# Regulators' Financial Toolbox: Cloud Computing

THURSDAY, SEPTEMBER 24, 2020

NARUC CENTER FOR PARTNERSHIPS AND INNOVATION

### NARUC Center for Partnership and Innovation (CPI) www.naruc.org/cpi

#### NARUC

The National Association of Regulatory Utility Commissioners (NARUC) is a nonprofit organization founded in 1889.

Our Members are the state regulatory Commissioners in all 50 states & the territories. FERC & FCC Commissioners are also members. NARUC has Associate Members in over 20 other countries.

NARUC member agencies regulate electricity, natural gas, telecommunications, and water utilities.

#### CPI

Grant-funded team dedicated to providing technical assistance to members.

CPI identified emerging challenges and connects state commissions with expertise and strategies.

CPI builds relationships, develops resources, and delivers trainings.

CPI thanks the US Department of Energy for support in today's session.

## Agenda & Housekeeping

#### AGENDA

- 1:30 ET Introduction
- 1:35 ET Moderator: Commissioner Diane Burman, New York Department of Public Service (DPS)
- 1:45 ET **Panelist:** Joseph Santamaria, Amazon Web Services (AWS)
- 2:00 ET **Panelist:** Rick Cutter, Cloud for Utilities
- 2:15 ET **Panelist:** Danny Waggoner, Advanced Energy Economy (AEE)

2:30 ET Dialogue and Q&A

3:00 ET Close

#### DURING THE WEBINAR

The webinar is being recorded.

**Chat** the organizers anytime for questions on the logistics or discussion.

#### AFTER THE WEBINAR

Please allow a few business days to process and post the webinar recording to <u>www.naruc.org/cpi</u>.

## Commissioner Diane Burman

NEW YORK DEPARTMENT OF PUBLIC SERVICE (NYDPS) PANEL MODERATOR

## Up next...

## Joseph Santamaria

AMAZON WEB SERVICES (AWS)

### Introduction to Cloud & AWS

Joseph Santamaria Amazon Web Services (AWS)

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### Introduction to cloud computing & AWS

### Utility cloud compliance & security summary

### Investor owned utility cloud deployment example





# Introduction to cloud computing & Amazon Web Services (AWS)



## What is cloud computing?



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## What is Amazon Web Services (AWS)?



**Everything** you'd want to do in a traditional datacenter





Run applications – reliably and securely

**Provision** network, compute, storage, and database services in the cloud with the click of a button



# Customers move to the cloud for multiple reasons



Cost reduction



Agility and dev productivity



Innovation and digital transformation



Data center consolidation



Colocation or outsourcing contract changes



Acquisitions or divestitures



## Increase agility and developer productivity



Use existing staff for higher-value work

#### Create momentum to grow new skills and processes

#### Invent and iterate with flexible resources



## Free up financial resources



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## Gain faster, deeper insights

Transform data into value, without compromising on security or governance



Speed decision-making to support your business

Deepen customer relationships

#### **Reduce business risk**



# Utility cloud compliance & security summary



### Cloud enhances utility security



Highest standards for privacy and data security



### Utilities inherit global security & compliance controls



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### The shared responsibility model



aws

### Alignment with security objectives



# Investor owned utility cloud deployment example



## The PSEG Energy Cloud

PSE&G plans to lead the way in supporting sustainable, open, and customer-centric energy services

- Provide solutions to manage the electric grid of the future
- Analyze data to predict needs, develop tailored solutions and automate interactions
- Use intelligence to optimize energy consumption and sustainability
- Provide a platform for PSEG and others to offer advanced energy services

#### **PSE&G Energy Cloud**





## **Energy Cloud Architecture**





## Sample capabilities enabled in Energy Cloud



- Identifying customer "Next Big Actions"
- Detecting Smart Home anomalies
- Using Smart Home Assistants to manage spend and carbon footprint goals
- Lowering cost and improving satisfaction by digitizing nearly 100% of interactions



- Detecting outages in real time
- Pooling IoT data into Demand Response programs
- Fully automating remote shut-off and service activations
- Generating customer savings by measuring power quality for Voltage Reduction programs



- Automating operations using real-time data and Al
- Using Augmented Reality to display underground assets
- Detecting fault location geocoordinates
- Performing storm damage assessment
- Manage resources with Distributed Energy Management



## Thank you

Further information for regulators:

Blair Anderson AWS Director of Public Policy blairand@amazon.com



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## That was...

