

September 28, 2023

AEY-FB-001

**ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)**

**Information Responses Round 1 to:
Florian Boulais (FB)
Received: September 6, 2023**

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References:

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Risk Premium	Section 08	AEY is requesting a risk premium as it faces greater business risk than the average Canadian or British Columbia benchmark utilities. Concentric has determined an appropriate risk premium to be 75 basis points.
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SECTION 1B: ENERGY TRANSITION

1B.1 Summary

5. Meeting these targets is having a dramatic impact on AEY's business and responsibility to provide safe and reliable electricity at an affordable cost.

2023-2024 General Rate Application (GRA)

5.3.4 Public Information - 17

The public information function includes labour costs for the communications advisor and costs related to external public information activities. The costs are forecast to remain flat over the Test Period, as outlined in Table 5.6, with only minor increases for labour inflation.

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IV. RISK ASSESSMENT

Issue:

The matter at hand pertains to a significant overarching concern concerning the resilience of our geographical jurisdiction and its structural arrangement. This matter engenders inquiries into the allocation of accountability and the exercise of authority.

ATCO, in its public communications, presents itself as a provider of power supply that approaches near-perfection. However, it shall be

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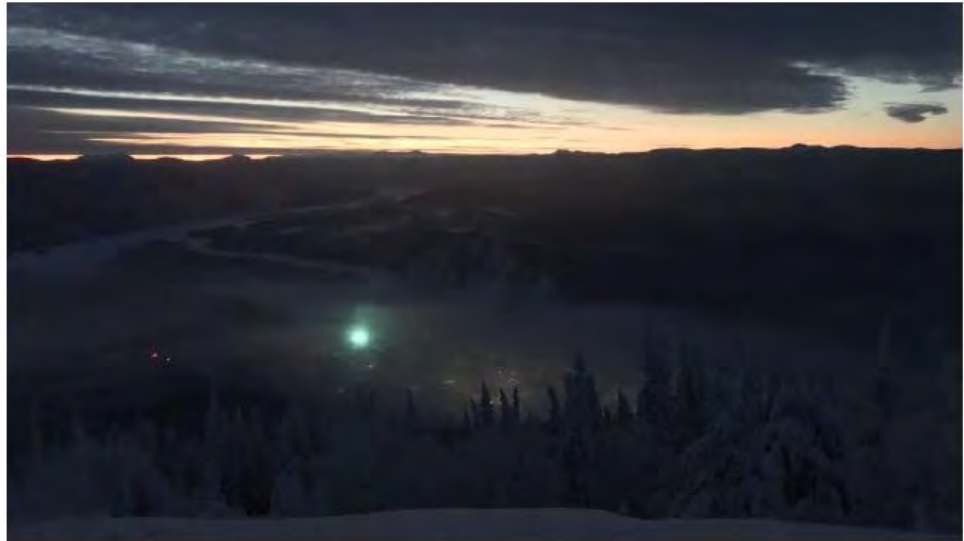
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demonstrated herein that ATCO can indeed furnish a power supply characterized by a high degree of reliability but falls short in furnishing a power supply distinguished by resilience. Furthermore, ATCO lacks a discernible strategy for effectively imparting this distinction to its clientele, thereby hindering their capacity to undertake proactive measures to fortify their resilience against the prospective compounding disruptions that the future is anticipated to bestow upon them.

Preamble:

In the ensuing discussion, I shall construct an argument contending that ATCO cannot provide an assurance of operation devoid of failures, given the intricate nature of the grid, the unique contextual factors pertinent to the Yukon region, and the rapidity of exponential changes in these circumstances.

*Example of typical accident - Yukon Energy Dawson City
December 2022*



This photograph was captured in Dawson City on December 22, 2022, by a tourist positioned atop the Midnight Dome. The precise moment was marked by the failure of a fastening component on a riser wire, triggered by the extreme cold of -44°C. The severed wire descended, intersecting lower power lines, inducing a short circuit that initiated a chain reaction across Yukon Energy's infrastructure. The consequence was a sudden loss of electrical power, depriving Dawson City of a substantial portion of its energy supply.

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Promptly following this incident, Yukon Energy's personnel embarked on an investigative endeavor to identify the root cause of the disruption. This endeavor was akin to locating a minute object in a vast expanse. After several hours of rigorous examination, a resident within the vicinity stepped forward, reporting a witnessed spark. This revelation was instrumental in isolating the origin of the problem, which was then promptly rectified.

By this juncture, the power had been offline for an extended duration. During the restoration process, an attempt to reinstate the grid encountered challenges due to the substantial load demand. This necessitated a gradual and sequential restart of grid segments. Regrettably, some residents were subjected to a power outage for up to 20 hours until the final restoration was achieved.

