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September 8, 2023

Dear Ms. Li

Re. KPMG Report on cloud computing costs

In accordance with our Statement of Work dated May 1, 2023 and our Master Agreement dated August 1, 2018, please find attached our report on cloud computing costs.

It has been a pleasure working with the Ontario Energy Board on this engagement and we look forward to presenting our report to you and your staff.

Yours truly,

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Cloud computing costs

Regulatory Options for the Treatment of Cloud Computing Costs

Prepared for the Ontario Energy Board

Final Report

September 8, 2023



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Executive summary

In May 2023, the Ontario Energy Board engaged KPMG to:

- design a survey to gain an understanding of what Ontario utilities are thinking or have done about cloud computing and summarize the results;
- perform a jurisdictional review to understand the regulatory treatment of cloud computing costs across North America;
- discuss cloud computing broadly, the use of cloud computing in the utility industry, and the accounting treatment of cloud computing under different accounting standards; and
- develop an accompanying series of potential options for the Ontario Energy Board to consider for potential policy development and/or rule-making on this topic.

This report summarizes the findings of our review.

Our review was based on research and analysis of publicly available sources and data (including sources from other jurisdictions) and the results of a survey of Ontario electricity distribution utilities.

Throughout this report, “cloud” refers to cloud-based computing arrangements: the on-demand availability of computer system resources — especially data storage and computing power — without direct active management or ownership by the user. We may refer to cloud, cloud services, cloud solutions, cloud computing, or cloud computing solutions. These various terms are synonymous in this report.

Overview

As cloud computing technology has matured, so too has the market for cloud services, which now covers the entire spectrum of electric utility services and associated IT support. Primary drivers of cloud adoption by utilities often include the increased flexibility, security and agility available through cloud computing arrangements. Such arrangements may also offer the potential for lower costs and increased efficiency, relative to traditional IT systems that are owned and managed on-premise.

Key findings

Current economic regulatory models may disincentivize the adoption of cloud services by Ontario electric utilities because many cloud investments fall outside of the rate base. This is due in part to remuneration models used by regulators that allow for rates of return on capital assets owned by utilities but not for subscription-based services and related implementation costs, which are treated as operating expenses not eligible for a return.¹

For example, the fees paid to cloud providers are expensed as incurred, and only certain implementation costs can be deferred under US GAAP, which may be included as capital assets for rate-making purposes. Under IFRS, it is unlikely to meet the criteria to have significant implementation costs deferred or recognized as an intangible asset. Recent guidance issued by the

¹ Under both US GAAP and IFRS, where the customer obtains only a right to receive access to the supplier’s application software, the hosting arrangement will be accounted for as a service contract with the fees paid being expensed as incurred. In a hosting arrangement that is a service contract, some implementation costs will be capitalized under US GAAP but implementation costs will typically be expensed as incurred under IFRS.



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Financial Accounting Standards Board and IFRS Interpretation Committee has not significantly changed applicable accounting rules.

The survey conducted by the OEB as part of this engagement shows that many utilities are concerned that the current regulatory treatment represents a disincentive to the use of cloud solutions: 55% see recoverability through rates as a risk of adopting cloud. Thirty-two percent (32%) of utilities would favour the OEB developing a consistent regulatory treatment for cloud computing costs (although such treatment may not align with accounting treatment for some companies). While this was the regulatory approach favoured by the greatest number of respondents, it can be seen it was not favoured by a majority. Fourteen percent (14%) of respondents suggested that the OEB should follow existing accounting guidelines and 32% of utilities provided no response.

Factors other than regulatory treatment also continue to influence IT investment decisions. Among utilities that chose an on-premise solution for an IT upgrade in the last five years, 33% stated that the on-premise solution was better or cheaper and 33% stated that a cloud solution was not available.

Jurisdictional review

In November 2016, the National Association of Utility Regulatory Commissioners (“NARUC”) — the U.S. national association representing state public service commissioners who regulate essential utility services — adopted a resolution encouraging state utility regulators to consider:

- “whether cloud computing and on-premise solutions should receive similar regulatory accounting treatment, in that both would be eligible to earn a rate of return and would be paid for out of a utility’s capital budget.”²

The NARUC resolution prompted a few initiatives by State utility commissions to review the regulatory treatment of cloud computing costs in more detail. In 2017, the Illinois Commerce Commission (“ICC”) initiated a proceeding to consider rules relating to the regulatory treatment of cloud-based computing solutions in Illinois. The objective was to create a rule that would “level the playing field between on-premise and cloud-based computing systems by clarifying the regulatory accounting rules to provide comparable accounting treatment of on-premise and cloud-based computing systems.”³

Ultimately, the ICC rejected a proposed rule that would have equalized the regulatory treatment of cloud and on-premises computing costs. Other jurisdictions, however, have moved forward with changes to regulatory rules that seek to address inconsistencies in treatment. Most of these focus on allowing the capitalization of certain additional cloud implementation costs for rate-making purposes. In some cases, this may be achieved by following a ‘Totex’ approach to the capitalization of costs.⁴ The various initiatives in other jurisdictions are reviewed in more detail in the jurisdictional review in Chapter 5.

² National Association of Utility Regulatory Commissioners, “Resolution Encouraging State Utility Commissions to Consider Improving the Regulatory Treatment of Cloud Computing Arrangements,” sponsored by the Committees on Critical Infrastructure, Gas, and Water; adopted by the NARUC Committee of the Whole on November 16, 2016, available at: <https://pubs.naruc.org/pub.cfm?id=2E54C6FF-FEE9-5368-21AB-638C00554476>

³ ICC, Docket No. 17-0855, Staff Report to the Commission, “Regulatory Accounting Treatment for Cloud-Based Computing Systems”, June 17, 2019, p.1.

⁴ Totex is a methodology implemented by UK regulators whereby a fixed percentage of expenditures are capitalized for rate-making purposes, independent of accounting rules, and recovered over a longer time-frame.



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Terminology

Many of the incentives proposed by various parties involve the capitalization for rate-making purposes of costs that would otherwise be expensed under applicable accounting guidelines. For this report, where such costs are capitalized for rate-making purposes, we will in general refer to this as the recording of costs in a Deferral and Variance Account (“DVA”). This terminology is used to match that used by the OEB. The general expectation in this report is that any costs recorded to a DVA will become part of rate base and will earn a return. This will provide utility shareholders with earnings that are equivalent to those earned on costs that are transferred to Property Plant and Equipment (“PPE”).

Policy options

The table below presents a summary of policy options reviewed as part of this study, including definitions and potential advantages and disadvantages:

- Option 1 – Record payments in a DVA and recover over remaining term
- Option 2 – Record payments in a DVA and recover each payment over a fixed term
- Option 3 – Prepayment
- Option 4 – Treat as a lease
- Option 5 – Provide an earnings uplift
- Option 6 – Defer implementation costs
- Option 7 – Apply “Totex” concept
- Option 8 – Follow accounting treatment

We conclude that the different rate making approaches analyzed have quite different impacts on the allocation of costs to customers over time, on utility funding requirements, and on the profile of cost recovery. Accordingly, the best option in any given circumstance may depend on the specific factors at play. Relevant considerations may include the size of the project relative to overall capital budgets, the degree of incentive required and the accuracy of cost estimates available. We also note that for any specific cloud project, it may be difficult to estimate the relevant parameters of the displaced in-house project. Thus, the actual impact of cloud on ratepayers and shareholders may not be clear.



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Summary of policy options reviewed				
#	Option	Description	Advantages	Disadvantages
1	Record payments in a DVA and recover over remaining term	Annual cloud payments would be recorded in a DVA and each payment amortized over remaining length of contract term	<ul style="list-style-type: none"> Allows utilities to earn a return on cloud payments, helping to offset lost earnings on traditional IT investments. Costs are still recovered within the period of the cloud contract, ensuring that costs are matched with benefits on an overall basis. 	<ul style="list-style-type: none"> Results an uneven recovery of costs from customers over the period of the cloud contract; as a result of the mechanics of this approach, the recovery of costs is shifted towards the end of the contract. Increases utility funding requirements, since cost recovery in the early part of the contract term is deferred. Requires more administrative effort, since accounting arrangements require more effort to record and amortize costs.
2	Record payments in a DVA and recover each over fixed term	Each annual cloud payment would be recorded in a DVA and amortized over a period equal in length to the initial length of contract term. (Recovery will then extend beyond the last payment.)	<ul style="list-style-type: none"> Relative to Option 1 provides a more even recovery of costs over time. The increase in rates toward the end of the term is less significant because cost recovery is extended beyond the contract term. 	<ul style="list-style-type: none"> Runs counter to the general principle that costs should be matched to benefits. (Under this principle, the customers that benefit from a service should be the ones that pay for it.) Under the approach of capitalizing each payment for a fixed period, customers in the period beyond the contract term continue to pay for the contract, even though it is no longer providing service (and benefits) to the utility. It thus raises issues of inter-generational equity. This is difficult to justify under normal cost allocation principles for regulated utilities. Similar to Option 1, there is an increase in utility funding requirements and some minor administrative costs (although both issues should be manageable).



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Summary of policy options reviewed				
#	Option	Description	Advantages	Disadvantages
3	Prepayment	Cloud computing services would be pre-paid (rather than paid annually over the contract term); upfront payment would be recorded in a DVA and costs recovered over the life of contract.	<ul style="list-style-type: none"> - Relative to Options 1 and 2, provides a more even recovery of costs over time. - Cost recovery is very similar to that for a traditional in-house project. - There is Canadian regulatory precedent for treating certain costs this way, such as DSM costs in Quebec and British Columbia. 	<ul style="list-style-type: none"> - If contract terms are not appropriately drafted to allow for service changes, prepayment could result in less flexibility for the utility, making it more difficult for the utility to make changes during the contract term because it has been prepaid. - Prepayment may result in more credit risk for the utility since it is more dependent on the continued solvency of the cloud provider. Credit assessments and/or performance bonds could help to mitigate this risk. - In practice, prepayment may not be realistic for contracts with longer-term duration, particularly beyond 5 years. - Negates the savings in upfront cash flows that would otherwise be associated with the cloud solution (other than those that occur because the cloud solution is cheaper). Utility financing needs are thus higher than they otherwise would be.



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Summary of policy options reviewed				
#	Option	Description	Advantages	Disadvantages
4	Treat as a lease	Present value of cloud computing contract would be capitalized at beginning of contract term. Unlike prepayment option, however, actual cash payment stream to contract provider remains the same.	<ul style="list-style-type: none"> - Similar to the prepayment option, it provides a relatively even recovery of costs from customers over time. - Relative to the prepayment option, it does not require that the utility shifts its cash expenditures forward. Payments to cloud providers remain as under the cloud option, meaning that there is no loss of flexibility (i.e., in changing the contract) or increase in financial risk (because of increased credit exposure). - There is Canadian regulatory precedent⁵ for allowing utilities to include lease assets in the rate base and to earn an interest at the rate of return. 	<ul style="list-style-type: none"> - Some mismatch between utility costs and revenues. - Revenues, if approved by the regulator, are greater than cash costs in early years and lower in later years. This effectively results in positive cash flows to utility shareholders in earlier years, which must then be “repaid” in later years. - Our modeling suggest that for utility shareholders to be kept “whole” the discounted value of lease payments used to set up the capital asset must use the post-tax cost of capital rather than the pre-tax cost of capital. (This results in higher costs of customers measured on a net present value basis.)
5	Provide an earnings uplift	Earnings incentive provided to utility in the form of a mark-up on cloud expenses	<ul style="list-style-type: none"> - Directly addresses the issue — that utilities’ shareholders lose benefits associated with putting capital at work. - Doesn’t alter general pattern for recovery of costs from customers; generally considered good cost allocation practice. - Adder could be adjusted for different circumstances. - Visible and transparent policy tool. 	<ul style="list-style-type: none"> - Results in additional, observable cost that is directly transferred to customers — a “deadweight” cost. - As with any incentive that is a fixed percentage of cost, it provides utilities with an incentive to increase the costs associated with the program in question. Greater oversight will be needed to ensure that reported costs are prudent. - May provide utilities with an incentive to categorize costs as cloud-related in order to gain the uplift. Some administrative effort may be required to assess IT cost categorization.

⁵ OEB, Case Number “EB-2018-0165”, File Name “Dec Order Cost Awards_THESL 2020-2024_20200409”, pg. 170



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Summary of policy options reviewed				
#	Option	Description	Advantages	Disadvantages
6	Record implementation costs in DVA	Utility allowed to record to a DVA as a regulatory asset only the implementation costs that would otherwise be expensed.	<ul style="list-style-type: none"> Relative to other options, this is a relatively simple change to accounting practice; it may thus be easier for stakeholders and regulators to accept and implement. Arguably results in a better matching of costs to benefits since implementation costs are recovered over the period of the cloud contract rather than at the early stages of contract and generally prior to the benefits that are derived from the contract. DVA would earn a return which compensates the utility for the up-front costs incurred similar to a traditional in-house project. 	<ul style="list-style-type: none"> As a relatively small adjustment, it only addresses part of the shareholder benefits lost with a move to cloud computing. Requires more administrative effort, since accounting arrangements require more effort to record and amortize costs
7	Apply Totex concept to IT costs	Utilities are allowed to record in a DVA a fixed proportion of computing costs, both for cloud and on-premises. These deferred costs could then be amortized over a pre-set fixed period.	<ul style="list-style-type: none"> Ensures perfect symmetry in the treatment of cloud and on-premises costs, removing any incentive to use one versus the other. Easy to administer because it does not require a detailed analysis of nature of underlying cost and associated accounting rules. Ensures treatment is the same across all utilities, regardless of their accounting standards. 	<ul style="list-style-type: none"> Results in a difference between asset values for rate setting purposes versus financial statement presentation Results in a difference in treatment of computing costs versus other utility costs Requires more administrative effort, since differences between accounting arrangements and regulatory recovery become more complex.
8	Follow current accounting treatment	Utility will recover cloud computing costs consistent with its accounting treatment.	<ul style="list-style-type: none"> Does not require a change to current accounting practice; it may thus be easier for stakeholders and regulators to accept and requires no implementation effort relative to current practice. 	<ul style="list-style-type: none"> Does not address perceived disincentives associated with the application of current accounting rules and may thus inhibit the use of cloud computing as compared to on-premise solutions Will result in different regulatory treatments for utilities reporting under US GAAP versus IFRS.



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1 Introduction

1.1 Scope and Background

The Ontario Energy Board engaged KPMG to:

- design a survey to gain an understanding of what Ontario utilities are thinking or have done about cloud computing and compile the results;
- perform a jurisdictional review to understand the regulatory treatment of cloud computing costs across North America;
- discuss cloud computing broadly, the use of cloud computing in the utility industry, and the accounting treatment of cloud computing under different accounting standards; and
- develop an accompanying series of potential options for the Ontario Energy Board to consider when undertaking policy development and/or rule-making on this topic.

KPMG's scope included:

- accounting, regulatory and policy research on the specific barriers to capitalizing the cloud in the current utility tribunal context;
- stakeholder consultations to describe the current state of cloud adoption among Canadian electric utilities and the associated opportunities and challenges of the cloud for utility operations;
- jurisdictional benchmarking of developments on these issues across North America;
- financial analysis of potential options for capitalizing the cloud; and

The remainder of is report is organized as follows:

- **Chapter 2: Cloud in the utility context** presents a high-level background of the cloud;
- **Chapter 3: Accounting for cloud computing arrangements** describes the accounting requirements with respect to the costs incurred for cloud services;
- **Chapter 4: Survey of Ontario regulated utilities** summarize the results of a survey that the OEB conducted during this study.
- **Chapter 5: Jurisdictional review** describes developments in a number of US and Canadian jurisdictions regarding alternative rate setting approaches for cloud computing, utility remuneration and related topics.
- **Chapter 6: Policy evaluation** provides an assessment of policy considerations and the advantages and disadvantages of alternative approaches for the rate treatment of cloud computing.



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2 Cloud in the utility context

In this Chapter we provide an overview of cloud computing arrangements and the rationale for their adoption.

