agreed with statements.

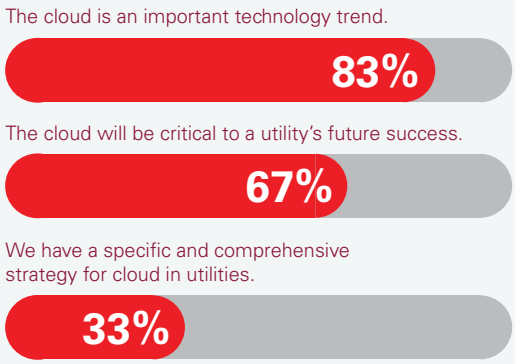
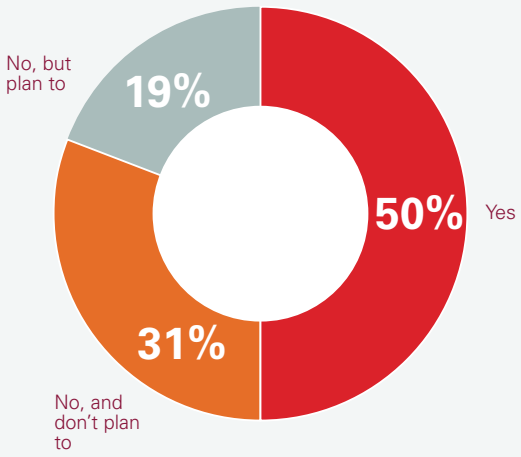


Figure 2. Does your staff have a committee or team that focuses on understanding the role of cloud technologies in utilities? (n=62)



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Regulators See Benefits in the Cloud

Why the change in perspective? In the digital age, customers' increasing expectations have set the bar for functionality, flexibility and efficiency at an unprecedented high level across all industries—and utilities are no exception. The digital world moves quickly, and keeping up with the latest technology can be difficult. For utilities, lagging behind on technology can pose significant physical, safety and financial threats.

The study shows that regulators understand these needs, and that the cloud can help utilities stay ahead of the technology curve. Approximately 74% of regulators surveyed ranked improved flexibility as one of the top three benefits of cloud applications versus on-premises solutions. Keeping pace with technology changes (70%) and improved accessibility to applications (61%) were also highly ranked benefits. *(Figure 3)*

The cloud offers myriad opportunities for utilities to leverage technology in ways that don't require them to step outside of their areas of expertise, both on the customer and operational sides of the business.

While the regulators we surveyed indicated that the top three opportunities for the cloud are in emerging or relatively new areas for utilities, including meter data management (46%), big data analytics (41%), and distribution and network automation (36%) *(Figure 4)*, there are opportunities for leveraging the cloud all across the business enterprise.

Figure 3. Please rank the importance of the following benefits in terms of what utilities could achieve from cloud applications over on-premises solutions. Chart shows percent listed in top three. (n=63)

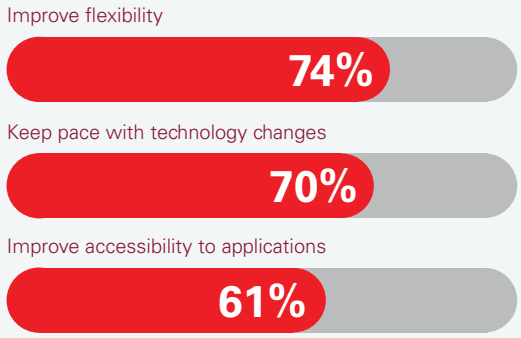
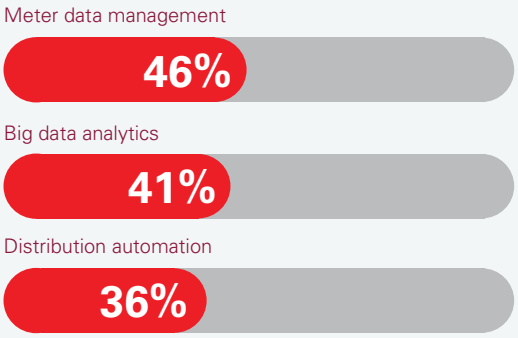


Figure 4. What are the top three opportunities for utilities to leverage the cloud within their organizations? (n=66; respondents chose three answers)



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Regulators' Evolving Role in the Cloud

Utilities are one of the most heavily regulated industries in the world, which means that utility adoption of the cloud will be inherently shaped by regulators. The challenge regulators face now is determining how to protect the public interest while better enabling utilities to keep up with other industries, all while the pace of technological change is rapidly increasing.