<https://www.cbc.ca/news/canada/north/power-restored-dawson-city-outage-1.6696508>

This issue happened to Yukon Energy but this could very well have happened to Atco.

These kinds of issues are practically unavoidable, especially since complex systems fail in complex ways. This reality is only exacerbated by the fact that a corporation such as Atco or Yukon Energy have a fiduciary responsibility to provide its shareholders with the highest return possible while offering the lowest price to customers. Utilities are thus incentivized to operate at the very edge of failure by complying with the bare minimum safety requirements.

Quotations extracted from a literary work - for the exclusive purpose of contemplation and reflection

“Legally, a manufacturer has a duty to warn when it knows or should know of a product’s hazards. Manufacturers that fail to meet this duty can be judged negligent. Thus, when considered from a legal perspective, manufacturers are held to a high standard - that of an expert in understanding and anticipating risks.”

Handbook of Warnings, Michael S. Wogalter, 2006, p.620.

“Complex systems fail in complex ways, a reality exacerbated by the business need to operate complex systems on the very edge of failure.”

Uptime Institute, Examining and Learning from Complex Systems Failures, October 9, 2015

“Reliability assumes blue skies. Resilience is the ability to take a punch.” says Scott Aaronson of the Edison Electric Institute (The National Academies Press, Communications, Cyber Resilience, and the Future of the U.S. Electric Power System: Proceedings of a Workshop, (2020), p.4 <https://www.nap.edu/download/25782>)

Power outage in Whitehorse in Dec 2022

On the 19th of December, an operational event occurred whereby a transformer in the Takhini substation underwent a protective tripping mechanism due to an elevated demand threshold. Notably, this event transpired against the backdrop of severe climatic conditions, characterized by an ambient temperature of -38°C. Consequentially, a localized power outage transpired, impacting geographical sectors encompassing the north side of Whitehorse, encompassing Crestview, Kulan, the Hot Springs, and the Whistle Bend vicinity.

Particularly relevant is the Whistle Bend neighborhood, a burgeoning subdivision, emblematic of Whitehorse's contemporary urban expansion. Noteworthy is the fact that a significant proportion of residential structures within this locale rely on electricity as the primary heating source. Consequently, this geographical segment experienced protracted power restoration timelines, culminating in the reinstatement of electrical services after a span of four hours from the onset of the incident.

Another pertinent consideration pertains to the dimensions of the municipality of Whitehorse and the quantity of isolated residences reliant on electric power. In the event of an extended power outage during severely frigid conditions impacting peripheral regions beyond the urban boundaries of Whitehorse, the capacity for both ATCO and the Emergency Management Organization to provide assistance would be significantly constrained.

A story to illustrate what happened in the IBEX valley during the outage - for the exclusive purpose of contemplation and reflection

A young single mother with an infant in her care was leasing a residence within the IBEX valley and found herself without heating for an extended period. Lacking an alternative heating source and devoid of her landlord's contact information, she endured several hours of the outage. Approximately two hours into the ordeal, with

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the indoor temperature plummeting precipitously, she resolved to transport her infant to a neighboring location situated at a considerable distance. Unfortunately, her vehicle failed to start without the electric preheating, compelling her to embark on a frigid journey by foot to reach the adjacent property, ultimately arriving while her and her infant were suffering from severe cold-induced distress.

This was posted on Facebook on Dec 23 by Atco - after the power outage



This post was expeditiously withdrawn from Facebook subsequent to the observation of agitated comments that had surfaced underneath it. This prompt action undertaken by ATCO underscored its recognition of the incongruity of the "Power Pack" offering within

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the specific Yukon context. Furthermore, this occurrence serves to underscore ATCO's apparent deficiency in possessing a coherent strategy for effectively engaging and apprising its clientele of the inherent impossibility for ATCO to furnish continuous and unceasing service. It seems quite incongruous that in no place whether it is on the government website or Atco that there is no mention of backup heat or energy source. One can imagine that there might contingency plans for urban dwellers but one can't imagine how either ATCO or the Emergency Management Organisation could possibly cover the huge rural area around Whitehorse or the different Yukon communities to make sure every one's basic needs for heat are met. This seems to be a significant overestimation of their combined capacity.

Most Yukoners (especially rural Yukoners)

- Have a generator in their shed - they could easily get a power switch installed on their meter in order to switch to generator power when needed.
- Could have a backup heat source installed.
- Could have agreements and plans with neighbours.

Requests:

- (a) In what manner can ATCO's clientele undertake requisite measures to enhance their resilience when they are consistently inundated with ATCO's affirmations of service reliability and excellence, all the while being deprived of essential disclosure pertaining to the inherent impracticability of ATCO to confer perpetual and uninterrupted service?
- (b) How is the issue of limited psychological capacity to plan for an extended outage addressed among citizens in the lower socioeconomic class, notably in the absence of adequate informational resources?