2.1 Overview of cloud computing

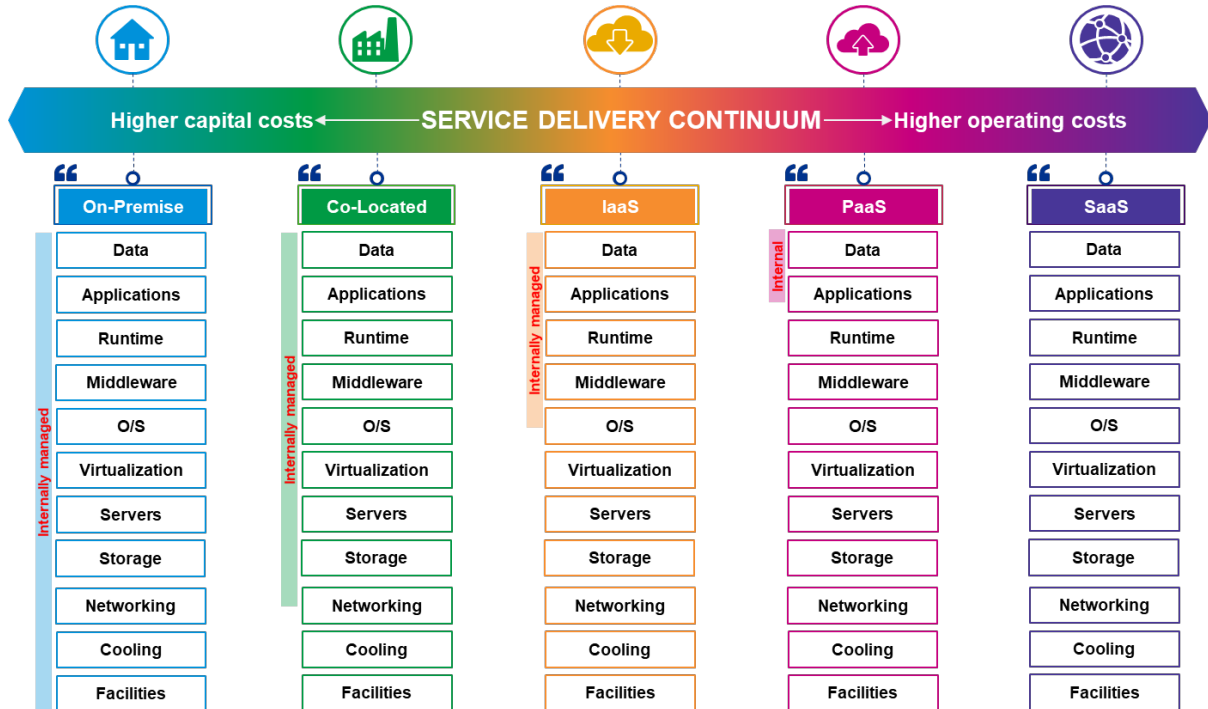
The early precursor to cloud computing was managed services. In this business model, companies pass their computing requirements to a dedicated provider that provides the same in-house services back to the customer. Objectives of these relationships are often to reduce costs, increase quality and allow companies to focus on their core business operations. Challenges with this model are that every outsourcing contract varies and, in turn, the service provider's ability to achieve economies of scale is limited. Additionally, the ability to walk away from an underperforming service provider is limited, since it includes costly and time-consuming transition costs. By contrast, cloud computing generally offers standardized services where companies choose from a set of options and pay according to what they select and how much they consume.

Leveraging a cloud provider is similar to a managed services arrangement in that the cloud provider manages the majority of the back-end requirements such as facilities, cooling, networking, servers and storage — but the core difference is that the options are standardized. This differentiating factor enables the cloud provider to achieve economies of scale that are passed on to the company. Economies of scale result from the fact that the cloud provider can leverage its infrastructure to serve multiple clients in parallel. Furthermore, it allows the company to increase capacity for data storage and processing as well as to create new technical operating environments depending on business demands. The choice for the company becomes employing the standardized cloud options to suit its core technical requirements while maintaining sight on the impacts to business capabilities.

2.2 Service delivery models and deployment

There are now many cloud providers and thousands of different cloud services. The figure below illustrates some of the broad classifications of deployment models, including cloud-specific arrangements:

- Infrastructure as a Service (“IaaS”);
- Platform as a Service (“PaaS”); and
- Software as a Service (“SaaS”).



In addition to the desired service delivery option, customers may choose the deployment model depending on what would support operations most effectively. Broadly, cloud services come in three distinct deployment models, each of which possesses its own set of benefits and challenges:

- **Private or dedicated cloud** is a deployment model where the organization possesses a cloud service that is physically isolated. In essence, it is a privately-owned cloud where the organization maintains ownership of server and computing infrastructure. While connectivity (network) services may be shared with others, data is on the client’s physical cloud, which is separate from others’ clouds. This enables the organization to provision resource-based access (e.g., to storage, virtual machines or processing power) to various business units as required. A benefit of this deployment is that it enables the organization to manage the infrastructure as it sees fit, while centralizing the technical effort and providing access to the business based on operational demand. However, this is an expensive approach. There is less opportunity to benefit from the sharing of physical infrastructure across multiple clients.
- **Public cloud** is a shared, physical cloud where many customers use the same underlying cloud infrastructure. The infrastructure is centrally owned and managed by a service provider (such as Microsoft Azure or Amazon Web Services), but client data is separated digitally. Logical separation and data protection are provided using virtual containers, access keys and encryption. Data may be shared or duplicated across multiple data centres, which could provide an additional layer of protection. This is typically a less expensive option than private cloud resulting from economies of scale.
- **Hybrid cloud** is a combination of Public or Private cloud and on-premise infrastructure. By configuring an organization’s on-premise infrastructure to integrate into a cloud environment,



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it is possible to extend that on-premise infrastructure into the cloud (i.e., off-premise). This enables the organization to gain some benefits of cloud while maintaining some benefits of the on-premise infrastructure. Organizations may take this approach to provide an on-premise infrastructure to transition applications into, before they migrate them into the native cloud, or to house specific mission critical data and applications. In some cases, this becomes a staging environment. Alternatively some organizations implement Hybrid cloud as a way of preserving their existing on-premise investment that may have significant remaining asset life.

- Cloud computing costs can differ significantly among vendors and/or solutions. For example, certain cloud solutions could have higher implementation costs (e.g., capital, prepaid, intangible, deferral) and lower ongoing licensing costs (O&M); or the opposite, where implementation costs are lower and the ongoing licensing costs (O&M) are higher. As such, there exists a range between these two, which may impact the regulatory accounting issues are around implementation costs and ongoing licensing.

2.3 Common benefits of cloud

Depending on the cloud service, there are several common benefits that can influence an organization's decision-making.

2.3.1 Cost reduction

Some organizations have found that they can achieve cost savings of up to 40% when compared to their on-premise costs. By moving to cloud, organizations can move to a utility-based consumption model where costs can be allocated to specific business units based on their use of services. This results in the potential for more effective tracking of the true costs of business services and of associated consumer needs. As well, costs can be managed as the service scales up to meet peaks in demand and costs can be reduced as the service scales back down to average demand or even falls to below average levels. Organizations can also avoid the high capital costs of major upgrade programs and infrastructure refresh programs.

2.3.2 Security, reliability and high availability

Until relatively recently, there were significant concerns that major vendors did not have robust cyber security, data privacy and associated compliance mechanisms. Many organizations therefore did not move to cloud or did so very cautiously. The risk of data loss, hacking or other criminal behaviour was deemed to be too high. However, over the past few years the major vendors have significantly matured. Vendors have worked with the regulatory bodies in each industry and in multiple jurisdictions. On the one hand, vendors have sought to educate and influence regulators, but on the other hand regulators have been able to impart the underlying drivers behind legislation. As well the vendors have worked with the security, risk and compliance departments from private and public organizations to improve their offerings.

Data privacy and protection has become a predominant concern of many cloud users and subscribers. Consequently, more stringent privacy regulations have been developed globally to protect consumer and personal data. Cloud service providers have reacted to these emerging regulatory changes and created operating models that align to regulatory requirements with little or no impact to performance and pricing for subscribers. Some of these regulations include PIPEDA (Canada) and GDPR (EU).



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As an example, in the case that an organization requires that data is stored within Canadian borders, cloud providers have responded and created options to support this need while maintaining the benefits of moving to the cloud such as redundancies, scalability and overall resilience. Many providers have multiple storage sites in different regions within Canada. Data is stored, transferred and duplicated between Canadian regions as needed instead of having to be stored in both Canada and another international region such as the USA.

Furthermore, cloud security has advanced greatly over the past decade. Most cloud providers have adopted most of the globally recognized cybersecurity standards and are developing stronger security protocols continuously. The cloud vendors typically will also have a high degree of physical security which in many cases would be stronger than that of an on-premise alternative.

2.3.3 Agility and time to market

Engaging standardized suites of cloud services in a multi-cloud delivery architecture can enable organizations to quickly build new services and applications. There is almost no lag time to setup the supporting infrastructure and platforms or to build out the application. Organizations can focus on the key differentiators for their customers, which may be the use of data or the service itself and not the underlying support structure. The cost of failure can also be significantly reduced.

2.4 Utility sector cloud

Power generation, transmission and distribution businesses are highly complex, technical and capital intensive. Applicable utility business operations include:

- customer billing
- grid operations
- advanced metering infrastructure
- demand response systems
- meter data systems
- customer relationship management

With new digital technologies such as Data Analytics, AI, IoT and 5G, the opportunity exists to expand the smart meter network into household devices. Smart fridges, microwaves and stoves can provide real-time telemetry and can have variable power consumption based on the immediate requirement. A fridge that is not full may have different power consumption than one that is full. The opportunity is for energy consumption to be intelligently managed, often at the edge of the network where consumption occurs. This will entail a better understanding of the consumer's needs and the application of energy services that are appropriate to the need. The reduction of environmental impact and the need to focus on clean energy can be enabled by digital technologies. By moving to cloud and reducing the effort required to "keep the lights on", the energy organization is better able to focus on value added services.



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3 Accounting for cloud computing arrangements

In this Chapter we review the accounting rules that relate to the treatment of cloud computing costs.

3.1 Key findings

If the customer obtains only a right to receive access to the supplier's application software, the hosting arrangement will be accounted for as a service contract, with the fees paid being expensed as incurred. This is the accounting treatment under both US GAAP and IFRS. In a hosting arrangement that is a service contract, some implementation costs will be deferred under US GAAP, whereas such implementation costs will typically be expensed as incurred under IFRS. In our experience, cloud computing arrangements usually do not give rise to a software intangible asset and are accounted for as a service contract.

Given that the fees paid to access the supplier's application software are being expensed as incurred, that only certain implementation costs can be deferred under US GAAP, and that it is difficult under IFRS to have significant implementation costs deferred or recognized as an intangible asset, there is currently a disincentive in Ontario for utilities to invest in Cloud Computing Arrangements ("CCAs"). This reflects the fact that those "investments" fall out of the rate base if the regulatory treatment follows the accounting treatment. The recent guidance issued by the FASB and the Committee have not been effective at resolving the disincentive.

3.2 Background

Cloud computing arrangements ("CCAs") have been gaining popularity across the globe over the past few years and are by far the most prevalent new digital technology; quickly replacing on-premise software and hardware arrangements. A common CCA is the Software as a Service ("SaaS") arrangement, which uses an internet-based application software hosted by a service provider or other third party. A SaaS arrangement may or may not include a software license.

Accounting standards bodies have recently caught the technology wave and some have issued guidance with respect to the accounting for fees paid for a SaaS arrangements. In some cases they have also addressed the accounting for the related implementation costs.

3.3 US GAAP

The *Financial Accounting Standards Board ("FASB") ASC Subtopic 350-40 Intangibles – Goodwill and Other – Internal-Use Software* (Subtopic 350-40) provides guidance on the accounting for the cost of computer software developed or obtained for internal use. It requires certain costs to develop or obtain software to be capitalized. However, until recently, US GAAP did not include any explicit guidance on the accounting for fees paid in a CCA nor for the implementation costs incurred. As a result, there was diversity in practice in accounting for the fees and implementation costs incurred.

In April 2015, FASB issued Accounting Standards Update 2015-05 *Customer's Accounting for Fees Paid in a Cloud Computing Arrangement* (ASU 2015-05) to help customers (i.e. companies using CCAs) evaluate the accounting for fees paid by a customer in a CCA. ASU 2015-05 provides guidance about whether a CCA includes a software license (see below), which drives the costs that may be capitalized. ASU 2015-05 took effect in 2016 for public companies.



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In August 2018, the FASB issued ASU 2018-15 *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that is a Service Contract* (ASU 2018-15). The intent was to clarify and align the accounting for implementation costs in a hosting arrangement that is a service contract with those costs capitalized for software developed or obtained for internal-use (see below). ASU 2018-15 took effect in 2020 for public companies.

3.3.1 Accounting for fees paid in a CCA (ASU 2015-05)

ASU 2015-05 amended Subtopic 350-40 to clarify whether a hosting arrangement (e.g., CCA or SaaS) contains a software license and, thus, whether a customer should account for the arrangement similarly to other internal-use software (or on-premise software).

A hosting arrangement in connection with accessing and using software products is defined in the ASU 2015-05 (and amended by ASU 2018-15) as an arrangement in which the customer of the software does not currently have possession of the software; rather, the customer accesses and uses the software on an as-needed basis.

For a hosting arrangement to qualify as a software license, it must meet the following criteria:

- the customer has the contractual right to take possession of the software at any time during the hosting period without significant penalty. There is considered to be no significant penalty if the customer has the ability to take delivery of the software without incurring significant cost and if it has the ability to use the software separately without significant loss of utility or value; and
- it is feasible for the customer to either run the software on its own hardware or to contract with another party unrelated to the vendor to host the software.

If both of the above criteria are present, then the hosting arrangement contains a software license.

If a CCA includes a software license, then the software license is accounted for by the customer in accordance with Subtopic 350-40. This generally means that:

- an intangible asset is recognized for the software license (i.e., customers can generally capitalize the present value of the future payments for the software and subsequently amortize the cost over the license period); and
- to the extent that the payments attributable to the software license are made over time, a liability is also recognized.

If a CCA does not include a software license (i.e., if both of the above criteria are not present), then the entity should account for the arrangement as a service contract. This generally means that the fees associated with the hosting element (service) of the arrangement are expensed as incurred as an operating cost.

3.3.2 Accounting treatment since the issuance of ASU 2015-05

The guidance in ASU 2015-05 has been in effect since 2016 and, in KPMG's experience, most CCAs continue to be accounted for as a service contract (i.e., the fees paid are expensed as incurred). This is because the terms and conditions of most CCAs do not allow for the customer to take possession of the software. This is supported by the FASB's outreach in connection with Issue No. 17-A "*Customer's Accounting for Implementation, Setup, and Other Upfront Costs Incurred in a CCA that is Considered a Service Contract*".



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In 2017, the FASB staff performed an outreach with preparers (customers in CCAs) and cloud service providers (the “Task Force”).⁶ In the outreach it was identified that:

- Customers in CCAs generally no longer have the ability to take possession of the software without losing the benefits associated with a CCA. The benefits would include, for example, the consistent experience for all customers and the optimized environment of not having to maintain multiple versions. Additionally, cloud service providers generally do not permit the customer to take possession of the software for proprietary reasons.
- CCAs are viewed as a favourable alternative to an on-premise solution. This reflects the fact that there are significant benefits related to the infrastructure, which appear to outweigh the significant implementation costs that are incurred. Therefore, customers who negotiate with cloud service providers generally already have accepted the CCA model without needing to take possession of the software.

3.3.3 Accounting for implementation costs incurred in a CCA (ASU 2018-15)

While ASU 2015-05 addressed the accounting for fees paid in a service contract, questions arose on how to account for the related implementation costs. This is because if a software license is acquired, costs related to implementation can be capitalized in accordance with Subtopic 350-40. In a similar way, customers incur significant implementation costs for a hosting arrangement that is a service contract. However, the accounting guidance on the treatment of these implementation costs was not as clear as it is for software licenses. Therefore, customers requested that the FASB provide additional guidance on the accounting for costs of implementation activities, such as implementation, setup and other upfront costs (collectively referred to as implementation costs) performed in a CCA that is a service contract. As the guidance is not explicit in that area, in August 2018, the FASB issued ASU 2018-15 to address the diversity observed.

Accordingly, the amendments in ASU 2018-15 are seen to improve US GAAP because they clarify and align the accounting for implementation costs for hosting arrangements, regardless of whether the implementation costs include conveying a license to the hosted software.

Paragraph BC8 of the Basis for Conclusions to ASU 2018-15 explains how the Task Force reached its consensus on the accounting for implementation costs and notes the following:

- When implementing a hosting arrangement that is a service contract an entity may incur significant costs that may indicate a future benefit to the entity beyond the period over which the implementation services are performed.
- While the right to receive the service and the obligation to pay for the service as the service is provided are not recognized on the balance sheet, the Task Force observed that certain costs to implement the hosting arrangement enhance the unrecognized right to receive the related service.
- Accordingly, the Task Force decided that the implementation costs of a hosting arrangement that is a service contract could be attached to the service contract and, therefore, should be deferred as an asset and recognized over a period longer than the period over which the implementation services are provided. That is, those deferred costs, while not representative

⁶ Financial Accounting Standards Board, Memo, Project: Issue No. 17-A, “Customer’s Accounting for Implementation, Setup, and Other Upfront Costs (Implementation Costs) Incurred in a Cloud Computing Arrangement That Is Considered a Service Contract”, Issue Summary No. 1, Supplement No. 1”, dated September 28, 2017.