## Joseph Santamaria

AMAZON WEB SERVICES (AWS)

## Up next...

## Rick Cutter

CLOUD FOR UTILITIES

## CLOUDFOR UTILITIES

## **Regulatory Considerations for Cloud Computing**

**Rick Cutter** Cloud for Utilities CloudforUtilities.org





#### **Rick Cutter**

- 25+ Years utility industry technology experience
- Founder, Cloud for Utilities
- Oversight 50+ utility industry CIS replacements
- Managed the first utility industry CIS in the Cloud (ASP Business Model in 1999, deregulated energy market)



## 2020 Cloud Economy

- Recent reports estimate Cloud market size in 2020 of \$371B to grow to \$832B by 2025.
- Rapid expansion fueled by work from home orders
- Companies already leveraging Cloud made the shift to work from home much faster and efficiently
- 2020 IT Budgets cuts due to Covid19
- Gartner recently estimated money spent on public cloud to rise by 19%, even with shrinking overall budgets

#### 2020 Cloud Trends

- Enterprises embrace multi-cloud and hybrid cloud
- Increases in cloud spending
- Migrating more work loads to Cloud
- 2020 IDG Survey 81% of organizations have at least one application in the cloud, up 73% from 2018
- Covid19 is accelerating cloud usage





#### **Cyber Security**

- Continues to be a concern
- Integrated strategy for cybersecurity
- Knowledge of security configurations
- Work from home is now an extension of the network (Covid19)
- Can an individual utility survive a nation state attack?



#### 2020 Utility Cloud Uses

- Digital Bolt-On Applications
  - Customer self service
  - Mobile work management
  - Customer relationship management
- Big Data
  - General cloud storage
  - Analytics in cloud
  - AMI data management
- Software as a Service
  - Demand response programs
  - ERP Financial Systems
  - Asset Management
  - Customer Information Systems
  - Even SCADA

#### **Clean Energy Programs**

- Behavioral energy efficiency
- EV charging optimization
- DER management and optimization
- Dynamic load control/Smart thermostat integration



#### **2020 Utility Implementation Challenges**

- Interoperability of systems
- Large complex in-house systems
- Legacy systems are fragile
- Many expensive consultants maintain the legacy systems
- Modern infrastructure is more complex than legacy mainframes
- Retraining technology staff



#### **Sample of Firms Utilizing Cloud**

- Zoom
- Salesforce
- Netflix
- FedEx
- AT&T
- Disney
- Walmart
- Nasdaq
- Capital One
- Government

### **Keywords to Remember:**

- Scalability
- Elasticity



### **Slower Cloud Adoption in Utilities**

2020 Cloud For Utilities – Utility Industry Cloud Adoption Survery

- Researched completed in February 2020
- Surveyed 152 utilities in the United States



### The Regulatory Environment



#### **Survey Question**

My utility has made the decision to use on-premises it solutions over cloud solutions because of the inability to earn a rate of return for cloud solutions

58% Agree Selecting On-Premises Due to Rate of Return



### The Regulatory Environment



#### **Survey Question**

The regulating body that oversees my utility allows for a rate of return for Cloud solutions



## Thank you ! Any Questions?

#### **Cloud for Utilities**

- Founded in 2017
- Industry Organization focused on Cloud Computing and Digital
- Annual Summit in Washington DC
  - Education, Lessons Learned and Best Practices
- Innovation Consortium
  - Cloud and Digital Framework for Utilities
  - Focused on Utility Innovation



#### CloudforUtilities.org



linkedin.com/company/cloudforutilities linkedin.com/in/rickcutter



@cloud4utilities



## That was...

## Rick Cutter

CLOUD FOR UTILITIES

## Up Next...

## Danny Waggoner

ADVANCED ENERGY ECONOMY (AEE)



### **Regulatory Considerations for Cloud Computing**

Danny Waggoner Advanced Energy Economy



How do cloud services impact utility earnings?