U.S. regulators understand they are central to this technological change. When asked what role they should play in determining whether utilities use on-premises or cloud technologies, 79% of respondents—or nearly 4 out of every 5—felt that regulators should play at least some role in determining whether or not utilities use cloud technologies. *(Figure 5)*

What sort of role should that be? Those who feel that regulators should play at least some role in determining utilities' use of cloud solutions most commonly noted:

- Protecting customer privacy and security (66%)
- Providing guidelines/statements for cloud technologies (48%) *(Figure 6)*

Regulators seemed to indicate that they have the tools at their disposal to effectively regulate the use of the cloud. For example, few respondents plan on creating new rules specific to cloud-based technologies. Further demonstrating that use of the cloud can be effectively regulated under existing frameworks, two-thirds of respondents whose organizations have made a ruling have been supportive of cloud. *(Figure 7)*

"The cloud offers myriad opportunities for utilities to leverage technology in ways that don't require them to step outside of their areas of expertise..."

Figure 5. What role should the regulator play in determining whether utilities use on-premises or cloud technologies? (n=62)

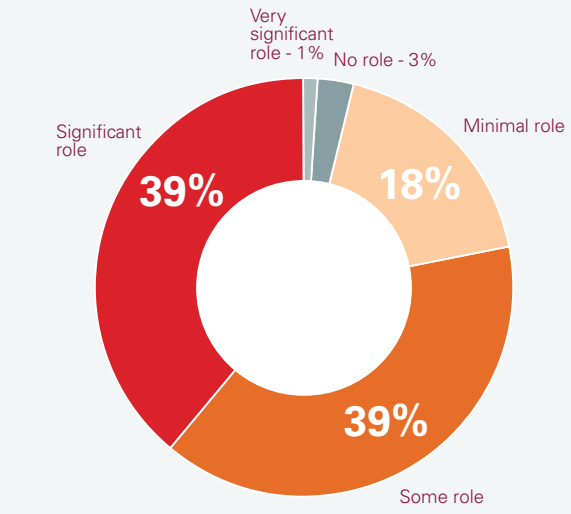


Figure 6. If you believe regulators should play at least some role, what role(s) should they should play? (Select all that apply) (n=60)

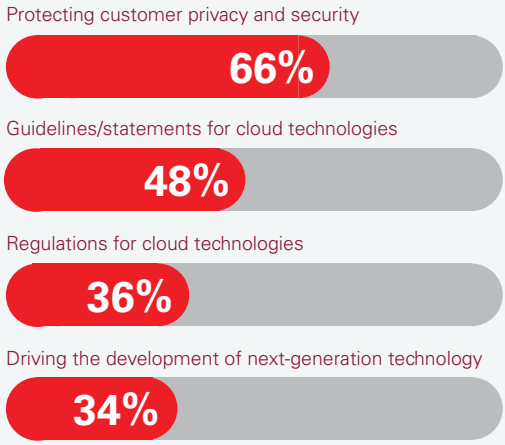
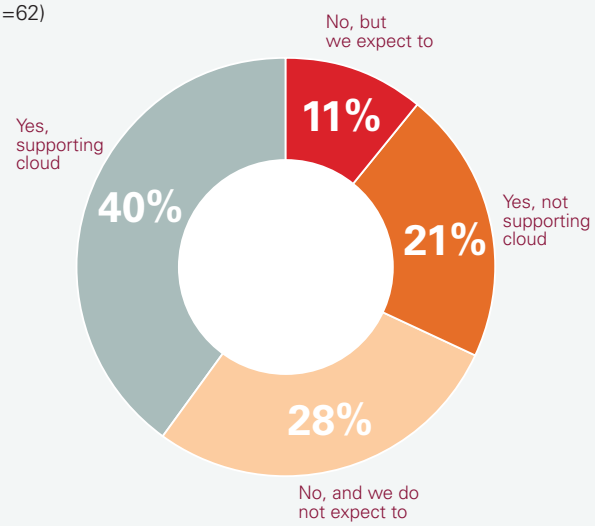


Figure 7. Has your organization made rulings on this topic? (n=62)



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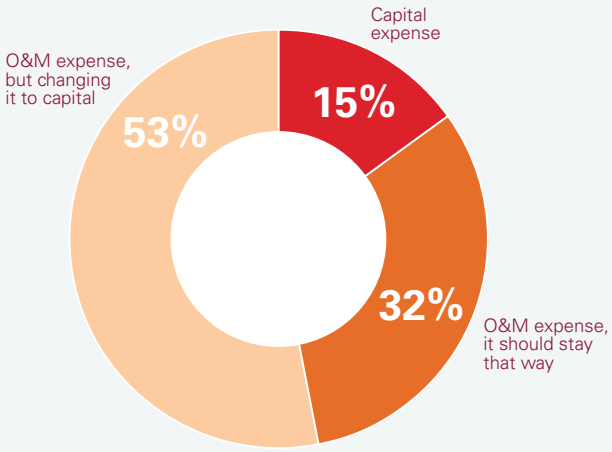
Capitalizing on Cloud Expenditures

As part of their job of protecting the public interest, regulators are tasked with determining how utilities recover the costs on their investments in technologies such as the cloud, and whether those costs are included in the rate base and earn a rate of return. U.S. regulators we surveyed are increasingly comfortable with capitalizing cloud expenses, building off of efforts in New York and Illinois.