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of an asset on a standalone basis, result in an increase in future benefits to be received under the hosting arrangement, thus resulting in an asset related to the service contract.

- While overall the FASB and Task Force concluded that it is important that guidance be developed in a manner in which the outcome is both relevant to investors' needs and responsive to preparers' ability to apply the guidance, some Task Force members weighed the expected costs and expected benefits differently in determining the consensus and its interaction with the FASB conceptual framework.
- In determining the consensus, the Task Force decided that it represents a practical solution that addresses the original concern that was raised to the Task Force and that it is responsive to the unique characteristics of hosting arrangements that are service contracts.

While ASU 2018-15 clarifies the accounting for implementation costs, it does not define implementation costs. This is because it was noted that Subtopic 350-40 already provides sufficient guidance on implementation costs and that guidance is currently being applied in practice.

In accordance with Subtopic 350-40, most costs to implement a licensed software are capitalized, such as costs to customize, configure and/or install the software in the customer's IT environment. Certain other costs typically incurred before a customer "goes live" with a new software solution — such as data conversion, training and business process reengineering — are expensed as incurred.

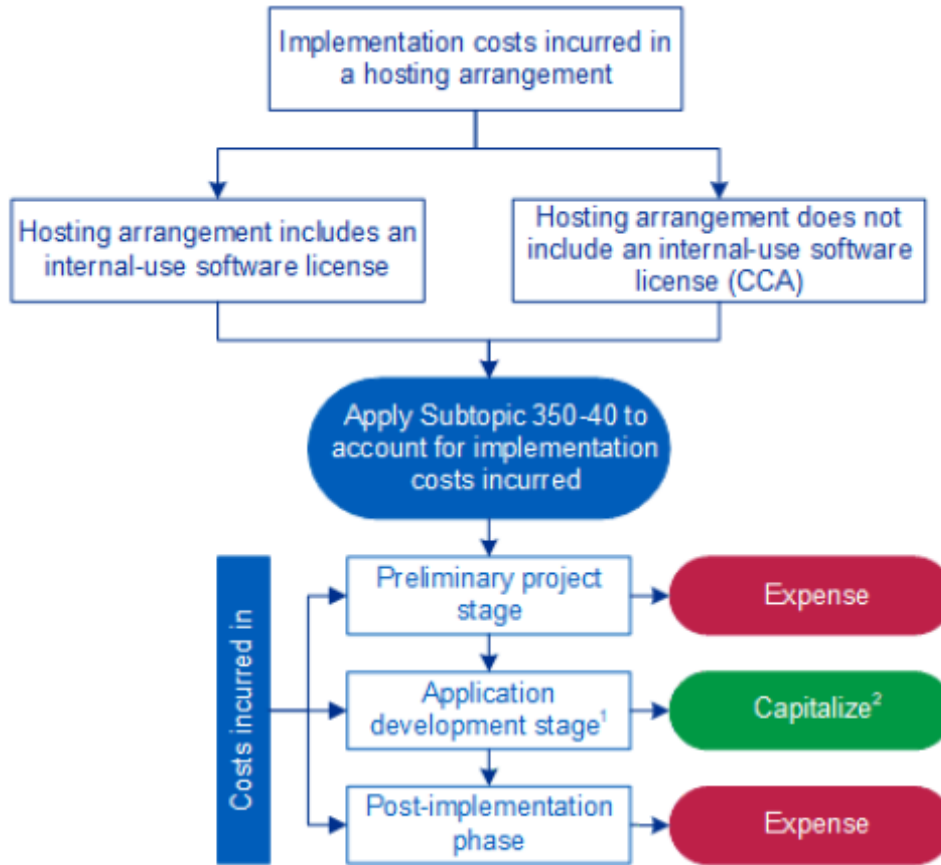
Therefore, based on the guidance in Subtopic 350-40, not all implementation costs will be deferred under ASU 2018-15. Costs incurred to implement a CCA will be deferred or expensed as incurred in accordance with the guidance for the capitalization or expensing of such costs under existing internal-use software guidance.

3.3.4 Recognition guidance in Subtopic 350-40

The amendments in ASU 2018-15 require an entity (customer) in a hosting arrangement that is a service contract to follow the guidance in Subtopic 350-40 to determine which implementation costs to capitalize as an asset related to the service contract and which costs to expense. The costs are capitalized or expensed depending on the nature of the costs and the project stage during which they are incurred, consistent with costs for internal-use software.

Costs to develop or obtain internal-use software that cannot be capitalized under Subtopic 350-40, such as training costs, business process reengineering and certain data conversion costs, also cannot be capitalized for a hosting arrangement that is a service contract. Therefore, an entity in a hosting arrangement that is a service contract must determine which project stage (that is, preliminary project stage, application development stage or post-implementation stage) an implementation activity relates to. Costs for implementation activities in the application development stage are capitalized depending on the nature of the costs, while costs incurred during the preliminary project and post-implementation stages are expensed as the activities are performed.

The following diagram summarizes the accounting for implementation costs incurred as part of a CCA after adopting ASU 2018-15.



Note 1:

See para 350-40-25-3 – 25-5 and 350-40-55-3 for capitalizable vs. non-capitalizable cost guidance.

Note 2:

Expense capitalized implementation costs over the term of the hosting arrangement (see para 350-40-35-14 – 35-15).

The table below provides examples of implementation activities and general treatment of their costs when incurred.



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Cloud SaaS	ASU 2018-15	Pre-ASU 2018-15
Interfacing (customer's environment)	Defer	Defer
Configuration	Defer	Expense
Coding	Defer	Expense
Testing	Defer	Expense
Customization of the hosted software	Defer	Expense
Training	Expense	Expense
Data conversion/migration	Expense	Expense
Business process reengineering	Expense	Expense

Generally, activities to configure and/or customize the hosted CCA service, whether incurred internally by the customer, by the cloud provider or an unrelated external party (e.g. consultant), would be part of the application development phase and eligible for capitalization.

3.3.5 Initial measurement guidance in Subtopic 350-40

An entity shall apply the guidance in Subtopic 350-40-30 *Initial Measurement* as though the hosting arrangement that is a service contract were an internal-use computer software project.

When an entity develops or acquires a software for internal use, the costs to be capitalized include the external direct costs of materials and services consumed in developing or obtaining the software, payroll and payroll-related costs for employees who are directly associated with and who devote time to the software project, to the extent of the time spent directly on the project, and interest costs.

3.3.6 Subsequent measurement guidance in Subtopic 350-40

ASU 2018-15 requires the entity to expense the deferred implementation costs of a hosting arrangement that is a service contract over the term of the hosting arrangement. The term of the arrangement includes the non-cancellable period of the arrangement plus periods covered by:

- an option to extend the arrangement if the customer is reasonably certain to exercise that option;
- an option to terminate the arrangement if the customer is reasonably certain not to exercise the termination option; and
- an option to extend (or not to terminate) the arrangement in which exercise of the option is in the control of the vendor. For this period, the customer does not need to assess the likelihood of the vendor exercising the option — this period is included in the recognition period automatically.

The ASU requires companies to periodically reassess the recognition period for its deferred implementation costs. Therefore, companies need to have a process in place to do so, considering the same factors as it did when it determined its initial period.



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The entity is also required to apply the existing impairment guidance in Subtopic 350-40 to the deferred implementation costs as if the costs were long-lived assets.

3.3.7 Presentation under ASU 2018-15

While US GAAP provides a practical expedient to treat implementation costs for cloud computing arrangements consistent with those for on-premise internal-use software, the presentation of implementation costs in the Statement of Financial Position and the manner in which they are presented in the Statement of Income are not identical.

In the Statement of Financial Position the implementation costs of a hosting arrangement that is a service contract cannot be presented as intangible assets. This is because they do not meet the recognition criteria for an intangible asset. Instead, implementation costs are deferred and presented in the same line item that a prepayment for the fees of the associated hosting arrangement would be presented (e.g., prepayments or prepaid expenses or other assets).

As deferred implementation costs are recognised in income over the period of the hosting arrangement the expense is not presented along with depreciation and amortization expense related to property, plant and equipment and intangible assets. Instead, deferred implementation costs will be presented in the same line item as the expense for the fees for the associated hosting arrangement. The line item is normally Operations, Management and Administration (“OM&A”) expenses for the industry.

3.4 International Financial Reporting Standards (IFRS)

3.4.1 Accounting for fees paid in a CCA

Unlike US GAAP, IFRS does not have explicit guidance in respect of CCAs and the related implementation costs. However, unlike US GAAP, IFRS does have a comprehensive accounting standard — IAS 38 Intangible Assets (“IAS 38”) — which contains detailed criteria that must be met to recognize an intangible asset.

Paragraph 18 of IAS 38 requires the following criteria to be met to recognize an intangible asset:

- **The definition of an intangible asset.** An intangible asset is a resource that is both controlled by an entity and from which future economic benefits are expected to flow to the entity; and
- **The recognition criteria.** An intangible asset is recognized if it is probable that there are expected future economic benefits and the cost of the asset can be measured reliably.

Similar to preparers under US GAAP, IFRS preparers questioned the accounting for the costs incurred for a CCA arrangement and whether at the contract commencement date a customer is receiving a software asset or a service over the contract term. In March 2019, the IFRS Interpretations Committee (“the Committee”) issued an agenda decision to address preparers concerns.

In the agenda decision, the Committee acknowledges that a customer receives a software asset if:

- the contract contains a software lease under the guidance in IFRS 16 Leases (“IFRS 16”); or
- the customer otherwise obtains control of the software under the guidance in IAS 38.



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Further, if the contract does not contain a software lease or provide a software intangible asset, then the contract is a service contract.

When assessing whether a CCA contains a software lease, the Committee observed that a right to receive future access to the supplier's software running on the cloud infrastructure does not in itself give the customer any decision-making rights about how and for what purpose the software is used. Accordingly, a software lease does not exist as the requirements of IFRS 16 (paragraphs 9 and B9) are not met if a contract conveys to the customer only the right to receive access to the supplier's application software over the contract term.

When assessing whether a customer obtains control of the software in accordance with IAS 38, the Committee acknowledges that it is the "control" criteria that poses the greatest hurdle in recognizing an intangible asset for SaaS arrangements. This is because a right to receive future access to the supplier's software does not, at the contract commencement date, give the customer the power to obtain the future economic benefits flowing from the software itself and to restrict other's access to those benefits.

The Committee concluded that a contract that conveys to the customer only the right to receive access to the supplier's application software in the future is a service contract which is expensed as incurred. If the customer pays the supplier before it receives the service, the prepayment gives the customer a right to future service and would be recognized as a prepaid asset by the customer.

In the discussions leading up to the March 2019 agenda decision, the Committee generally agreed that some contracts might convey at contract commencement rights to software (beyond a right to receive future access) that create an intangible asset for the customer. For example, as part of the SaaS arrangement the customer might obtain rights that give it the ability to direct the use, and obtain the benefits from use, of software that is delivered to the customer at contract commencement. In that case, the customer would have power to obtain the future economic benefits flowing from the rights and to restrict the access of others to those benefits and, thus, would control an intangible asset.

As an example, the Committee noted that if a customer has a genuine right to possess the software and the ability to host that software on its own (or a third party) server, that the customer would likely control a copy of the software and have the ability to recognize an intangible asset for the CCA, similar to the accounting for on-premise software that an entity may acquire.

When the criteria in IAS 38 to recognize an intangible asset are met, the asset is recognized at cost — being its purchase price together with any directly attributable cost of preparing the asset for its intended use (such as costs of employee benefits, professional fees and costs of testing to bring the asset to its working condition).

In KPMG's experience, the typical features of a CCA grant the customer a right to receive future access and thus, do not permit the recognition of an intangible asset. In practice, such arrangements are typically treated as a service contract under IFRS and the fees are expensed as incurred. However, terms and conditions of CCAs can vary and professional judgement will be required.

3.4.2 Accounting for implementation costs

As the Committee did not address the treatment of implementation costs in its March 2019 agenda decision, questions continued to be raised about how to apply IAS 38 to these types of transactions. To address the concerns raised, the Committee revisited the issue in its March 2021 agenda decision which clarified how an entity should analyze configuration and customization costs incurred when an entity enters into a CCA, i.e. when the entity does not control a software intangible asset.

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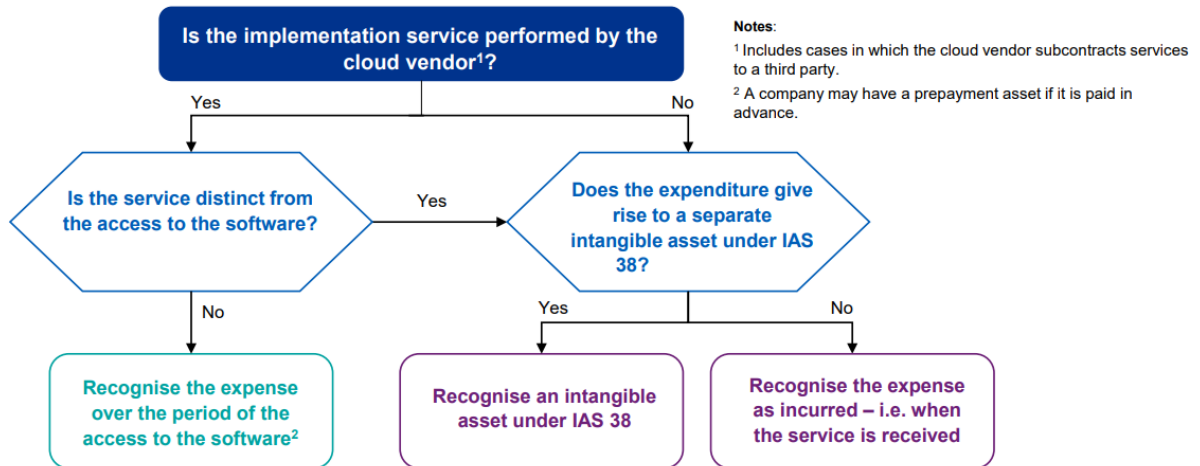
In the scenario analyzed by the Committee, ‘configuration’ involves the setting of various ‘flags’ or ‘switches’ within the application software, or defining values or parameters, to set up the software’s existing code to function in a specified way. ‘Customization’ on the other hand involves modifying the software code in the application or writing additional code. Customization generally changes, or creates additional, functionalities within the software.

Analyzing the issue using the guidance in IAS 38, the Committee concluded that:

- An entity cannot recognize an intangible asset unless the configuration and/or customization activities creates an intangible asset that is separate from the CCA software, and,
- If the configuration and/or customization services are not distinct from the CCA software (because those services are not separately identifiable from the entity’s right to receive access to the supplier’s application software), then the entity recognises the costs as an expense when the supplier provides access to the application software over the contract term.
- If the entity pays the supplier before receiving the services, it recognizes the prepayment as an asset in accordance with IAS 38.70.

Although the Committee only specifically addressed configuration and customization costs, global accounting firms have since released guidance which interprets this agenda decision as applying to a broader category of implementation costs, such as: data conversion/migration, testing, training, business process reengineering, etc.

The following diagram summarizes the accounting for implementation costs incurred as part of a CCA:



It is important that an entity carefully evaluates the nature of the implementation costs incurred. In some limited cases, an entity’s implementation costs may include the cost to develop an internal use piece of software — e.g., an interface software — for which control and legal title to that software belongs to the customer. Provided the recognition criteria in IAS 38 are met, it may be possible to recognize the costs of the internal use software as an intangible asset. Otherwise, in the absence of meeting the strict recognition criteria for an intangible asset, implementation costs are typically



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expensed as incurred in a hosting arrangement that is a service arrangement. In our experience, implementation services in a CCA often do not result in the recognition of a separate intangible asset.

An entity will also need to assess whether the implementation services are distinct from the access to the software in the CCA. It does so by applying the principles in IFRS 15 *Revenue from contracts with customers*. This assessment is not necessary for services performed internally or by a third-party other than the cloud vendor because those services are clearly distinct.

If the implementation services are distinct, the entity recognizes the expense when the service is received. In our experience, most implementation services (e.g. configuration, data conversion/migration, interfacing, testing, training) usually could be performed by a third party that is not the cloud vendor and is therefore distinct.

If the implementation services are not distinct, the related implementation costs are recognized as an expense as the entity receives access to the customized software – i.e. over the contract term. Assuming the entity pays for the implementation services upfront, the entity will recognize a prepaid expense asset which is then amortized over the contract term. In our experience, typically only some customization services are not distinct.

The following table provides examples of implementation activities and general treatment of their costs when incurred under IFRS in a hosting arrangement that is a service contract (Cloud SaaS) compared to an on-premise software.