Response:

- (a) It is important that all Yukoners are prepared for emergencies, including power outages, that can last up to 72 hours or longer. AEY provides information on its website to assist customers in ensuring they are prepared for such emergencies. While AEY works diligently to provide safe and reliable power to its customers,

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certain factors beyond AEY's control, such as severe weather, can sometimes lead to unavoidable disruptions.

To enhance resilience during such situations, AEY recommends that its customers consider the following measures:

- Create an emergency preparedness kit.
- Establish a communication plan with your family and loved ones.
- Familiarize yourself with local emergency services and community resources available to assist during emergencies.

While AEY strives for service reliability and excellence, it is essential for customers to understand that no utility provider can guarantee perpetual and uninterrupted service.

- (b) As noted above, AEY provides information on its website to all customers and it is important that all Yukoners are prepared for emergencies, including power outages, that can last up to 72 hours or longer.

In the event of an extended outage, AEY works closely with the Emergency Measures Organization (EMO) and other responding agencies to ensure that they have up-to-date information to make informed decisions regarding the need to provide supports to the community.

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IV. RISK ASSESSMENT**

Issue: Given the prevailing lack of widespread public understanding regarding energy matters and the imperative necessity for

substantial transformations to align with the objectives of "Our Green Future" within the territory and the increase in uncertainty the future holds, it raises the question as to why ATCO is not undertaking a concerted effort to enlighten its customer base concerning the remarkable services rendered by the electrical grid. Such an educational initiative could render ATCO's potential electricity cost increments more palatable. Consequently, this dual-pronged approach has the potential not only to enhance ATCO's standing as an engaged contributor to the territory's "Our Green Future" aspirations but also to furnish ATCO with additional financial resources to undertake modernization endeavors aimed at elevating the efficiency, resilience and expansion of the grid infrastructure.

Preamble:

Quotations extracted from a literary work - for the exclusive purpose of contemplation and reflection

These principles apply now more than ever for the communication with the public:

- HSD Human Systems Dynamics Institute holds as a fundamental principle that a human system - such as ATCO's customer base - will not change until tension is introduced into it:

<https://www.hsdinstitute.org/resources/four-principles-of-change-in-human-systems-tension-blog.html>

- Social media crushes old school marketing. The rule of 7: it takes a person 7 exposures before registering a message.

<https://digitaldealer.com/latest-news/rule-7-social-media-crushes-old-school-marketing/>

- Ease of cognitive processing is equated with truth. The easier to understand, the truer it will seem:

<https://medium.com/@andy.brockie/what-is-cognitive-fluency-d9e3e98b5922>

- 2017-2018 Harvard Study finds that optimism can lead to inaction:

<https://news.harvard.edu/gazette/story/2017/08/study-finds-optimism-can-lead-to-inaction/>

- Irony can create a compelling call to action more effectively than traditional marketing strategies, particularly with less sexy topics:

<https://opusfidelis.com/insights/unlocking-the-power-of-irony-in-marketing/>

<https://medium.com/nova-marketing-insights/how-to-exploit-irony-in-the-advertisement-world-3a33768c729c>

Quotations extracted from a literary work - for the exclusive purpose of contemplation and reflection

“Effective communication will always require some degree of irrationality in its creation because if it’s perfectly rational it becomes, like water, entirely lacking in flavour... Quite simply, all powerful messages must contain an element of absurdity, illogicality, costliness, disproportion, inefficiency, scarcity, difficulty or extravagance—because rational behaviour and talk, for all their strengths, convey no meaning.” – Rory Sutherland

Jevons paradox - for the exclusive purpose of contemplation and reflection

Jevons paradox, also known as the Jevons effect, is an economic phenomenon that occurs when an increase in the efficiency of resource use leads to an overall increase in the consumption of that resource rather than a decrease. In other words, as technology or efficiency improvements make it possible to use a resource more effectively, people tend to use more of that resource rather than less. This paradox was first described by the 19th-century economist William Stanley Jevons in his book "The Coal Question," where he observed that improvements in steam engine efficiency actually led to an increase in coal consumption, rather than a decrease, because the engines became more widely used in various industries.

The Jevons paradox is often cited in discussions about resource conservation and environmental

sustainability. It highlights the complexity of efforts to reduce resource consumption and the potential for rebound effects, where gains in efficiency may be offset by increased consumption, ultimately leading to continued resource depletion.

Habituation bias - for the exclusive purpose of contemplation and reflection

The habituation bias, also known as the hedonic adaptation or simply habituation, is a psychological phenomenon that refers to the tendency of individuals to become accustomed to or desensitized to a certain stimulus or situation over time. In other words, when people are exposed to a new and initially pleasurable or distressing experience, their emotional response to that experience tends to diminish or return to a baseline level of emotional well-being with continued exposure. This means that the initial impact, whether positive or negative, becomes less significant as it becomes more familiar.

