STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

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| Illinois Commerce Commission  On Its Own Motion  Notice of Inquiry Regarding the Regulatory Treatment of Cloud-Based Solutions | :  :  :  :  :  : | 16-NOI-01 |

NOTICE OF INQUIRY

1. **Background**

Cloud computing generally refers to delivering computing power – whether in the form of software, storage capacity, or other services – over the Internet. Web-based software services, more commonly referred to as cloud computing or Software-as-a-Service (“SaaS”), are being implemented globally by users in virtually all types of organizations, including manufacturing, government, services, retail, and some utilities.

In September 2015, the Illinois Commerce Commission (“Commission”) hosted a policy session on Business and IT Investments in Cloud Computing Arrangements (“Policy Session”). The purpose of the Policy Session was to discuss technology advancements in energy analytics and cloud computing arrangements, including the regulatory accounting treatment of such arrangements as capital expenses versus operating expenses. According to current accounting principles, utility investment in on-premises software is treated as a capital expense, which is included as part of the utility’s rate base on which it is allowed a return. Contrastingly, utility investment in a cloud-based solution is treated as an operating expense, which does not earn a rate of return. A simple illustration of the distinction is that a utility is permitted to capitalize the cost of purchasing a copy of Microsoft’s on-premises Office product but not the cost of a license for Microsoft’s cloud product known as Office 365, despite having similar functionality.

Cloud proponents and utility representatives at the Policy Session stressed that the traditional utility model incents investment in on-premises IT software solutions over cloud solutions without regard to technical or functional merits because utilities favor fixed assets that go into rate base. Moreover, they pointed to the benefits of bringing together the various IT systems within the utility to enable data sharing, data analysis, and interoperability. For example, utilities pursuing SaaS options can improve existing business functions, such as customer relationship management, while also exploring applications like Smart Meter as a Service. According to its proponents, a shift to the cloud can enable both utilities and customers to leverage the economic and environmental value of the smart grid by aggregating systems to analyze the relevant data, develop new products and programs to help customers reduce their energy bills, and help utilities to better manage the power infrastructure.

As innovation becomes increasingly necessary for grid modernization, the Commission is interested in determining whether utility investment in cloud computing is prudent and whether leveling the playing field between cloud and on-premises solutions would encourage utilities to make the most cost-effective investments. As described in detail in Section IV, below, the Commission is interested in: 1) comparing cloud services with on-premises IT systems, looking at respective cost, reliability, and security; 2) examining the regulatory accounting treatment of cloud services and discerning whether there are additional regulatory barriers that hinder the adoption of cloud services; and 3) exploring whether additional benefits would accrue from deployment of cloud-based solutions to utilities, customers, the grid, and the environment.

Accordingly, the Commission initiates this Notice of Inquiry (“NOI”) as a vehicle for gathering information and opinions that may form the basis for action by the Commission on these matters.

1. **Applicable Law – NOI**

The Commission’s rules with respect to NOIs are found in 2 Ill. Adm. Code 1700, Subpart D. Section 1700.330 states that NOls will contain, in part, a disclaimer that:

the Notice of Inquiry proceeding is not a rulemaking, but that information gathered may or may not form the basis for the initiation of rulemaking or for other purposes at a later date.

2 Ill. Adm. Code § 1700.330.

1. **NOI Manager**

Section 1700.310 of the Commission's NOI rules requires the designation of an NOI Manager to conduct discussions as are necessary to address the issues raised in the Commission’s directive for an NOI. The NOI Managers in this case will be Elizabeth McErlean and Anastasia Palivos. For correspondence, please note:

Mailing Address:

Elizabeth McErlean & Anastasia Palivos

Illinois Commerce Commission

160 North LaSalle, Ste. C- 800 Chicago, IL 60601

Telephone: 312-814-8929/4088

Fax: 312-814-1818

e-mail: [emcerlean@icc.illinois.gov](mailto:emcerlean@icc.illinois.gov) & [apalivos@icc.illinois.gov](mailto:apalivos@icc.illinois.gov)