Typical treatment of implementation costs when incurred

Cloud SaaS	Cloud SaaS	On-premise software
Construction of a new interface software owned by customer	Intangible	Intangible
Configuration	Expense	Intangible
Testing	Expense	Intangible
Customization of the hosted software by the cloud provider which is not distinct	Defer/Prepaid	Intangible
Training	Expense	Expense
Data conversion/migration	Expense	Expense
Business process reengineering	Expense	Expense

As a result of the strict criteria for the recognition of an intangible asset under IFRS, the accounting for implementation costs will be significantly different to their treatment under US GAAP. All else being equal, an entity reporting under IFRS will recognize higher expenses during the years of implementation as compared to an entity reporting under US GAAP. As an entity reporting under US GAAP is required to capitalize costs for some implementation services, it will recognize higher expenses in later years as it amortizes the deferred costs.



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The following table provides a comparison between IFRS and US GAAP of the general accounting treatment of costs for certain implementation activities incurred in a hosting arrangement that is a service contract (Cloud SaaS).

Cloud SaaS	IFRS	US GAAP
Construction of a new interface software owned by customer	Intangible	Intangible/Defer
Configuration	Expense	Defer
Testing	Expense	Defer
Customization of the hosted software by the cloud provider which is not distinct	Defer/Prepaid	Defer
Training	Expense	Expense
Data conversion/migration	Expense	Expense
Business process reengineering	Expense	Expense

3.5 Application of rate-regulated accounting

The accounting analysis discussed above is based on the general requirements of US GAAP and IFRS and does not contemplate the application of rate-regulated accounting under ASC 980 *Regulated Operations* or IFRS 14 *Regulatory deferral accounts*. Since neither regulatory standard provides explicit guidance relating to the treatment of costs incurred in a CCA, the general provisions of ASC 980 or IFRS 14 shall be applied.

3.5.1 US GAAP

For entities that meet the scope requirements to apply ASC 980, the actions of a regulator can provide reasonable assurance of the existence of an asset that would otherwise be charged to expense under the general requirements of US GAAP (ASC 980-340-25). Therefore, the decisions and rate orders issued by a regulator in relation to the recovery of CCA costs could impact an entities' accounting treatment of whether to capitalize or expense the costs. In addition, depending on the nature of the recovery a regulator allows, the classification of the costs may be different as well. Generally, if the regulator were to allow CCA costs to be recovered in rate base, similar to the treatment of other intangible assets, an entity could classify these costs with other intangible assets recognized in accordance with ASC 350. Regulated entities often do this based on the guidance provided in ASC 980-10-15-5:

- Guidance in other Codification Topics that applies to entities in general also applies to regulated entities. However, entities subject to this Topic [ASC 980] shall apply it instead of any conflicting provisions of other parts of the Codification. For example, a regulator might authorize a regulated entity to incur a major research and development cost because the cost is expected to benefit future customers. The regulator might also direct that cost to be capitalized and amortized as an allowable cost over the period of expected benefit. If the



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criteria of paragraph 980-340-25-1 are met, the entity shall capitalize that cost even though Subtopic 730-10 [Research and Development] requires such costs to be charged to income currently. That Subtopic shall still apply to accounting for other research and development costs of the regulated entity, as shall the disclosure requirements of that Subtopic.

If recovery is provided by the regulator through the creation of a distinct deferral account, we would expect to see the costs recognized as a regulatory asset.

3.5.2 IFRS

IFRS 14, *Regulatory Deferral Accounts*, is an interim Standard that permits a variety of accounting approaches for the effects of rate regulation to continue temporarily. As IFRS 14 allows an entity to continue to apply its previous GAAP accounting policies for the recognition and measurement of regulatory deferral account balances, the recognition and measurement requirements for regulatory assets are usually consistent between IFRS and US GAAP. A key difference however is in the classification of costs subject to regulatory treatment. Under IFRS, if a cost does not meet the recognition criteria for PP&E or intangible assets, it cannot be classified as such, even if a regulator allows it. In these cases, we would expect to see the cost recognized as a regulatory asset.

The International Accounting Standards Board (IASB) has issued an exposure draft *Regulatory Assets and Regulatory Liabilities*, published in January 2021, which sets out the IASB's proposals for a model to account for regulatory assets and regulatory liabilities. The current workplan indicates that the standard will be issued in 2025. If issued as a new IFRS Accounting Standard, the proposals would replace IFRS 14. The general approach to the way in which the proposals would interact with other standards can be described as an overlay approach. Under this general approach, a company would: – first apply the requirements of existing IFRS Standards (e.g. by recognising revenue under IFRS 15); then – recognise regulatory assets and regulatory liabilities. Similar to current IFRS treatment, based on the guidance in exposure draft, if a cost does not meet the recognition criteria for PP&E or intangible assets, it cannot be classified as such, even if a regulator allows it. In these cases, we would expect to see the cost recognized as a regulatory asset.



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4 Survey of Ontario Regulated Utilities

This Chapter summarizes the results of a survey of regulated utilities in Ontario.

4.1 Cloud Computing Survey – Purpose, Scope and Process

In June 2023, the OEB conducted a survey of Ontario regulated utilities to collect information on:

- The status of their implementation of cloud solutions
- Their views on the benefits and likely future role of cloud solutions more generally, and
- Their views on the appropriate regulatory treatment of cloud computing costs.

The OEB sent an invitation by email to a contact at each of the utilities that it regulates. Responses were collected on an anonymous basis through a web-based survey program. A file containing the raw data was forwarded to KPMG, which compiled and analyzed the results on behalf of the OEB. This Chapter summarizes the survey findings.

The survey was ultimately completed by 56 Ontario utilities, which represents a response rate of 90%. For reporting purposes, utilities have been categorized into small, medium, and large utilities based on the number of customers served, as follows:

Customers	Category	No. of utilities
Under 9,999	Small	24
10,000 – 29,999		
30,000 – 59,000	Medium	16
60,000 – 99,999		
100,000 – 999,999	Large	16
Over 1,000,000		

4.2 Key Survey Highlights

Highlights from the survey are summarized as follows:

- A majority (84%) of respondents have adopted some form of cloud computing systems for the purposes of workforce management, asset management, or financial reporting. Financial accounting software is the most popular type of system adopted by the utilities on the cloud.
- Of those utilities that upgraded a major IT system in the last five years, however, only 35% chose a cloud solution even though utilities generally see benefits to cloud solutions including efficiencies and cost savings.
- Fifty-five percent (55%) of utilities see recoverability through rates as a risk with cloud computing solutions. Consistent with this, roughly 60% see a lack of regulatory certainty, regulatory treatment and/or a reduction in utility earnings as barriers to implementing cloud solutions.

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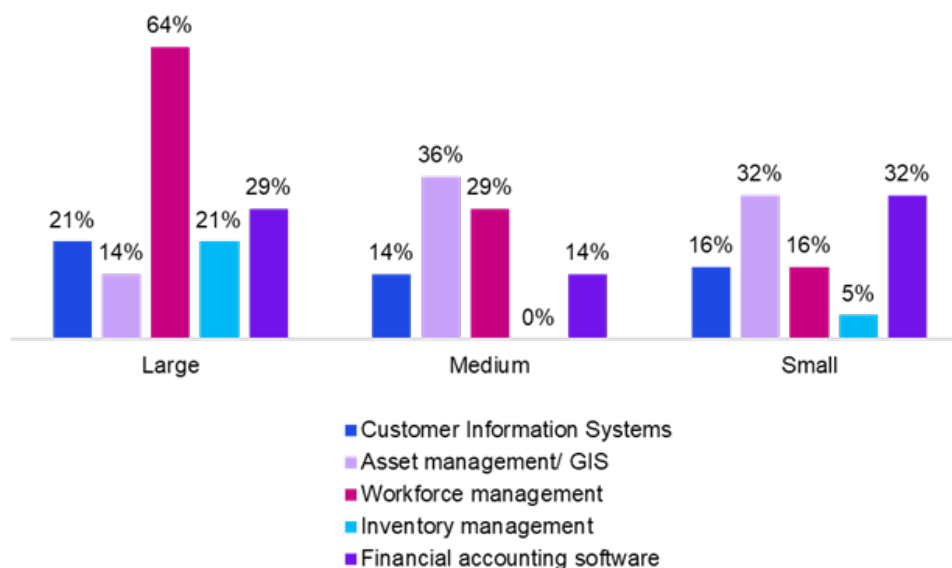
- One third of utilities think that regulatory treatment needs changing and another third think that cloud costs should be capitalized for regulatory purposes in a manner similar to that for on-premise solutions.

Additional results from the survey are summarized in the remainder of this Chapter.

4.2.1 Current State of Cloud Adoption by Utilities

A variety of cloud computing solutions have been adopted by all sizes of regulated utilities in Ontario, although cloud solutions have been adopted slightly less frequently by the small utilities. The types of solutions adopted appear to differ by size of utility. The utilities were surveyed on five types of software systems that are commonly used in their operations: asset management/GIS (Geographic Information Systems), customer information support, financial accounting, inventory management, and workforce management.

The figure below shows the percentage of utilities that have adopted a Cloud solution for each of the five types of systems. Data are reported separately for each utility size category.



Key findings:

- Workforce management is a key cloud-based solution for most of the large utilities but is of less significance for the medium and small utilities.
- Twenty-one percent (21%) of large utilities use cloud solutions for Customer Information Systems (CIS), but this cloud solution is slightly less popular for medium and small utilities (with 14% and 16% adoption rates respectively).
- Overall, less than one-third of all utilities are using a cloud solution for asset management/GIS (although uptake is slightly higher for medium utilities).
- Less than one third of utilities (in all size categories) have adopted a cloud solution for their financial accounting software.

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— The percentage of utilities using Cloud for inventory management is small (although higher for large utilities).

4.2.2 IT Budgets

As context for our review of responses, the survey asked utilities about their current IT spending. The annual IT budgets (O&M and CapEx combined) indicated by utilities range from \$4,800 to \$300 million. The median annual IT budget for small, medium and large utilities is \$450,000, \$1,250,000 and \$11,250,000 respectively. The budget data can be broken down as follows:

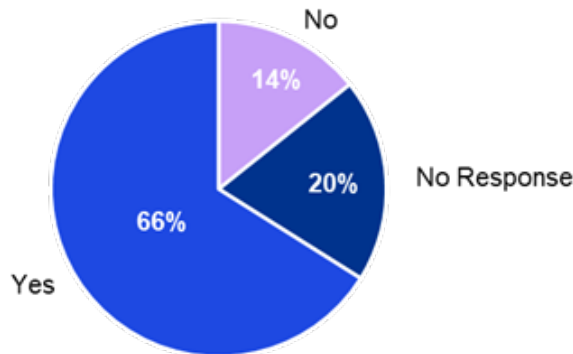
Size of utility	Reported Annual IT budget		
	Minimum	Median	Maximum
Small	\$4,800	\$450,000	\$5,000,000
Medium	\$250,000	\$1,250,000	\$8,000,000
Large	\$35,000	\$11,250,000	\$300,000,000

For small and medium utilities, the median percentage of IT spending attributed to Cloud is 10%. For large utilities, the median spending percentage is 15%.

4.2.3 Recent Upgrade Projects

Many utilities responded that they upgraded or replaced a major IT system within the last 5 years, as shown in the graph below.

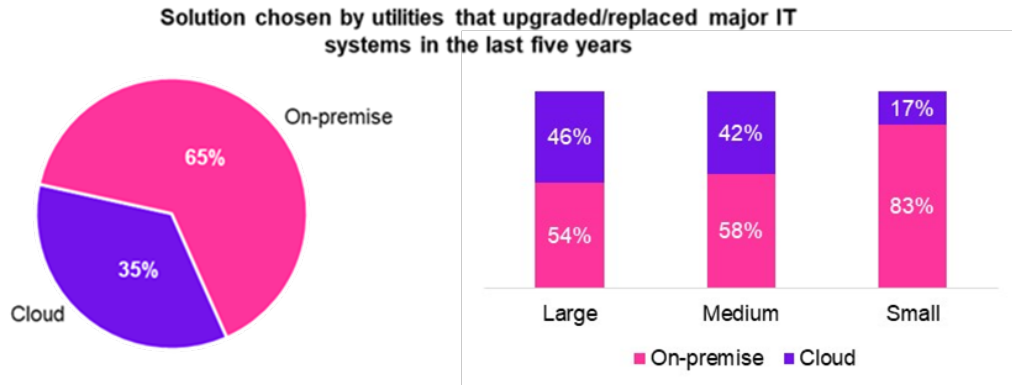
Has your utility upgraded or replaced any major IT systems within the last five years?



Among those utilities that upgraded or replaced systems in the past five years, 65% selected an on-premise technology, as shown in the graph below. The graph shows the overall percentage breakdown in a pie chart, with breakdowns by utility size category in bar charts to the right.

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Small utilities were more inclined than larger utilities (83% of small compared to 56% of medium and large utilities) to choose an on-premise solution for their upgraded IT systems.

Some of the reasons utilities gave for choosing cloud or on-premise were as follows:

Reasons for choosing cloud solution	Reasons for choosing on-premise solution
<ul style="list-style-type: none"> - Better or cheaper - Less up-front investment - On-premise not available or applicable 	<ul style="list-style-type: none"> - Cloud solution not available or applicable - Better or cheaper - Cloud solution would have a negative impact on earnings over time or in year of implementation

Four of the utilities that chose an on-premise solution for their recent upgrade did not evaluate a cloud solution at all. In contrast, all the utilities that chose a cloud solution also evaluated on-premise solutions. Interestingly, of the four utilities that did not evaluate a cloud solution, three nevertheless indicated that they have implemented cloud solutions in the past.

4.2.4 Expectations for the Future of Cloud

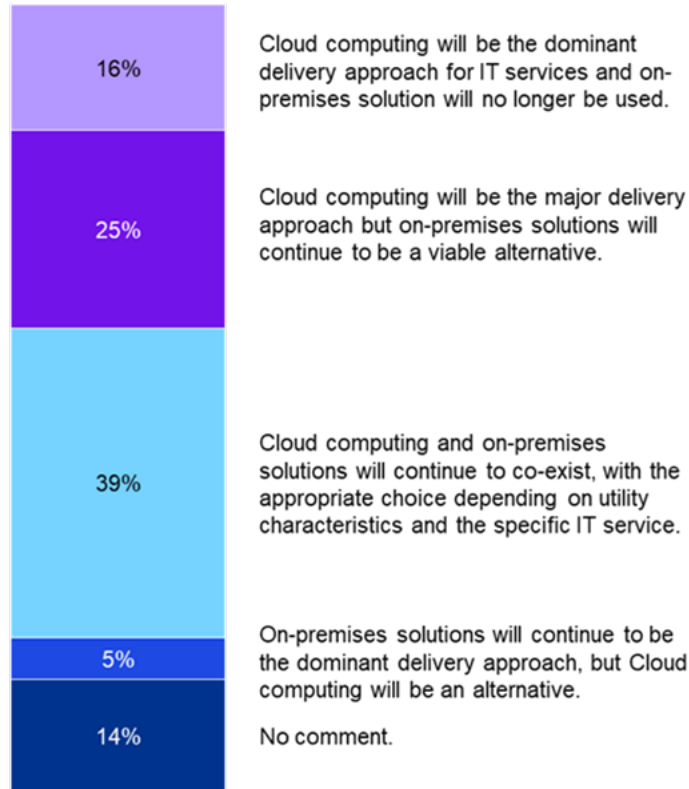
A few utilities have indicated that cloud computing will provide the tools that will enable innovation in the sector along with efficiencies and speed. Interestingly, a majority of large and medium utilities (56%) think that cloud computing will be a key driver of innovation in the electricity sector in the future whereas only 29% of small utilities do. Overall, many other utilities (30%) are not sure if cloud is driving innovation.

Cloud computing is seen as important by utilities, with 41% of the respondents thinking that cloud computing will be a major or dominant delivery approach for IT services in the next 5-10 years: 16% think that on-premise solutions will no longer be used and 25% think that cloud will be the major delivery approach. Nevertheless, 69% of survey respondents think on-premise solutions will continue to be available. Survey responses are illustrated graphically below.



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Given the views noted above, it is not surprising that a majority of respondents (52%) expect to implement new or additional cloud solutions soon, with responses not varying significantly based upon utility size.