For example, if someone gets a new car, they may initially feel very happy and excited about it, but over time, the novelty wears off, and the car's presence no longer brings the same level of joy. Conversely, if someone experiences a negative event, like a persistent noise in their environment, they may initially find it highly annoying, but they may gradually become less bothered by it as they become accustomed to the noise.

Understanding the habituation bias is important in psychology and behavioral economics because it can influence people's perceptions of happiness, satisfaction, and well-being. It suggests that pursuing material possessions or external experiences alone may not lead to sustained happiness because people tend to adapt to them.

Resilience in complex systems - for the exclusive purpose of contemplation and reflection

1. **Autonomy and Decision-Making:** Resilience in complex systems often involves granting a degree of autonomy to individual agents within the system. Agents, whether they are humans, machines, or natural entities, have the freedom to make decisions and take actions based on local information and context. This autonomy allows agents to respond adaptively to changing conditions and unforeseen challenges without needing centralized control.
2. **Distributed Control:** In resilient complex systems, decision-making authority is often distributed across multiple agents rather than concentrated in a single entity or center. Each agent can assess its environment, make decisions independently, and communicate or interact with other agents as needed. This distribution of control reduces vulnerability to system-wide failures and enhances the system's capacity to recover from disruptions.
3. **Learning and Adaptation:** Resilience encourages agents within complex systems to possess learning and adaptation capabilities. Agents can adjust their behaviors, strategies, or rules based on past experiences and feedback from their interactions with the environment and other agents. This adaptability allows the system to evolve and improve its performance over time, especially in the face of novel challenges.
4. **Interactions and Feedback:** Agents in a resilient complex system engage in interactions with each other and with their environment, generating feedback loops. These interactions and feedback mechanisms enable agents to assess the consequences of their actions, detect changes in the system, and coordinate with other agents when necessary. Feedback loops provide a means for agents to self-regulate and maintain system stability.


Resilience in complex systems, with a focus on agency, acknowledges the importance of empowering individual agents to make decisions and take actions that contribute to the overall robustness and adaptability of the system. This approach values decentralized decision-making, adaptability, and the ability of agents

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to respond effectively to uncertainties and disruptions, ultimately enhancing the system's capacity to endure and thrive in a dynamic and unpredictable environment.

Example of a humorous, surprising, yet scientifically accurate and educational pamphlet- for the exclusive purpose of contemplation and reflection



ATCO

yukon energy

My nephew and me lifted our car that high off the ground using electric power. It took us 10 000W for 10 seconds and it cost us far less than a cent.

Energetic Literacy series:

- 18 cents is the cost of 1000 Watts for one hour.
- 1000 Watts is the energy it takes to lift 100kg of one meter every second.
- If this car weighed 2000 kg and there was no energetic loss, it could be lifted of 5 meters for \$0.002 using an electric device.
- 150 years ago, before electric power, it would have taken me about 15 minutes using my arms' power to do the same job.

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Requests:

- (a) Why is ATCO not allocating additional resources to enhance its efforts in educating and/or reinforcing awareness within its customer base regarding the myriad of invaluable services electricity provides, all at an unparalleled cost?
- (b) Why does ATCO not capitalize on its monthly billing communications to include an informative pamphlet discussing either the advantages of electric power or the potential pitfalls associated with the expectation of uninterrupted electric power supply?

Response:

- (a) AEY is a regulated utility, which fundamentally distinguishes its business model from competitive enterprises. AEY's primary mission is to ensure the delivery of safe, reliable, and affordable power to all customers within its service area. As a result, AEY's focus revolves around fulfilling this mandate rather than engaging in marketing efforts to promote the value or benefits of electricity.

AEY's communications with customers are primarily centered on sharing critical safety messages, providing service updates, and conveying important operational information. This approach aligns with AEY's core mission of delivering power that is both dependable and cost-effective.

While AEY does not engage in extensive customer education campaigns focused on the value of its services, AEY remains committed to transparency and welcomes any inquiries from its customers seeking information about its operations or the electricity services provided.

- (b) AEY is primarily a power distribution company, which means its primary responsibility lies in the maintenance and operation of the poles and wires that deliver electricity to its valued customers. In the context of the electricity supply chain, Yukon Energy serves as the primary entity responsible for electric generation on the Yukon Integrated System. Given this division of responsibilities

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within the industry, AEY's primary focus is on ensuring the reliable distribution of electricity to homes and businesses in its service area.

That said, AEY's communication efforts with regards to supply are geared towards conveying essential information related to customer's electricity consumption, billing details, and any service-related updates that may impact power.