1. **NOI Questions and Issues**

Interested persons and entities are requested to respond to the following questions and issues:

Cloud vs. On-Premises IT Solutions:

1. Cost:
   1. Identify how costs differ between a traditional on-premises IT system and a cloud-based solution, including all relevant costs and timing of costs.
   2. Describe the costs associated with migrating utility data systems to cloud services. What evidence have stakeholders seen of this shift and what are the results? How long would it take to migrate utility data from on-premises IT to a cloud solution? Provide examples of utility services that have migrated from utility-owned systems to cloud services.
   3. Identify costs associated with training employees to use cloud-based solutions and whether those costs differ substantially from costs to train employees to use utility-owned, on-premises systems.
   4. Describe whether and how operations and maintenance costs differ between utility-owned, on-premises systems and cloud services.
2. Reliability:
   1. Describe whether and how cloud-based solutions improve safety and reliability at a utility.
   2. Proven Cloud Technologies in Regulated Utilities
      1. Identify the cloud services that have proven most successful for public utilities. Identify the differences between a public versus a private cloud, and determine whether one is more appropriate for the utility industry.
      2. Identify public utilities that have adopted cloud-based solutions and what effect cloud services have had on the utility’s safety and reliability.
      3. Identify circumstances where the utility and its customers are better served by a combination of utility-owned, on-premises IT systems and cloud services, a “hybrid” model. What approach best maximizes reliability, safety and security for a utility and its customers?
   3. Identify successful cloud services adopted by non-utility, but highly regulated, companies or industries. Explain any lessons from their experience that can help maximize reliability, safety, and security for a utility and its customers.
3. Cybersecurity:
   1. Cloud Security
      1. Describe whether and how utilities will benefit from the cybersecurity practices provided by cloud-based solutions providers versus those associated with on-premises solutions.
      2. Identify any cybersecurity benefits of using a cloud-based solution versus an on-premises IT system.
   2. New Risks
      1. Describe the extent of new risks introduced (if any) when a utility migrates to a cloud-based solution from an existing on-premises system.
   3. Incident Response
      1. Describe how cloud-based solution providers can respond to cybersecurity threats in contrast to utilities utilizing on-premises systems.
   4. Threat Detection
      1. Describe whether and how a cloud-based solution can assist a utility in protecting, detecting, and responding to cybersecurity threats and operational vulnerabilities.
   5. Security Framework for Utilities
      1. Identify the key elements and value of a security best-practices framework for utilities to address cybersecurity threats.
      2. Identify the security best-practices framework you would recommend for Commission adoption and explain why.
   6. Security Framework for Cloud Providers
      1. Identify the key elements and value of standardized security requirements for cloud-based solution providers.
      2. Identify and explain the security best-practices framework you would recommend the Commission adopt for cloud services. Explain how this framework differs from security best-practices you would recommend for on-premises systems.
      3. Identify the key elements and value of standardized due diligence guidelines for utilities when selecting cloud-based solution providers. Explain how this guidance is different from selecting on-premises solutions.
      4. Identify the cloud services selection guidelines you would recommend for Commission adoption and explain why.
   7. Best Practices
      1. Describe how best practices in protecting sensitive utility and customer information differ between cloud-based hosting and on-premises hosting.
   8. Compliance
      1. Describe whether and how cloud based solutions can improve utility compliance, privacy, and data security.
   9. What Should Utilities Avoid Putting in the Cloud?
      1. Describe the utility functions - including generation, transmission, distribution, metering, consumption, customer data management and customer experience - that should not be placed in the cloud and explain why. Would your answer depend on whether the information was placed in a public versus private cloud?
   10. Connectivity
       1. Describe how existing utility IT systems that are not currently interconnected can be made to integrate if hosted in the cloud. What are the benefits and vulnerabilities introduced by interconnecting various utility IT services?