4.2.5 Benefits of Adopting Cloud Computing Solutions

Respondents see some benefits to adopting cloud computing solutions. The significant benefits identified include:

- Reduced risk of obsolescence;
- Ease of upgrades;
- Greater functionality/performance; and
- Reduced implementation risks

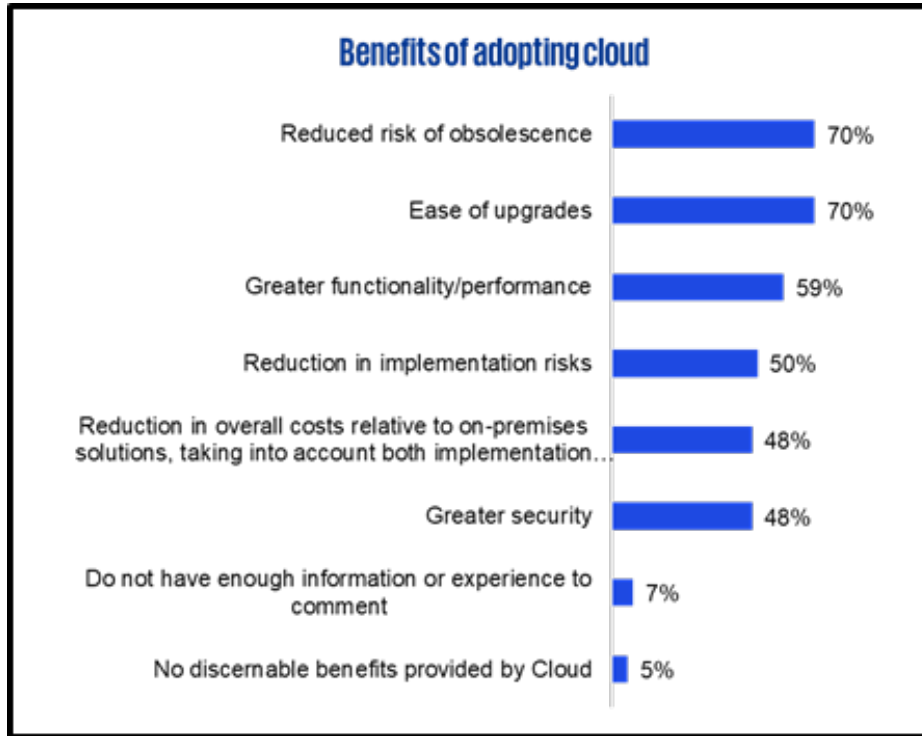
Most respondents (93%) see at least one or more benefits of adopting cloud solutions. Nevertheless, we also note that 65% of respondents that upgraded a major IT system in the last 5 years did not choose a cloud solution when making the upgrade.

Many respondents who identified benefits from adopting cloud also mentioned that cloud is sometimes the only solution available and must be chosen. This is supported by the observation from multiple utilities that technology providers are shifting from on-premise to cloud solutions.

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The survey asked respondents to respond to a pre-set list of potential benefits from cloud computing. Responses are shown in the graphic below. Respondents were allowed to check multiple answers, which is why the percentages total more than 100% when added together. Only a very small proportion of respondents (5%) reported no benefits from cloud.



4.2.6 Risks and Barriers to Adopting Cloud Computing Solutions

Cloud computing is expected to drive innovation but regulatory treatment was identified as the most significant barrier to adopting cloud solutions and one of the more significant risks of adopting cloud. Key results are as follows:

- 55% of utilities see recoverability through rates as a risk of adopting cloud solutions.
- 63% see lack of certainty of regulatory treatment as a barrier to adopting cloud solutions.
- 59% see the reduction in utility earnings due to regulatory treatment as a barrier to adopting cloud solutions.

4.2.7 Accounting and Regulatory Treatment

The accounting and regulatory treatments of cloud costs currently appear to be impacting the decision making of utilities when choosing between on-premise and cloud solutions: 69% of utilities see accounting treatment as a key/major consideration in their decision and 74% see regulatory treatment as a key/major consideration. Other factors frequently cited by utilities when choosing a technology solution were:

- The annual operation and maintenance costs,



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- Functionality/performance and the costs of upfront investments, and
- Future upgrades.

As part of the survey, utilities were asked to provide their views on the regulatory treatment of Cloud computing. This was an open-ended question that allowed respondents to respond as they saw fit. We assessed responses for commonality and identified major groupings. Key findings:

- Thirty-four percent (34%) of utilities indicated that the regulatory treatment needs changing.
- Twenty-seven percent (27%) specifically indicated that cloud costs should be capitalized.⁷
- Five percent (5%) think that the regulatory treatment should be studied.

Preferred Option from Selected List

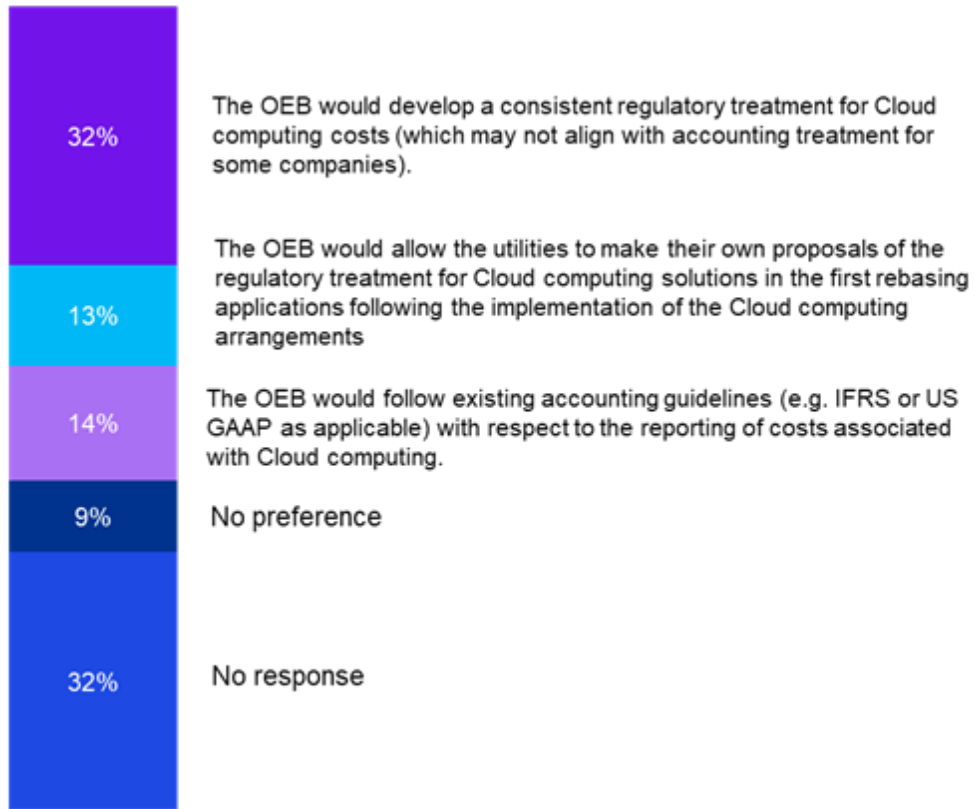
The survey also included a more structured question that required utilities to select their response to a list of pre-set options with respect to the future regulatory treatment of cloud computing costs. Responses are shown in the graphic below. The preferred approach (favoured by 32% of utilities) is one where a consistent regulatory treatment is developed for all utilities (and which may not align with the accounting treatment under GAAP for some utilities).

⁷ As might be expected, there was a large degree of overlap between the 27% who think that cloud costs should be capitalized and the 34% of utilities who indicated that the regulatory treatment needs changing.



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5 Jurisdictional review

In this Chapter we review recent developments in a few Canadian and US jurisdiction regarding alternative rate setting approaches for cloud computing and for other types of innovation. These cover the following jurisdictions and regulatory bodies:

- British Columbia (British Columbia Utilities Commission)
- Illinois (Illinois Commerce Commission)
- Alabama (Alabama Public Service Commission)
- Federal Energy Regulatory Commission (FERC)
- UK (Office of Gas and Electricity Markets)

These specific jurisdictions and associated decisions were selected in consultation with OEB staff after an initial, broader scan of decisions by regulators that appear to relate to cloud computing. We chose decisions based on their potential relevance to the OEB, interesting features, and/or the date of the decision (with more recent decisions being of greater interest).

Developments in these various jurisdictions are reviewed in more detail later in this Chapter. As a first step, we provide a summary of key findings overall.

5.1 Highlights of the Jurisdictional Review

As noted above, the regulatory treatment of cloud computing costs has been a focus of regulatory interest since NARUC issued a resolution on the issue in 2016. As highlighted in the NARUC resolution, there has been widespread concern that utilities have an incentive to favour on-premise computing solutions (versus cloud) because of the mechanics of the rate setting process. A few regulatory decisions have attempted to address this concern.

The dominant strategy used by regulators to remove disincentives to cloud has been to allow the capitalization of certain implementation costs that would otherwise have to be expensed under accounting guidelines (either US GAAP or IFRS). Under accounting guidelines for cloud, a greater proportion of implementation costs may need to be expensed than for on-premises computing. Equalizing the treatment of implementation costs between the two types of treatments (i.e. capitalize or expense) can help “level the playing field”. This strategy is reflected in the decisions summarized below for both BC and Alabama.

The Alabama decision is interesting because it also expanded the scope for the capitalization of on-premises implementation costs. This was done to improve the matching of costs with benefits, by leveling all system implementation costs over the expected life of a solution.

In addition to addressing implementation costs, the BC decision also provided a mechanism for recovering increases in O&M costs relative to forecast because of shifts to cloud computing solutions. This was important in the BC context given the three period for which rates are set. Given the relatively long-test period for setting its rates, BC Hydro may have more difficulty than some other utilities in accurately forecasting the specific mix of on-premises versus cloud solutions that will be used. The forecast for the three year period already included some cloud payments in the expense budget: one part of the decision thus addressed potential changes in these costs from forecast. Thus, some implementation of cloud solutions had already been anticipated in BC Hydro’s rate filings.



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The Illinois decision reviewed was notable because it was a reversal of a long-anticipated move to expand the scope for capitalizing cloud implementation costs. The decision by ICC to reject a proposed order was controversial: it spurred two dissenting votes and over-turned the results of what had been a lengthy consultation process. The rejected proposal was interesting because it proposed that a fixed percentage (i.e. 80%) of all costs paid to an outside cloud service provider be capitalized. The Illinois proposal was thus very similar in philosophy and mechanics to the Totex regime used by Ofgem in the UK. Under Totex, utilities capitalize a fixed percentage (85%) of their overall expenditures.

The FERC decision that we reviewed allows utilities to capitalize certain cybersecurity costs that would otherwise have to be expensed under accounting rules. FERC's objective was to provide additional incentive for utilities to implement enhanced cybersecurity measures. Thus, this decision shows that permission to defer costs that would otherwise have to be expensed has been used as a regulatory incentive in other contexts.

5.2 British Columbia

The British Columbia Utilities Commission (BCUC) recently addressed cloud computing costs in Order Number G-85-23, dated April 18, 2023. This Order responded to an application by British Columbia Hydro and Power Authority (BC Hydro); this application requested approval for a single new Cloud Costs Regulatory Account effective Fiscal 2023. In its decision, BCUC directed instead the establishment of three separate regulatory accounts as follows:

- A regulatory account for “Cloud Arrangement” implementation operating costs.⁸
- A regulatory account for Project Write off Costs, and,
- A regulatory account for Cloud Arrangement annual usage fees.

Further details are provided below.

Cloud Arrangement Implementation Operating Costs

The Order approved the establishment of a regulatory account effective fiscal 2023 to defer, on an ongoing basis, the Cloud Arrangement implementation operating costs that would have been capitalized for each project had the Cloud Arrangement been eligible for capitalization as an intangible asset.⁹ Additional findings are as follows:

- The regulatory accounts are to attract interest at BC Hydro's weighted average cost of debt.
- Beginning in Fiscal 2026, the balances in these regulatory accounts will be amortized into rates, subject to BCUC approval of the associated amounts.

Project Write off Costs

BCUC specifically directed BC Hydro to apply to the BCUC for approval to transfer to a new “Project Write off Costs Regulatory Account” any implementation costs associated with projects that were

⁸ In the proceeding, cloud computing solutions were referred to as “Cloud Arrangements”. We have used this terminology when referring to the specific proposed solutions.

⁹ The decision allowed the deferral of forecast costs and the variance between forecast and actual costs. This effectively allows the deferral of actual costs.



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cancelled prior to completion. This is to be done if BC Hydro believes that recovery of these costs from ratepayers is appropriate.

Cloud Arrangement annual usage fees

BCUC directed BC Hydro to establish a separate regulatory account for Cloud Arrangement annual usage fees. Similar to the accounts above, this will attract interest at BC Hydro's weighted average cost of debt. This account will be used to defer, on an ongoing basis, any variances between the actual annual usage fees for unplanned Cloud Arrangements, and the avoided forecast maintenance and support costs associated with the related planned Traditional Computing capital projects.

BCUC further directed BC Hydro to, subject to BCUC approval of the amounts, amortize into rates the following over the next Revenue Requirements Application (RRA) test period¹⁰, effective Fiscal 2026, on an ongoing basis :

- The balance related to unplanned annual usage fee variances at the end of the test period; and
- Actual annual interest costs for the preceding test period.¹¹

Process for Proceeding

During the proceeding, BC Hydro responded to one round of written information requests from BCUC staff. The process allowed for the receipt of letters of comment from other interested parties but none are posted on the BCUC website. There were no oral hearings. Accordingly, the proceeding involves relatively few filings.

5.2.1 **Rationale for BCUC Decision**

In its application, BC Hydro stated that it is difficult to forecast costs associated with Cloud Arrangements at the time a particular IT project is being planned. This reflects the fact that the decision to use a Cloud Arrangement is often not made until a specific technology solution, and vendor for that solution, have been selected.¹² Difficulties in forecasting the nature and cost of IT projects in advance means that it is difficult to forecast IT capital and operating budgets and the allocation between Traditional Computing and Cloud Arrangement projects.

BC Hydro had requested one regulatory account to accumulate implementation operating costs as well as variances in annual usage fees. The BCUC rejected the idea of having a single regulatory account, noting that the two amounts (implementation operating costs and variances in annual usage fees) would still need to be tracked separately since they will be treated differently in the rate setting process. More specifically, implementation operating costs will be amortized over the remaining expected usage term for each implementation (which may vary by project), whereas annual usage fee variances will be amortized over the next RRA test period.

¹⁰ The RRA is the test period for which rates are set on a forward looking basis using a Cost of Service approach.

¹¹ The decision allows the amortization of both forecast annual interest costs and the variance between forecast and actual interest for the preceding test period. This effectively allows for the ability to amortize actual interest costs.

¹² Exhibit B-3, BCUC IR 1.2.4.



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The rationale for having variance accounts for these two different items (implementation operating costs versus variances in annual usage fees) is outlined below:

- The deferral of implementation costs is done to match the costs with the benefits. More specifically, the deferral allows implementation costs to be amortized over the life of a Cloud Arrangements, even though accounting guidelines require these costs to be expensed in the year of implementation. Deferral of implementation costs thus allows for more appropriate treatment in the rate setting process.
- The deferral of variances between forecast and actual usage fees addresses the fact that it is difficult for the utility to accurately forecast usage fees in the rate-setting process. This is partly because the utility may not know in advance whether it will adopt a traditional or cloud solution for its computing requirements.

5.2.2 Rate Setting Process for BC Hydro

As context for the BCUC decision, we provide a summary of the overall rate setting process for BC Hydro.

In an application filed in August 2021, BC Hydro submitted a rate application covering the three year period Fiscal 2023 to Fiscal 2025 (the test period). This application requested rate increases of:

- 0.62% on April 1, 2022 (to establish rates for Fiscal 2023)
- 0.97% on April 1, 2023 (to establish rates for Fiscal 2024)
- 2.18% on April 1, 2024 (to establish rates for Fiscal 2025).

In addition, the application requested approval of amounts for the Deferral Account Rate Rider (DARR).

Approval of these rate increases was granted on June 19, 2023, which was subsequent to the cloud decision that is the focus of this section and which was issued on April 18th, 2023. The specific rate adjustments are subject to adjustments as a result of other determinations and directives arising from the proceeding. BC Hydro will file a revised revenue requirement reflecting these adjustments.

Rate Setting Framework

As per Directive No. 8 issued by the BC government, rates for BC Hydro are set to allow it to achieve an annual rate of return on deemed equity that would yield a distributable surplus of \$712 million.¹³ Rate calculations assume deemed equity equal to 30% of BC Hydro's Rate Base. The Rate Base includes both Property Plant & Equipment (PP&E) as well as intangible assets in service.

Prior to the cloud proceeding, the rate setting process in place already included a variance account for differences in depreciation expense from forecast. These variance accounts are used to "true-up" differences in actual depreciation expenses versus forecast, with true-ups occurring in the next test period. Any underspending by BC Hydro relative to forecast on capital assets in the Fiscal 2023-25 period will result in a balance in this variance account (because the resulting actual depreciation expense will be less than forecast). This balance will result in a refund to customers in the next test period (i.e. Fiscal 2026 forward). There is no similar variance account for operating expenses.

¹³ BC Utilities Commission Act, Direction No. 8 to the British Columbia Utilities Commission, B.C. Reg. 24/2019, last amended March 7, 2022 by B.C. Reg. 56/2022.



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In effect, KPMG's conclusion is that the rate setting mechanism provides BC Hydro with an opportunity to achieve a target return based on forecast expenses for the three-year test period. As noted, there is a true-up mechanism to adjust for differences in capital expenditures (and hence in subsequent depreciation expenses) against forecast. This will affect rates in subsequent test periods.