Even though just 15% said that their commission currently categorizes cloud investments as capital expenses, a majority (54%) said that they anticipate changing their categorization of cloud investments from O&M to capital expenses in the future. This means that more than two-thirds of the respondents are actively working to level the playing field between investments made in cloud-based and on-premises solutions. *(Figure 8)*

Figure 8. How does your organization currently categorize cloud technology investments? (n=59)



Regulatory Accounting Rules and the Cloud

Just as regulators are using traditional prudency tests to determine if a utility should invest in cloud-based software, existing regulatory accounting rules show how investments in the cloud can be capitalized.

Each regulator has the authority to determine what goes into a utility's rate base in their jurisdiction. In the United States, regulators use the Federal Energy Regulatory Commission's Uniform System of Accounts to categorize investments as operating expenses or capital expenses, which are added to the rate base. There is growing precedent for including cloud-based software in capital accounts.

The New York Public Service Commission ordered in May 2016 that cloud investments that are prepaid will earn a rate of return. This builds off of long-standing practice in which prepayments are added to the rate base.

In Illinois, a number of utilities and software companies recommended that the Illinois Commerce Commission treat cloud computing agreements as intangible property. In this scenario, the cloud software contract is similar to a patent or copyright.

Simply interpreting existing regulatory accounting rules is the best approach for regulators who want to level the playing field for utilities.

Recommendations

Regulatory bodies across the United States are enabling the cloud to grow in value for utilities, and utilities must take a proactive approach to optimize their individual strategy for leveraging cloud technology. By combining the regulator insights captured in this report with the utility executive insights captured in our previous study, we've developed a Cloud Playbook for Utilities to assist in evaluating cloud strategy decisions. Below are the steps:

Step 1: Evaluate cloud fit.
There is not simply a "one size fits all" cloud roadmap. Utilities must evaluate their own goals, business processes, and technology needs in order to determine the cloud roadmap that will deliver the most value for their unique needs. Utilities should evaluate cloud fit for each application and business area within their technology roadmap.

Key assessment categories:

- *Cost savings and risk reduction potential:* Applications that typically carry a heavy cost and time burden for initial on-premises implementation, as well as ongoing maintenance, tend to have significant opportunity for cost savings and process efficiency improvements in the cloud.
- *Standardization:* A major key to realizing the greatest cost benefit of cloud lies in eliminating complexity and risk through standardization. The more a process can be standardized, the greater the opportunity to streamline and simplify the supporting technology.
- *Internal expertise:* When a business area or application requires specialized expertise, building a team to support it pulls resources from core business objectives. The cloud can potentially offload this specialization to a technology partner so your team can refocus on the core business.
- *Scalability:* Supporting the rapid growth of projects can potentially be expensive, as traditional on-premises infrastructure and technology costs add up. Cloud options often deliver the flexibility to scale up, or down, in a cost-effective way.
- *Latest technology:* Keeping in sync with the latest technology and capabilities is difficult when working within traditional methods of software implementation and upgrades. Alternatively, cloud solutions should offer a predictable, consistent upgrade path.

Cloud Fit Assessment:

For each business area or application on your utility's technology roadmap select all below that apply:

- ☐ There is significant potential to reduce the cost to implement and maintain this technology or application.
- ☐ There is a significant opportunity and willingness to standardize this business area or application.
- ☐ It is difficult to build and maintain the internal expertise needed to support and get full value from business area or application.
- ☐ The ability to scale quickly as needed to support this business area or application is important and valuable.
- ☐ The ability to take advantage of the latest technology and capabilities is desirable and will provide an advantage for this business area or application.

For each of the applications or business areas you scored, look at the number of criteria matched.

If you selected 3, 4, or 5 of the Cloud Fit criteria: This application or business area is likely a good fit for cloud now.

If you selected 2 of the Cloud Fit criteria: This application or business area may not be the best fit for cloud now and can move to a lower priority. Keep an eye on this, though, as your needs may change.