## The trade off between operating expense and capital creates challenges for cloud computing

In general...

- Capital investments generate a rate of return over the long term
- Operating expenses do not provide a direct rate of return and must be managed to result in savings that may be retained as earnings.
- The impacts vary based on how cost of service is implemented and the impact of capital trackers and clawback mechanisms.

### Standard Cost of Service: <u>Short-term</u> financial impacts Savings retained as earnings



Operating Exp Capital Cost of Debt Return on Equity

\*Simplified illustration, cost of debt and RoE higher than usual so that they are visible. Taxes excluded (pass through).

### Standard Cost of Service: Long-term financial impacts Savings disappear, RoE remains diminished



## Capital Trackers/Clawbacks: Short-term financial impacts Revenues reconciled with $\Delta$ capital, not $\Delta$ operating exp.



Operating Exp Capital Cost of Debt Return on Equity

\*Simplified illustration. Impacts are exaggerated for visibility. Effects are directionally accurate but would be smaller in magnitude for an actual utility.

## Long-term impacts on capital outweigh short-term impacts on operating expenses

- Regardless of the specific regulatory model, the strategy remains mostly the same:
  - Growth in capital expenditures produces long-term, durable earnings
  - Expenses can be managed to produce savings, but the impacts on earnings are short-lived
- These concerns are especially acute for service expenses that replace capital, such as cloud:
  - This presents the utilities with an opportunity cost—forgone earnings on capital
  - The increase in expenses can reduce earnings

### **Regulatory Options and Considerations**

## Capitalization is often used, though it is not always compatible with flexibility

- Most states have used capitalization to address accounting disparities.
  - This can be accomplished through prepaid service contracts or regulatory assets
  - The services are purchased upfront for several years, and the costs are placed in the rate base and amortized over time, just like a distribution asset.
- Prepayment isn't always the best fit with cloud's flexibility
  - Cloud service charges are often based on usage and don't need to be forecasted
  - Prepayment requires a defined quantity to be purchased up front—forecasting required
- Illinois' draft rule allowed for periodic payments to be capitalized
  - Periodic payments allowed for flexibility, though the methodology did not provide the same earnings as an on-premises facility

### Flexibility of cloud vs flexibility in procurement



### Which costs should be capitalized?

- Software is only one aspect of cloud. It also includes hosting, connectivity, compute, storage, support, and other services.
- Deciding which cloud costs to capitalize based on a comparison with their onpremises equivalents is difficult. Most states have chosen a simplified process.
- IL's draft rule allowed 80% of cloud costs to be capitalized. Utilities in the state historically capitalized 80% of on-premises system costs.
- AL's decision allows all cloud-related costs to be capitalized.
- A recent accounting change in federal GAAP standards now provides for the capitalization of implementation costs for most cloud solutions, though did not speak to the cloud solution itself.
  - GAAP rules allow for commissions to capitalize costs as they see fit

### **State Actions on Cloud for Utilities**

#### New York

PSC confirmed existing rules allowed for software licenses to be prepaid / capitalized.

#### Pennsylvania

Capitalized cloud implementation costs prior to GAAP change. Granted capitalization in specific rate cases.

#### Illinois

Most extensive process to date, but rule was not approved. Allows for flexible payments and provided an 80% capitalization rate for cloud.

#### Ohio

PUC made a general statement that it was in the public interest. Invited utilities to propose in rate cases.

#### Alabama

Alabama Power granted authority to capitalize cloud and related costs on an ongoing basis.

Danny Waggoner dwaggoner@aee.net



## That was...

## Danny Waggoner

ADVANCED ENERGY ECONOMY (AEE)

## Q&A

## Thank you!

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