Accounting Framework

BC Hydro prepares financial statements under IFRS. In its submission, BC Hydro noted that implementation costs for Cloud Arrangements would typically be expensed whereas for 'Traditional Computing' the implementation costs would generally be capitalized.¹⁴ BC Hydro stated:

"...Cloud Arrangements are treated as a service contract, rather than an IT asset since the user of the service doesn't control the asset. Under IFRS and based on the particulars of each Cloud Arrangement, the cloud implementation costs, and annual usage fees may not meet the accounting criteria for capitalization, except in limited circumstances where they qualify as Intangible Assets under IAS 38 *Intangible Assets*. Accordingly, these costs are required to be expensed as operating costs when incurred, instead of being recovered over the useful life of the arrangement."¹⁵

Application for Cloud

In its rate application for the Fiscal 2023-25 test period, BC Hydro provided capital expenditure forecasts, including for technology projects. In the cloud proceeding, BC Hydro noted that, subsequent to its application for Fiscal 2023-25 rates, it determined that five technology projects that had been assumed to be on-premises solutions, with associated capital expenditure forecasts, would instead be implemented as cloud solutions.

At the time of its cloud application, BC Hydro estimated that the five projects to be implemented as cloud solutions involve \$18 million in expenditures. In addition, BC Hydro noted that it will incur approximately \$0.5 million in unplanned operating costs in Fiscal 2024 and \$1.6 million in Fiscal 2025.

With the rate setting regime that was in place prior to BCUC's cloud decision, with no Cloud Costs Regulatory Account in place, the shift by BC Hydro of the five technology projects to cloud would result in customers bearing none of the associated costs. This reflected the following:

- Customers would benefit from a reduction in rates in the period Fiscal 2026 forward as a result of a refund of balances in the depreciation variance account (from the underspending on on-premises IT). In effect, they would get a refund of the capital expenditures for on-premises equipment that were forecast but not made.
- Customers would not pay any of the unplanned operating costs of the cloud solutions.

BC Hydro argued that this outcome would be inappropriate.

With the rate treatment proposed by BC Hydro, in contrast, the following would be the change in expected financial results in the Fiscal 2023-25 test period as a result of the shifts in project costs outlined above:

¹⁴ BC Hydro noted that some costs for traditional computing projects would need to be expensed under IFRS. These are the costs that are not considered directly attributable to preparing the asset to be capable of operating in the manner intended such as training and change management costs. See Exhibit B-1, p. 10, Footnote 8.

¹⁵ Exhibit B-1, p.10.



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- “Technology capital additions would be reduced by \$18 million;
- “Amortization expense would be lower as there would be no amortization related to the \$18 million reduction in capital additions; and
- “Operating costs would be higher by \$18 million; however, these costs would be deferred and subject to amortization (over the expected usage term for each Cloud Arrangement) if the proposed regulatory account treatment is approved.”¹⁶ [*Emphasis added*]

BC Hydro further noted:

“The Cloud Arrangement expected usage terms are not expected to differ significantly from the approximate six-year average life used to calculate amortization expense for technology capital additions. Therefore, the amortization amounts associated with certain actual implementation costs of a Cloud Arrangement, whether treated as capital or deferred to the Cloud Costs Regulatory Account, would be similar in magnitude. As the two amortization amounts would approximately offset, there would be little change in rates by adjusting the F2023-F2025 RRA plan if the proposed treatment of the Cloud Arrangement implementation costs is approved.”¹⁷

In summary, BC Hydro argued that this was a more appropriate outcome from a rate setting perspective.

KPMG’s Assessment of the Cost Treatment for Forecast Cloud Arrangements

One feature to note about the arrangements that have been implemented is the treatment of variances associated with the usage fees for *planned* Cloud Arrangements.

If BC Hydro includes usage fees for Cloud Arrangements in its RRA, any variances between actual and planned usage fees for these Cloud Arrangements will not be added to the regulatory accounts. Thus, there will be no recovery (or alternatively refund) of these variances from customers.

The regulatory account for usage fees will only be used to capture differences in usage fees that arise because BC Hydro implemented Cloud Arrangements that were not originally foreseen at the time of the RRA. More specifically, the amount that is added to the regulatory account will be the variance between actual usage fees for cloud and the forecast operating and maintenance expenses of the traditional computing solution that had originally been contemplated.¹⁸

It can be seen that customers will therefore ultimately pay the actual (usage-related) operating costs of cloud solutions that were not foreseen but will pay only the forecast operating costs of those cloud solutions that were foreseen (and therefore included in the RRA). BC Hydro noted:

“For these forecasted annual usage fees for known Cloud Arrangements, BC Hydro considers it reasonable that BC Hydro be at risk with respect to variances.”¹⁹

Based on the above discussion, it appears that there is some asymmetry between planned and unplanned Cloud Arrangements in the extent to which the shareholder assumes operating cost risks. The shareholder does not assume any cost risks with respect to unplanned Cloud Arrangements. However, this asymmetry did not attract comment in the proceedings or decision.

¹⁶ Exhibit B-1, p.24.

¹⁷ Exhibit B-1, pp.24-25.

¹⁸ Savings in operating and maintenance expenses because the traditional computing solution was not implemented will tend to reduce the amount that is added to the regulatory account.

¹⁹ Exhibit B-1, pp.24-25.



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5.3 Illinois

5.3.1 Overview

The Illinois decision that is reviewed in this section was the culmination of a proceeding that had evolved over a long period of time. It began in 2017, when the Commission had initiated a proceeding to consider rules relating to the regulatory treatment of cloud-based computing solutions in Illinois. The objective was to create a rule that would “level the playing field between on-premise and cloud-based computing systems by clarifying the regulatory accounting rules to provide comparable accounting treatment of on-premise and cloud-based computing systems.”²⁰

Proposed rules to address the issue of creating a level playing field evolved over time in response to comments from various intervenors and to an initial decision by the Joint Committee on Administration Rules (“JCAR” or “Joint Committee”) in January 2019. The January 2019 decision had objected to an initial proposed rule, noting that it had “not yet received sufficient information regarding the economic impact of the rulemaking on affected ratepayers”.²¹

After additional consultation and review, the final proposed rule that was submitted for consideration to the Commission read by Commission staff as follows:

A public utility may record as a regulatory asset and, subject to the Commission's determination of prudence and reasonableness in a rate case, include in rate base eighty percent (80%) of the costs paid to an outside service provider for a cloud-based computing solution or computing service if all the requirements in subsection (b) are met. The remaining twenty percent (20%) of such costs shall be recorded as an operating expense. All other costs associated with a cloud-based solution or computing service, including but not limited to, implementation costs, training costs, and data conversion costs, shall be included in rate base or recorded as an operating expense in accordance with financial accounting requirements, Commission practice, rules, and law.

The requirements in subsection (b) restricted the application of the rule to “costs incurred through the period being reported, including prepayments”.²² They also provided that each regulatory asset correspond to a specific service contract.²³

The proposal to capitalize a fixed 80% of costs is similar to the Totex concept used by Ofgem and which is reviewed later in Section 5.6 of this Chapter. Ofgem requires utilities to capitalize a fixed percentage (85%) of their overall costs for rate-making purposes. The rationale is to eliminate the incentive for utilities to favour solutions that involve capital versus operating expenditures. A proposal to capitalize a fixed percentage of cloud computing costs was first put forward by the Advanced Energy Economy Institute (“AEEI”), which represented Cloud vendors. AEEI, however, declined to specify a particular percentage rate, noting that it “is not in the best position to propose language that would effectuate such a fixed capitalization percentage nor does it possess data that could inform

²⁰ ICC, Docket No. 17-0855, Staff Report to the Commission, “Regulatory Accounting Treatment for Cloud-Based Computing Systems”, June 17, 2019, p.1.

²¹ Illinois Commerce Commission, Documents for 17-0855, First Notice Order, “Order – First Notice,” filed by Heather Jorgenson, Administrative Law Judge, posted 10/10/2019, available at: <https://www.icc.illinois.gov/docket/files.aspx?no=17-0855&docId=292097>

²² ICC, Docket No. 17-0855, Dissent, not dated, p. 5.

²³ ICC, Docket No. 17-0855, Exhibit A to Joint Utilities’ Response Comments, April 10, 2020, p.2.



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what a specific percentage might be”.²⁴ Revised language incorporating the 80% rate was subsequently developed in workshops with interested parties. The new language was supported by the various utilities participating in the proceeding (collectively, the “Utilities”). Staff then accepted the shift to the 80% rate, noting that it “believes this approach is a well-reasoned solution”²⁵ KPMG has not seen any detailed analysis that supports the 80% figure; it appears to have been developed through a consensus process.

The final proposal to capitalize 80% of costs was supported by all parties that provided comments on the draft order. Those in favour included utility representatives, the Advanced Energy Economy Institute (AEEI), and Staff of the Commission.

Prior Proposals

The proposal at the ICC to apply an 80% ratio replaced an earlier proposal, which had called for inclusion in rate base only of those costs “that would be recorded in a utility plant account in accordance with financial accounting requirements if the costs were for an on-premises computing solution, rather than a third-party cloud-based computing solution”. The earlier proposal thus tried, for cloud-solutions, to mirror directly the accounting treatment that would be applied to on-premises solutions.

The proposal to move to a fixed 80% rate reflected a few considerations:

- Using a fixed (80%) rate would “clarify the rule and negate the need for case-by-case, service contract-by-service contract litigation of cloud technology costs, thus promoting regulatory certainty and controlling rate case expenses”.²⁶
- Basing the capitalization rate on the internal costs of a cloud-based solution would not necessarily eliminate the disincentive for utilities to utilize cloud-based solutions in every situation. Application of accounting rules to the internal costs of a cloud solution could still yield a capitalization rate that would be significantly lower than for an on-premise solution.²⁷ (It was also noted that application of account rules could, in certain situations, yield a capitalization rate that would be higher than that for an on-premises solution. While this would be favourable from an incentive perspective, it would result in additional costs to customers through the return on capitalized amounts.)

An earlier proposed rule had required that cloud providers provide a breakout of their costs so that they could be functionalized and either capitalized or expensed based on a comparison to on-premises system costs. This was viewed as having a few problems:

- Requiring companies to disaggregate the costs associated with a cloud-computing solution would essentially penalize a company for using a cloud-based solution, since the same level of detail is not required for on-premises solutions.²⁸
- It would create ambiguity around which costs will be recovered as capital.
- It would have required utility contracts with cloud computing providers to break out, to the

²⁴ ICC Docket No. 17-0855, Comments on First Notice Rule on Behalf of Advanced Energy Economy Institute, January 30, 2020, p.8.

²⁵ ICC, Docket No. 17-0855, Response Comments of the Staff of the Illinois Commerce Commission, April 10, 2020, p.6.

²⁶ ICC, Docket No. 17-0855, Order, July 15, 2020, p.6.

²⁷ ICC, Docket No. 17-0855, Order, July 15, 2020, p. 10.

²⁸ ICC, Docket No. 17-0855, Response Comments of Staff, April 10, 2020, p. 4.



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extent possible, the internal costs of cloud providers to supply services. This would have, in turn, the following challenges:

- The prices for cloud services are generally market- rather than cost-based.
- Cloud providers may not account for their costs in the same way that utilities do. This would make it difficult for them to provide the required information.

A brief submitted by the Attorney General's office noted that requiring a break-out of costs, as proposed above, could lead to a decrease in competition amongst providers of cloud-based services, as some third-party vendors would simply forego serving the Illinois utility market. Alternatively, they may increase their bid prices to recover the additional costs of disclosure.²⁹

Parties in the proceeding believed that the proposed 80/20 allocation would be much simpler to apply and would balance two opposing concerns noted above:

- That additional disclosure of cloud costs would be a disincentive to use cloud.
- That, in some instances, companies would be able to capitalize some costs associated with cloud-computing that they could not capitalize with an on-premises solution, resulting in an undue incentive to use cloud.

5.3.2 Final Decision

In its final decision, the Commission rejected the proposed rule to capitalize a fixed 80% of costs. Hence, no change in regulatory treatment was implemented. The decision included a strongly worded dissent by two of the five commissioners.

The majority decision noted the following:

"The Commission finds the proposed 80/20 split of the costs of cloud computing arbitrary and not supported by the record. It runs contrary to the Commission's obligation to assure proposed rates are "just and reasonable" and "least-cost" as required by Sections 9-101 and 8-401 of the Public Utilities Act. 220 ILCS 5/9-101; 220 ILCS 5/8-401. Instead, the 80/20 split is based on a few sporadic examples by certain utilities, rather than a sufficient set of data points, common industry practice, or an average break down of the cloud computing solutions' costs in Illinois based on Illinois utilities' extensive empirical data. Such arbitrary, regulatorily set split of the costs provides little oversight and contemplation for the Commission into cloud computing spending by the utilities and impairs the Commission's ability to review such costs. The proposed rule also fails to adequately contemplate and quantify the impacts on the consumers as charged by JCAR's Statement of Objection."³⁰

The majority decision also noted that FASB Accounting Standards Update 2018-15 remains available to utilities to allow them to recover their cloud-based solutions' costs.³¹ Thus, the Commission found that the proposed rule was "not necessary" for the proposed task of 'leveling the playing field'.

As noted above, there was a strongly worded dissent signed by two commissioners. The dissent noted:

"What began almost three years ago and then began yet again as an effort to explore innovative ways to encourage responsible and prudent investments into cloud-based computing solutions

²⁹ ICC, Docket No. 17-0855, Comments of the People of the State of Illinois, September 27, 2019, pp. 3-4.

³⁰ ICC, Docket No. 17-0855, Order, July 15, 2020. pp. 10-11.

³¹ This topic was addressed earlier in Chapter 3, Section 3.3.3.



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or computing service...has dwindled to nothing more than a circular and futile exercise in failed logic.”³²

This dissenting opinion made the following points:³³

- The proposed rule did not impair in any way the Commission’s ability to review the prudence and reasonableness of costs, contrary to the assertion in the majority opinion. Utilities would still be required to show that such investments are prudent, reasonable, and least cost.
- The use of a fixed percentage of costs for rate setting purposes has precedent, including in a 4% rule that the California PUC applies to cloud investments and in the rule used by Ofgem in England for the capitalization of expenditures.
- The proposed rule had achieved consensus among the parties to the docket, including consumer advocates. Accordingly, the rejection of the proposed rule was a repudiation of the input received over the years in the stakeholder workshops held as part of the proceeding. The decision disregarded the extensive time and effort spent by staff, utilities and concerned stakeholders in supporting deliberations.

5.4 Alabama

On February 5th, 2019, the Alabama Public Service Commission (“Alabama PSC”) approved a request by Alabama Power Company (“Alabama Power”) to establish a regulatory asset in which it would capitalize operations and maintenance (“O&M”) costs associated with software projects, including cloud-based software solutions. These costs will then be amortized over a period that is consistent with the lives of comparable on-premises equipment.

The Alabama decision is notable because it provides for the capitalization of certain costs that would otherwise be expensed both for on-premises solutions and for cloud solutions. Thus, it addressed a perceived inconsistency in the treatment of different types of implementation costs even just for on-premises solutions.

The regulatory asset put in place only applies to implementation costs. Project management costs incurred after the post-implementation operation stage are to be expensed as incurred.

The regulatory asset will be used for management-approved software projects with an expected total project cost exceeding \$2 million. The treatment will be available for both new software systems (including cloud-based solutions) and for existing system upgrades that provide improved functionality and the opportunity for sustained system life. The regulatory asset for any specific asset will be amortized on a levelized basis over a period that is consistent with comparable on-premises equipment.

Reporting and Review Mechanisms

Alabama Power proposed, and the Alabama PSC approved, a reporting and review mechanism. This entails the following steps:

- As part of its annual submission for rate setting purposes:
 - Alabama Power would provide a report that provides details of each software project

³² ICC, Docket No. 17-0855, Order, July 15, 2020. pp. 10-11.

³³ ICC, Docket No. 17-0855, Dissent, not dated.



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that it proposes be subject to a regulatory deferral. For each project, the report would include a description of the project and its business purpose, as well as the projected cost for the project (including cost by year and the development life).

- The company would also report estimated regulatory asset balances and the amount to be amortized by year.
- Alabama PSC staff would have the ability to question the information provided. Recording of the costs as a regulatory asset would be subject to resolution of any questions submitted.

Company Arguments

In its submission, Alabama Power noted that:

“Prevailing accounting guidance, much of which was established nearly 20 years ago, does not allow for a consistent accounting treatment of the expenditures associated with software project costs. Specifically, GAAP calls for some project costs to be treated as capital investment, with others to be expensed as incurred. This creates uneven expense recognition patterns for software projects that are expected to have an extended useful life and for which the costs all serve a common objective, namely the development and installation of systems that are integral to reliable and effective operations.”³⁴

More specifically, Alabama Power noted that FASB requires the capitalization of the following software costs when developing or obtaining internal-use computer software:

- Fees paid to third parties for services provided to develop the software during the application development stage;
- Costs incurred to obtain computer software from third parties;
- Costs associated with data conversion during the software development stage; and
- Payroll and payroll-related costs (e.g., employee benefit costs) for employees directly involved with the software project and performing tasks such as software configuration, coding, installation and testing.