If you selected 0 or 1 of the Cloud Fit criteria: This application or business area is not a good fit for cloud yet. Re-evaluate in the near future.

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Given the respective scores of the business areas and applications assessed, utilities can begin to prioritize their cloud roadmap strategy and accelerate cloud adoption where there is the most value to be gained.

Step 2: Get aligned with regulators.
As we found in both studies, utilities and regulators are aligned on many of the key cloud benefits and challenges. This alignment is a solid foundation to build upon and continue to nurture progress. Utilities and regulators can develop an effective approach to maximizing benefits of cloud while working together as stewards of privacy and data security. Here are key points to keep in mind:

Think Big Picture
As regulation evolves in the face of technology-induced change, huge opportunities will be unlocked for utilities. Support regulators as they continue their balancing act between protection and innovation. As regulators move forward, it is important first to help them understand the big picture of the cloud and its potential value to constituents, and then to address specific ways in which utilities can best recover the costs of their investments in cloud technologies.

Leverage Common Understanding
When asked to identify the top three perceived benefits for utilities in leveraging cloud applications over on-premises solutions, regulators and utilities alike identified improved flexibility and the ability to keep pace with technology changes as important benefits. After that, their focus diverged: utilities identified reduced spending on technology infrastructure and the ability to focus on core competencies as important benefits, while regulators indicated that improved accessibility to applications was important. Both the commonalities and differences in the survey results of these two groups present an opportunity to establish a common understanding within both groups of the benefits of moving to the cloud.

Step 3: Implement the right accounting treatment.
Throughout the U.S., regulators and utilities alike are turning to accounting experts to better understand how to account for cloud investments.

Some regulators have made progress in leveling the playing field between cloud and on-premises solution investments. These regulators are taking a simple approach and interpreting existing regulatory accounting rules to meet their needs. Utilities can proactively urge other regulators to follow in their footsteps.

As the National Association of Regulatory Utility Commissioners recently noted in a resolution at its 2016 annual meeting: "The business of electric, gas, and water utilities is changing rapidly. Utilities are now faced with how best to respond to modern expectations, technological innovation, and new regulatory drivers. To thrive in the future, utilities may need to modernize and transform their business operations. A key element of this may be access to state-of-the-art commercial cloud computing services, which is increasingly delivered via a 'cloud-based' or 'software-as-a-service' model."

Step 4: Move forward quickly and prudently.
After you have built a cloud strategy that supports your business and technology roadmap, move forward with confidence. You have cleared the best path to the cloud, trust it. Periodically reassess your strategy to uncover opportunities to accelerate and optimize return on investment. Look to your technology partners to support you through this.

To learn more about building the best cloud roadmap to fit your needs, visit: www.oracle.com/utilitycloudsolutions

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Survey Methodology

Zpryme and Oracle completed the survey for this report in the Fall of 2016. More than 75 regulatory personnel completed the 22-question online survey about their organizations' approaches to the cloud. Below is a breakdown of survey respondents by organization type, regulation area, functional area of expertise, and location.

Figure 9. Respondents by regulatory organization type

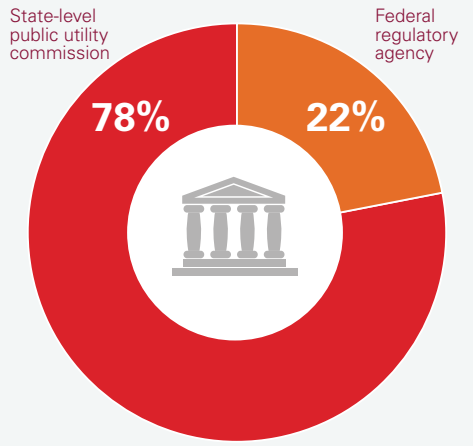

Figure 10. Respondents by organization location

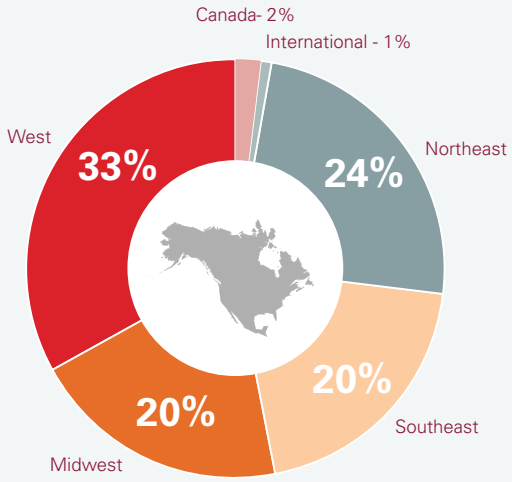

Figure 11. Respondents by functional area of expertise

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