Regulatory Barriers:

1. Ratemaking Treatment:
   1. Does current ratemaking practice discourage Illinois utilities from deploying cloud-based solutions (e.g., data analytics) provided by third party vendors?
   2. Describe any reasonable justification for accounting ratemaking distinction between investing in cloud-based solutions and investing in on-premises solutions.
   3. Describe whether and how utilities are adopting cloud-based solutions despite its accounting treatment.
   4. Identify alternative ratemaking treatments that would render Illinois utilities indifferent in either choosing to deploy cloud-based solutions provided by third party vendors or continuing with on-premises IT systems owned by the utility.
      1. For each alternative identified, identify the costs and benefits of implementing that alternative.
      2. For each alternative identified, identify Illinois administrative rules that would need to be revised, and the revisions(s) required, in order to implement that alternative.
2. Other Barriers:
   1. Identify and explain any other regulatory barriers that discourage Illinois utilities from deploying cloud-based solutions (e.g., data analytics) that would otherwise be in the best interest of the utility and its customers. For each barrier identified, identify Illinois administrative rules that would need to be revised, and the revision(s) required, to eliminate that barrier.

Additional Benefits of Cloud Deployment:

* 1. Describe the types of cloud-based technologies available for electric, gas, and water utilities.
  2. In electric utilities:
     1. Identify specific software services not currently deployed in Illinois available to engage customers in distributed generation, distributed storage, demand response, and energy efficiency programs. Are those tools available as on-premises and cloud solutions, or is only one option available?
     2. Identify specific services not currently deployed in Illinois that could provide customer engagement portals that improve customer engagement, increase customer satisfaction, and help meet regulatory mandates for verified energy savings and demand reduction.
  3. In water and gas utilities:
     1. Identify the types of software or services not currently deployed in Illinois that could improve customer engagement and increase customer satisfaction.
     2. Identify the types of software or services not currently deployed in Illinois that could detect leaks and inefficiencies, improve conservation, and lower operating costs.
  4. Describe any additional feature benefits to a utility when adopting a cloud-based solution. For example, what are the benefits of cloud software that analyzes consumption patterns, identifies malfunctioning meters, reduces unbilled energy, or engages in predictive maintenance and load forecasting, among other things.

1. **Form and Content of Documents Distributed in this NOI**

Pursuant to Section 1700.350 of the Commission's NOI rules:

1. An original and three copies of all comments, reply comments, and other documents should be submitted to the Chief Clerk of the Commission on or before the date stated in the NOI. The distribution of such copies will be as follows:
   1. Chief Clerk — Springfield
   2. Chicago Office
   3. Office of Chairman & Commissioners — Chicago [successor to PAR Division for purposes of this NOI]
2. Copies of all documents filed in the proceeding will be available for public inspection at the Chief Clerk’s office in Springfield and the Commission's Chicago office.
3. A copy of the list of participants may be acquired from the NOI Manager. The NOI Manager will take steps to ensure that copies of all documents filed in the proceeding are posted to the Commission’s website, [www.icc.illinois.gov](http://www.icc.illinois.gov). In addition to providing comments and other documents as set forth above, interested persons and entities are requested to email the same in electronic form (preferably Adobe pdf) to [emcerlean@icc.illinois.gov](mailto:emcerlean@icc.illinois.gov) and [apalivos@icc.illinois.gov](mailto:apalivos@icc.illinois.gov).
4. **Schedule**

The schedule for this NOI shall be as follows, unless altered by the NOI Manager with adequate public notice provided:

* Submission of initial comments (pursuant to 2 Ill. Adm. Code 1700.340 (b)): March 31, 2016.
* Submission of reply comments (pursuant to 2 Ill. Adm. Code 1700.340 (c)): April 21, 2016.

The Commission anticipates that additional rounds of comments might be of benefit and therefore authorizes the NOI Managers to schedule further rounds, with adequate public notice provided, if they believe that additional comments would be helpful.

Participants are encouraged by the Commission to share their data and other information pertinent to the issues to be addressed in this NOI with other participants, if requested.

Initiated this 10th day of February, 2016.

(SIGNED) BRIEN SHEAHAN

Chairman