Alabama Power noted that, in contrast, “seemingly comparable” expenditures that are necessary for the identification and development of the appropriate software solution must be expensed as incurred. These expense items include:

- Efforts at the preliminary project stage (e.g., conceptual formulation and evaluation of alternatives, research into technology availability, and training);
- Efforts at the post-implementation operation stage (e.g., internal and external training costs, application support costs);
- Data conversion costs occurring either at the pre-implementation or post implementation stage; and
- Associated general and administrative costs related to the project.

³⁴ Alabama Power, Letter to Walter L. Thomas – Request for Accounting Authorization Related to Software Expenditures, January 22, 2019, p. 2.



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In addition, US GAAP directs expenditures associated with cloud-based software solutions to be expensed as incurred. Alabama Power noted that this is “a categorical approach that is at odds with the (albeit conflicting) treatment afforded to on-premise software”.³⁵

In its submission, Alabama Power noted:

“As evidenced by the foregoing, applicable accounting guidance does not allow for a consistent treatment of the expenditures necessary for software project identification, development, implementation and operation. The result is a pattern of irregular expense recognition for software projects, an outcome rendered more undesirable by the fact that the costs of these projects all serve a common objective, namely the promotion of reliable and efficient electric service to customers. To this end, the software projects represent investment in assets that are expected to have an extended useful life. Accordingly, in the Company’s view, a proper treatment of these types of expenditures is a uniform one that promotes a recovery of all associated investment across the life of the asset and for the entire term over which it is expected to provide a benefit to the Company and its customers. Such an approach would enable the Company to recognize such software-related costs over the period for which the software is expected to provide a benefit to customers; levelize the O&M costs and thus lessen their disruptiveness to rates; and align the treatment of on-premise software solutions and cloud computing arrangements.”³⁶

Alabama PSC Decision

In its decision, Alabama PSC found that the requested accounting authorization, as described in the Company’s petition, was “reasonable” and should be granted. It noted that the regulatory asset will benefit customers “by matching the recognition of certain software expense over the period for which the software benefits will occur”.³⁷

5.5 Federal Energy Regulatory Commission

On April 21, 2023, the Federal Energy Regulatory Commission (“FERC” or the “Commission”) issued Order No. 893. This approved, among other things, the creation of a Cybersecurity Regulatory Asset Incentive that would allow utilities to seek deferred cost recovery for cybersecurity investments that are eligible for incentives. This regulatory asset incentive would be used to defer certain cybersecurity costs that are generally expensed as they are incurred.³⁸ Regulatory assets will be included in rate base for determination of a utility’s base return.

We have summarized this decision because cybersecurity expenses offer some parallels to expenses for cloud computing. Also, cloud solutions were noted in the proceeding as a key strategy in addressing cyber issues.

As background to the proposed rule, FERC noted that:

“Many costs associated with cybersecurity are in the form of expenses, often to third-party vendors, rather than capital investments. Moreover, certain cost categories that companies historically have purchased and capitalized, such as software, are now often procured as services

³⁵ Alabama Power, Letter to Walter L. Thomas – Request for Accounting Authorization Related to Software Expenditures, January 22, 2019, pp. 2-3.

³⁶ Alabama Power, Letter to Walter L. Thomas – Request for Accounting Authorization Related to Software Expenditures, January 22, 2019, p. 3.

³⁷ Alabama Public Service Commission, Docket U-5285, February 5th, 2019, p. 5.

³⁸ FERC, Document No. RM22-19-00, Order No. 893, April 21, 2023, para 135.



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with periodic payments to vendors that are recorded as expenses. Therefore, to encourage investment in cybersecurity, the Commission proposed to allow utilities to defer and amortize eligible costs that are typically recorded as expenses, including those that are associated with third-party provision of hardware, software, and computing and networking services.”³⁹

With respect to implementation costs, a FERC summary of the Notice of Proposed Rulemaking (“NOPR”) stated that:

“another potentially eligible implementation cost may be internal system evaluations and assessments or analyses by third parties, to the extent that they are associated with a capitalizable item and are part of eligible capitalizable costs. The Commission proposed that any implementation costs that are not conventionally booked as plant and thus capitalized can be considered for deferral as a regulatory asset. Recurring costs may be eligible for deferral as a regulatory asset and may include, for example, subscriptions, service agreements, and post-implementation training costs. Specifically, the Commission proposed to allow utilities, under this incentive, to include ongoing dues and other expenses directly associated with participation by utilities in cybersecurity threat information sharing programs that satisfy the eligibility criteria.”⁴⁰

Under the Order, and consistent with the summary of the NOPR provided above, utilities will be allowed to seek the incentive for a range of expenses, including:

- Operation and maintenance expenses,
- Labour costs,
- Implementation costs,
- Network monitoring, and
- Training costs.

Additionally, ongoing expenses, either incurred by utility employees or utility payments to third parties may be eligible.

The Order noted that software purchases typically would not qualify for the incentive because they generally constitute capital investments. However, software-as-a-service expenses would qualify for the incentive.

The Commission found that use of a regulatory asset incentive was appropriate because of the “expense-heavy nature of many cybersecurity investments”. Thus, the deferral of costs is “appropriate to effectuate Congress’ requirement that the Commission offer cybersecurity incentives”.⁴¹

Record Keeping

FERC noted that utilities will need to maintain records to support the eligibility of costs that are added to the regulatory asset account:

“Pursuant to our existing regulations, any utility receiving an incentive must maintain sufficient records to support the distinction of any investments that are afforded incentive-based rate treatment. Given the novelty of allowing incentive recipients to include certain expenses in rate

³⁹ FERC, Document No. RM22-19-00, Order No. 893, April 21, 2023, para 135.

⁴⁰ FERC, Document No. RM22-19-00, Order No. 893, April 21, 2023, para 136.

⁴¹ FERC, Document No. RM22-19-00, Order No. 893, April 21, 2023, para 146.



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base, it is essential that the utilities keep records in a manner that allows the Commission and other parties to ensure that no double-recovery occurs.⁴²

Amortization Period

The Order provides that a utility granted the regulatory incentive must amortize the regulatory asset for up to five years.⁴³ The five-year period was through to balance the goals of ratepayer protection and providing an appropriate incentive to encourage utilities to improve their cybersecurity posture. Annual expenses can be subject to the incentive as well as implementation costs. The decision noted:

“To clarify, incentive-eligible, cybersecurity expenses for each of the five years may be included in rate base and amortized for up to five years, essentially creating five tranches of cybersecurity expenses.”⁴⁴

Nature of Investment

It should be noted that the regulatory asset incentive applies only to cyber security expenditures that are voluntary or, in other words, go beyond the minimum standards established. The FERC order notes that the incentive cannot be applied to expenditures that are mandatory. Thus:

“We also clarify that if and when cybersecurity measures become mandatory, utilities will cease receiving the Cybersecurity Regulatory Asset Incentive for taking such measures. No additional expenses will be converted to regulatory assets and the unamortized portions of regulatory assets must be incurred as expenses in the year when they were converted back to expenses and immediately removed from rate base.”⁴⁵

The regulatory incentive is thus clearly designed to focus on voluntary actions that are above and beyond applicable minimum standards.

5.6 Ofgem

The Office of Gas and Electricity Markets (“Ofgem”) is the government regulator for gas and electricity markets in the UK. It introduced the concept of “Totex” as part of its RIIO rate-setting process.⁴⁶ Under the Totex model, actual operating and capital expenditures are grouped together; a fixed percentage of these overall expenditures are then capitalized for rate-setting purposes. Amounts that are capitalized are eligible for recovery later through depreciation and a return on capital. The remaining portion of costs is treated as an operating cost in the period concerned.

The Totex model was first applied to electricity distribution companies and involves transferring a fixed 85% of total expenditures into Regulatory Asset Value (“RAV”), independent of the exact breakdown of these expenses. (RAV is equivalent to the rate base of North American utilities.) The Totex allocation to RAV is applied independently of the capitalization policies used for financial reporting purposes; hence, two sets of financial accounts need to be maintained.

⁴² FERC, Document No. RM22-19-00, Order No. 893, April 21, 2023, para 153.

⁴³ FERC, Document No. RM22-19-00, Order No. 893, April 21, 2023, para 172.

⁴⁴ FERC, Document No. RM22-19-00, Order No. 893, April 21, 2023, para 172.

⁴⁵ FERC, Document No. RM22-19-00, Order No. 893, April 21, 2023, para 172.

⁴⁶ RIIO stands for ‘Revenue = Incentives + Innovation + Outputs’ and is Ofgem’s performance-based model for setting network tariffs.



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The Totex model was introduced to eliminate any bias that utilities may otherwise have in favour of solutions that involve an investment in assets rather than an increase in operating costs. Cloud computing solutions are an example of exactly the type of project that the Totex mechanism is designed to support, by removing the bias for expenditures that are treated as capital investments under accounting rules.

In reviews of the Totex model, cloud computing projects have been cited by observers as an example of the type of innovation that has occurred or that are relevant in considering the Totex model. Relevant citations are noted below.

Study of Innovation and Efficiency Gains

In 2017, Ofwat, the economic regulator of water and wastewater services in England and Wales, commissioned KPMG LLP (UK) to examine the impact that the Totex regime had, or could have in the future, on efficiency gains in the water sector.⁴⁷ The KPMG report cited a review by Ofgem on impacts that had been observed for electricity and gas utilities and noted: “Companies are also realising efficiency gains from using robots for mains replacement, flexible workforces, **and cloud technologies**” [*emphasis ours*].⁴⁸

Submission to Commerce Commission

Orion, an electricity transmission and distribution utility in New Zealand, provided comments to the Commerce Commission in New Zealand in response to a proposed framework for setting network tariffs. The submission indicated that a Totex approach to expenditure was a “key priority”. In support of this statement, it noted:

“The current choices we face to substitute Capital Expenditure (e.g. in-house software or infrastructure build) with Operational Expenditure (e.g. cloud-based services or flexibility services) is one example of the need for expenditure flexibility. This, coupled with rising costs, requires flexibility to allocate costs between Capex and Opex to ensure better outcomes for customers.”⁴⁹

⁴⁷ Ofwat’s official name is the Water Services Regulation Authority.

⁴⁸ KPMG LLP and Aqua Consultants LTD, “Innovation and efficiency gains from the totex and outcomes framework”, report for OFWAT, June 2018, p. 77.

⁴⁹ Orion, letter to Dane Gunnell of Commerce Commission, “Feedback on the Input Methodologies ‘Draft Framework Review’ and ‘Process and Issues’ Papers, 11 July 2022, p. 5.

6 Policy evaluation

In this chapter, we provide an assessment of policy considerations and the advantages and disadvantages of alternative approaches for the rate treatment of cloud computing.

6.1 Evaluation criteria

In evaluating policy options and alternative rate-making treatments, it is important to define the criteria that will be considered in the evaluation and the associated assessment of the advantages and disadvantages of different options. Relevant considerations are as follows:

- **Incentives for efficiency.** Policies should provide utilities with incentives to appropriately manage IT systems and costs, and to make optimal decisions regarding IT systems. This is important for ensuring that costs paid by customers are ultimately as low as possible consistent with the need to meet other objectives, such as the desire to provide reliable, secure and effective utility service. The costs of any IT system should be commensurate with the anticipated benefits from that system.
- **Consistent with good cost allocation practices.** Policies should result in an appropriate allocation of costs, both across time periods and across different classes of customers. Good cost allocation practice generally implies that costs are matched with benefits. Those who benefit from a service, or who cause the associated costs to be incurred, should bear those costs.
- **Ease of administration.** Policies should be easy to implement and administer. They should not entail undue costs, for example, for tracking and oversight.
- **Impacts on utilities' financial position.** Policies should be consistent with the desire to maintain utilities' financial health and should not interfere with their ability to raise investment capital for service improvements.
- **Impacts on regulatory oversight.** Any policy should support regulators' ability to review the prudence of IT spending.
- **Effectiveness.** Any incentive policy that results in additional costs for customers should clearly be effective: it should induce changes in behaviour relative to the baseline level. It should not reward behaviour that is likely to have occurred anyway. Another way of stating this is that the policy should have few "free riders".

Although KPMG has provided an assessment of various options for rate-making treatment, it was not within our scope to provide an overall recommendation on a preferred option.

6.2 Policy considerations

Prior to detailed discussion of the various rate-setting options, we provide some initial discussion of the policy considerations noted above in the context of the alternative rate-setting approaches for cloud computing.



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6.2.1 Incentives for Efficiency

Most of the options examined in this report are generally designed to offset some of the lost earnings that utility shareholders experience when they adopt solutions that replace a capital investment with a stream of operating expenses. The objective of the alternative rate-making treatments is therefore to reduce the disincentive that shareholders may face when evaluating cloud options. Proponents of these treatments argue that existing regulatory rules may dissuade utilities from considering and adopting cloud solutions that would be more cost effective and that would better serve customers. Alternative options should therefore promote efficiency, by overcoming potential hurdles to cloud adoption. Overall costs to customers could then be lower, even though delays in cost recovery through a DVA or similar mechanism may increase shareholder earnings for cloud projects relative to a scenario where alternative rate treatments are not offered.⁵⁰

Efficiency could be compromised if the incentives are so strong that they lead to utilities making sub-optimal decisions in order to receive the incentive. The Ontario Energy Board will still need to evaluate the prudence of utility decisions. Further incentives should be moderate in the context of the overall utility business size.

6.2.2 Consistent with good cost allocation practice

Rate making options that delay the recovery of costs from customers, in order to allow shareholders to earn a return, may have either a positive or negative impact on cost allocation patterns:

- Options that allow implementation costs to be recorded in a DVA, and then recovered over the period of the contract, will generally result in a more defensible approach to cost allocation. Costs are better matched to benefits and recovered more evenly through the period of service.
- Options that delay recovery of annual payments to later periods (through the use of a DVA) appear to result in a less defensible allocation of costs among time periods. Cost recovery may be skewed to later periods in the contract term, or may even extend beyond the term.

Many other options, such as pre-payment or an earnings uplift, have no significant impact on cost allocation patterns. Costs that are prepaid are amortized over the period of the contract, meaning that charges to customers are relatively even.⁵¹ Customers pay a relatively even amount even though, from utility investors' perspectives, there is a large cash outflow in the initial year(s).

6.2.3 Ease of implementation

Options that introduce differences between accounting for financial reporting versus rate-making purposes introduce some additional administrative complexity. This is probably manageable given utilities' familiarity and experience with regulatory assets and liabilities generally.

⁵⁰ If utilities adopt an on-premise solution that is less cost-effective overall in order to maintain earnings associated with investments in rate base, customers will pay the higher costs of the on-premise solution and will not see the benefits of the cloud solution. Prudence reviews by regulators can help address this, but information asymmetry may make it difficult for regulators to identify instances of sub-optimal utility decision-making.

⁵¹ It should be noted that charges will be somewhat higher in early years because the unamortized book value of the asset associated with prepaid expenses, and hence the carrying charges associated with this element of rate base, are higher in these years. Charges to customers are therefore not flat, but they are much flatter than the profile of cash flows, which has a large cash outflow in the first year as a result of the prepayment.

6.2.4 Impacts on utilities' financial position

Options that entail the capitalization of cloud computing costs, and hence deferral of cost recovery, will generally increase utilities' financing needs and hence their outstanding debt and equity capital. For incentives relating to cloud computing costs, we do not expect that such additional debt will have an undue impact on utilities' financial position. Computing and IT costs are typically a relatively small (although not insignificant) portion of utility capital budgets. Hence, deferral of the recovery of cloud computing costs should not have large impacts on utility financial position.

6.2.5 Impacts on regulatory oversight

In many jurisdictions, regulators have requested detailed disclosure of the costs for which special rate treatment has been applied. This is to help regulators monitor the use of these incentive mechanisms or alternative rate treatments. To the extent that regulators put in place such rules on disclosure, incentives can facilitate and enhance regulatory oversight.

6.2.6 Effectiveness

As noted, a key test of effectiveness is that the policy encourages changes in behaviour. As the prevalence of and familiarity with cloud computing increases, the need for incentives to induce changes in behaviour may decline.

Nevertheless, alternative rate making approaches may still be desirable if they improve cost allocation practices, even if these alternative approaches are no longer necessary for incentive purposes. Thus, regulators could continue to favour, for example, alternative mechanisms to permit the recovery of implementation costs over time, where such costs would not be allowed under normal accounting rules. Recovering implementation costs over the life of the contract may improve cost allocation patterns, even if no longer necessary to induce changes in utility behaviour.

6.3 Considerations related to incentives

A general philosophical issue is whether utility regulators need to provide incentives for utility shareholders (and managers) to adopt particular technologies or solutions. One point of view is that incentives are not necessary to induce appropriate utility behaviour: if a particular technology or solution is the most cost-effective, then utilities should adopt that solution or technology as a matter of prudent cost management. Any decision to adopt a less efficient or effective approach could be challenged based on "prudence".

Counterpoints to this perspective are as follows:

- Strategies that involve both incentives and penalties may be more effective than strategies that rely only on penalties. In other words, regulators can use both "carrots" and "sticks". Rather than rely on only "sticks", mechanisms that incentivize the use of cloud solutions (or, more precisely, remove disincentives against their use) may induce better behaviour than simply relying on, for example, the potential use of a prudence review.
- Regulators may have difficulty gaining the information required to understand when cloud computing solutions are the most cost-effective. Cloud computing is a rapidly emerging field where best practice is evolving: even utilities themselves face a learning curve and may lag companies in other sectors where IT systems are more of a core focus. In practice, regulators may thus not have the information to know when a particular IT solution is not the optimal



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solution and to undertake an effective prudence review. Incentives can thus help address the associated information asymmetry, by encouraging utilities to more actively consider the cloud computing option. We further note that overcoming informational asymmetries is often a primary rationale for utility incentives generally: the recognition that incentives can help remove barriers to the identification of the most cost-effective opportunities.

- There is ample precedent where regulators have built incentive mechanisms into rate-setting processes. For example:
 - Regulators’ sometimes provide earnings bonuses to utilities for meeting performance targets. For example, the Illinois Commerce Commission has adjusted Commonwealth Edison’s target ROE based on meeting performance metrics associated with system reliability (SAIDI and CAIDI), reductions in unaccounted for energy, and participation by minority and women-owned businesses in its supply chain.⁵²
 - The so-called “RIIO” model in the United Kingdom incorporates a wide range of performance metrics when setting allowed revenues for utilities. (RIIO captures the idea of setting Revenue using Incentives to deliver Innovation and Outputs.)⁵³

Incentives for capital expenses versus operating expenses

From a utility financial perspective, a major change associated with the introduction of cloud computing is typically the replacement of an initial upfront capital investment (in particular for computer hardware and software) with annual payments to a cloud service provider. For a utility, capital investments result in an increase in the utility’s Rate Base and hence an increase in allowed earnings under a Cost of Service (“CoS”) rate setting framework. Annual operating expenses, in contrast, are typically treated in most rate setting frameworks as a pass-through cost, resulting in no direct opportunity to increase shareholder earnings. Some commentators therefore believe that utilities have an incentive to favour solutions that involve capital investment, relative to solutions that involve increases in operating costs. Any such incentives for capital spending could inhibit utilities’ adoption of cloud computing solutions. This reflects the fact that cloud solutions typically require less upfront capital investment but entail higher annual operating expenses than traditional in-house approaches to IT delivery. Theoretically, utilities might therefore continue with in-house solutions even when overall costs between a cloud solution and a traditional “in-house” approach are equivalent.

Utilities may also perceive more pressure from regulators to reduce operating costs than to reduce capital costs. This reflects the following considerations:

- Increases in annual operating expenses flow through directly into increases in required current revenues, whereas additional capital costs are recovered over time, which moderates the immediate impact of capital cost increases by pushing rate recovery into the future.
- Regulators typically find it easier to compare and benchmark operating costs across utilities than to compare capital costs and asset bases. The book value of assets can vary widely depending on asset age and installation date, making comparisons difficult even for utilities that have similar system configurations.
- Some incentive rate-making mechanisms focus primarily on operating expenses, in part

⁵² State of Illinois, Public Act 097-0616, pp. 96-97.

⁵³ KPMG, “Literature Review of Alternative Approaches to Regulation”, report for CAMPUT, December 2012, pp. 9-11



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because of the issues noted above.

Regulators' focus on operating costs could also dissuade utilities from moving to solutions that increase operating expenses relative to required capital investments.

6.4 Other considerations

Several of the proposed mechanisms rely on the deferral of costs to customers (through deferral of costs that would otherwise be expensed) in order to allow utility shareholders to earn a return. Customers pay more in nominal dollar terms in total, but this is compensation to utilities for the delay in receipt of revenues. Evaluated at the utility's pre-tax cost of capital, the Net Present Value ("NPV") of revenues, and hence costs to customers, is identical. From this perspective, and assuming that the cost of capital for customers is identical to utilities' pre-tax cost of capital, an incentive that is based on capitalizing cloud computing costs does not in itself result in any additional cost to customers (on an NPV basis) than the traditional treatment as an expense. If customers cost of capital is higher, then they actually benefit from the deferral. Only if their cost of capital is lower do customers face higher costs in NPV terms.

6.5 Options

In this section, we review the advantages and disadvantages of some specific regulatory options for incentivizing the use of cloud computing solutions. These options are as follows:

- Option 1 – Record payments in a DVA and recover over remaining term
- Option 2 – Record payments in a DVA and recover each payment over a fixed term
- Option 3 - Prepayment
- Option 4 - Treat as a capital lease
- Option 5 - Provide an earnings uplift
- Option 6 - Record implementation costs in a DVA

These options are discussed in more detail below.

6.5.1 Option 1 – Record payments in a Deferral and Variance Account ("DVA") and recover over remaining term

Under this option, annual payments to a cloud provider would be recorded in a DVA and each amortized over remaining length of contract term.

Advantages

The advantages of this option are as follows:

- It allows utilities to earn a return on cloud payments, helping to offset lost earnings on traditional IT investments.
- Payments are still recovered within the period of the cloud contract, ensuring that costs are matched with benefits on an overall basis.



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Disadvantages

The disadvantages of this option are as follows:

- This approach results in an uneven recovery of costs from customers over the period of the cloud contract. As a result of the mechanics of this approach, the recovery of costs is shifted towards the end of the contract resulting in higher rates to customers in the later years of the contract.
- It increases utility funding requirements somewhat, since cost recovery in the early part of the contract term is deferred.
- It requires more administrative effort, since accounting arrangements require more effort to record and amortize costs. (We note, however, that this is well within the administrative capability of most utilities, since they are used to capitalizing many assets and dealing with regulatory deferrals.)

6.5.2 Option 2 – Record payments in a DVA and recover each payment over a fixed term

Under this option, each annual payment to a cloud provider would be recorded in a DVA and each amortized over a period equal in length to the initial length of the contract term. (Recovery will then extend beyond the last payment.)

Advantages

The advantages of this option are as follows:

- The advantage of this approach, relative to the prior option (to defer over the remaining term), is that it results in a more even recovery of costs over time. The increase in rates toward the end of the term is less significant because cost recovery is extended beyond the contract term.
- Results in a smoother rate to customers.

Disadvantages

The disadvantages of this option are as follows:

- This approach runs counter to the general principle that costs should be matched to benefits. (Under this principle, the customers that benefit from a service should be the ones that pay for it.) Under the approach of capitalizing each payment for a fixed period, customers in the period beyond the contract term continue to pay for the contract, even though it is no longer providing service (and benefits) to the utility. It thus raises issues of inter-generational equity. This is difficult to justify under normal cost allocation principles for regulated utilities.
- Similar to Option 1 above, there is an increase in utility funding requirements and some minor administrative complexity (although both issues should be manageable).



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6.5.3 Option 3 - Prepayment and deferral of cloud expenses

Under this option, utilities would be allowed to pre-pay for cloud computing services. Rather than pay an annual fee over the term of the contract, they would instead pre-pay for the services. The upfront payment amount would be recorded in a DVA and costs recovered over the life of the contract.

For this approach to be cost-effective, utilities must receive a discount from the cloud provider for this prepayment. For our analysis, we have assumed that the discount would be based on utilities pre-tax cost of capital. This is likely a reasonable assumption for our initial financial analysis. Relative to other companies, utilities have a low cost of capital. Their status as rate-regulated entities providing a monopoly service allows them to use higher levels of debt and to raise debt and equity capital at lower cost, because of the perceived lower risk. Technology companies and IT service providers, in contrast, may theoretically have a higher cost of capital.⁵⁴

If no discount is received from the cloud provider, this approach will increase overall costs to customers. The cloud provider will receive higher revenues in net present value terms, and this will translate into higher costs for customers relative to the traditional cloud project.

Advantages

The advantages of this option are as follows:

- Relative to the prior options (to defer each annual payment over the remaining term or for a fixed period), this option results in a more even recovery of costs over time. Cost recovery is very similar to that for a traditional in-house project.
- There is Canadian regulatory precedent for treating certain costs this way, such as DSM costs in Quebec and British Columbia.

Disadvantages

The disadvantages of this option are as follows:

- If contract terms are not appropriately drafted to allow for service changes, prepayment could result in less flexibility for the utility, making it more difficult for the utility to make changes during the contract term because it has been prepaid.
- Prepayment may result in more credit risk for the utility since it is more dependent on the continued solvency of the cloud provider. Credit assessments and/or performance bonds could help to mitigate this risk.
- In practice, prepayment may not be realistic for contracts with longer-term duration, particularly beyond 5 years.
- The Prepaid option negates the savings in upfront cash flows that would otherwise be associated with the cloud solution (other than those that occur because the cloud solution is cheaper). Utility financing needs are thus higher than they otherwise would be.

⁵⁴ We note, however, that cloud service providers may, in practice, be reluctant to provide discounts to the extent needed to ensure cost equivalence. This could offset some of the potential benefits of this approach.



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6.5.4 Option 4 - Treat as a capital lease

Under this option, the utility is allowed to capitalize the present value of cloud computing contract at the beginning of the contract term. Unlike under the Pre-Paid option, however, the actual cash payment stream to the Contract provider remains the same. (Payments are made on a periodic basis and are therefore not prepaid.) This approach results in a cloud contract being treated in a similar manner for rate setting purposes as a lease, where leases are allowed in rate base. (It does not mean that the cloud contract would be considered to be a lease.)

Advantages

The advantages of this option are as follows:

- Similar to the Prepaid option, it results in a relatively even recovery of costs from customers over time.
- Relative to the Prepaid option, this Option does not require that the utility shifts its cash expenditures forward. Payments to cloud providers remain as under the cloud option, meaning that there is no loss of flexibility (i.e., in changing the contract) or increase in financial risk (because of increased credit exposure).
- There is Canadian regulatory precedent for allowing utilities to include lease assets in the rate base and to earn an interest at the rate of return, such as Toronto Hydro⁵⁵ in Ontario.

Disadvantages

The disadvantages of this option are as follows:

- There is some mismatch between utility costs and utility revenues. Revenues are greater than cash costs in early years, and lower in later years (once the Rate Base value has been depreciated). This effectively results in positive cash flows to utility shareholders in earlier years, which must then be “repaid” in later years. Our modeling suggest that, for utility shareholders to be kept “whole”, the discounted value of lease payments used to set up the capital asset must use the post-tax cost of capital rather than the pre-tax cost of capital. This results in this option resulting in higher costs of customers, measured on a net present value basis.

6.5.5 Option 5 - Provide an earnings uplift

Under this option, the utility is simply given an earnings incentive, in the form of a mark-up on cloud expenses, to incentivize shareholders to consider cloud solutions and to offset the lost shareholder earnings relative to options where costs can be capitalized and included in Rate Base.

As one potential scenario, regulators could consider implementing an earnings uplift for only a limited period of time, in order to encourage early exploration and adoption of this emerging technology (i.e. cloud). Once the technology becomes more established and accepted, the earnings uplift could be scaled back or phased out. This could help address stakeholders concerns that shareholders are being incentivized to do things they should ultimately be doing anyway. Providing an earnings uplift for only a limited time would also reduce concerns over “free-ridership”. Based on our consultations with industry members, it is clear that cloud computing remains an emerging technology in the

⁵⁵ OEB, Case Number “EB-2018-0165”, File Name “Dec Order Cost Awards_THESL 2020-2024_20200409”, pg. 170



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electricity sector. It is currently used for a number of smaller applications but still represents a relatively small share of IT delivery approaches.

Advantages

The provision of an adder on top of expenses to compensate utilities for their lost earnings opportunity has some conceptual advantages:

- It directly addresses the issue of concern, which is that utility's shareholders lose the benefits associated with putting their capital at work.
- It does not alter the general pattern for the recovery of costs from customers. (It just shifts costs up slightly). This is generally positive from the perspective of good cost allocation practice.
- The adder could theoretically be adjusted for different circumstances: for example, a higher adder could be associated for cloud contracts that replace longer-lived assets. (Longer-term assets tend to produce higher shareholder benefits than shorter-lived assets given the longer period available to shareholders for earning a return).
- As a policy tool, it is visible and transparent.
- It does not require any changes to accounting rules, and therefore does not lead to differences between financial accounts used for rate-setting versus those used for financial reporting.

Disadvantages

The disadvantages of this option are as follows:

- It results in an additional, observable cost that is directly transferred to customers. This is a "deadweight" cost.
- As with any incentive that is a fixed percentage of cost, it provides utilities with an incentive to increase the costs associated with the program in question. Greater oversight will be needed to ensure that reported costs are prudent.
- It may provide utilities with an incentive to categorize costs as cloud-related in order to gain the uplift. Some administrative effort may be required to police this.

6.5.6 **Option 6 - Record implementation costs in DVA**

Under this option, the utility is allowed to record only the implementation costs to a DVA that would otherwise be expensed. Relative to some of the earlier options examined, this is a relatively limited adjustment to rate setting approaches. Annual payments to access the cloud would continue to be treated as a pass-through expense.

As noted earlier, different accounting standards (i.e., IFRS versus US GAAP) entail different rules as to which implementation costs can be expensed versus which can be capitalized. To the extent that some costs can be capitalized, no alternative rate treatment is required. (The regulator can simply follow financial accounting practice.) This specific option is intended to capture the scenario where a regulator allows costs to be capitalized for rate-setting purposes, where they would otherwise be expensed under accounting rules.



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Advantages

The advantages of this option are as follows:

- Relative to other options, this option is a relatively small change to accounting practice. It may thus be easier for stakeholders and regulators to accept and implement.
- It arguably results in a better matching of costs to benefits, since implementation costs are recovered over the period of the cloud contract, rather than coming out of expenses in the starting year.

Disadvantages

The disadvantages of this option are as follows:

- As a relatively small adjustment, it only addresses part of the shareholder benefits lost with a move to cloud computing and as a result is less of an incentive to utilities.
- Requires more administrative effort, since accounting arrangements require more effort to record and amortize cost

6.5.7 Option 7 – Apply “Totex” approach

Under this option, utilities would be allowed to record, in a DVA, a fixed proportion of computing costs, both for cloud and on-premises. These deferred costs could be amortized over a pre-set fixed period.

This option thus follows, for IT costs, the “Totex” approach that has been implemented by Ofgem in the UK for all utility costs. This approach was also considered (although ultimately rejected) by Illinois in its recent proceeding relating to removing disincentives for cloud.

As a potential variant, regulators could decide allow utilities to simply capitalize a certain percentage of cloud costs, while requiring utilities to follow existing accounting treatment for on-premises costs. The rationale for such an approach would be that the major current barriers to cloud are restrictions on the ability to capitalize cloud implementation costs. This variant would address that issue directly without altering the treatment of on-premises costs, reducing changes to utility cost accounting practice. However, this more limited approach would not ensure consistency between the treatment of cloud and on-premises costs (although it may bring them into closer alignment if an appropriate percentage is chosen).

Advantages

The advantages of the full option (in which the Totex concept is applied to both cloud and on-premises computing costs) are as follows:

- Ensures perfect symmetry in the treatment of cloud and on-premises costs, removing any incentive to use one versus the other.
- Easy to administer because it does not require a detailed analysis of nature of cost and associated accounting rules.
- Ensures treatment is the same across all utilities, regardless of their accounting standards.



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Disadvantages

The disadvantages of the full option are as follows:

- Results in a difference between asset values for rate setting purposes versus financial statement presentation.
- Results in a difference in treatment of computing costs versus other utility costs.
- Requires more administrative effort, since differences between accounting arrangements and regulatory recovery become more complex.

6.5.8 Option 8 – Follow current accounting treatment

Under this option, the utility will simply recover cloud computing costs consistent with the treatment of these costs under current accounting treatment. This option reflects the current approach in Ontario and thus requires little or no implementation effort.

Advantages

The advantages of this option are as follows:

- Does not require a change to current accounting practice; it may thus be easier for stakeholders and regulators to accept and requires no implementation effort relative to current practice.

Disadvantages

The disadvantages of this option are as follows:

- Does not address shareholder benefits lost with a move to cloud computing and may thus inhibit the use of cloud computing as compared to on-premise solutions.
- Will result in different regulatory treatment for utilities reporting under US GAAP and IFRS.