

July 7, 2023

Yukon Utilities Board
Box 31728
Whitehorse, YT Y1A 6L3

Attention: Mr. Richard Buchan
Chair

**Re: ATCO Electric Yukon
2023-2024 General Rate Application**

Please find enclosed for filing with the Yukon Utilities Board (Board) ATCO Electric Yukon's (AEY) General Rate Application (GRA or Application) for the 2023-2024 Test Period.

This Application includes:

- Determination of the 2023-2024 revenue requirement in Sections 1 to 12;
- Approval of Deferrals in Section 1;
- Interim Refundable Rate Riders in Section 13; and
- Business Cases for 2023-2024 Capital Additions.

In accordance with the *Public Utilities Act* and *Order-In-Council 1995/90*, AEY respectfully requests that the Board commence the public notification process in anticipation of a possible public hearing later this year.

The rate changes requested by AEY in each of the Test Years are as follows:

**Table 1: Proposed Rate Changes
(\$000)**

	2023	2024
ATCO Electric Yukon Retail Revenues	62,203	64,152
(Decrease)/Increase over Existing Rates	(1,211)	3,943
Rate (Decrease)/Increase %	-1.6%	5.2%
Year Over Year Rate (Decrease)/Increase %	-1.6%	6.8%
Rate Increases/(Decreases) % (including Fuel Adjustment)	3.3%	10.0%

Interim Refundable Rate Rider

In Section 13 of this Application, AEY has requested approval of a 6.68 percent Interim Refundable Rate Rider (Rider R) for electrical consumption between August 1, 2023 and

December 31, 2023. By implementing the rate adjustment on August 1, 2023, Rider R will refund approximately 40 percent of its forecast surplus in 2023. AEY submits that its proposal to refund approximately 40 percent of its forecast surplus is reasonable, similar to the approach approved by the Board for AEY's 2016 Interim Refundable Rider in Board Order 2016-02, and will reduce future true-ups. For this reason, AEY respectfully requests approval of Rider R by July 21, 2023, in order to implement the new Rider R on August 1, 2023.

Also, in Section 13, AEY is requesting approval for an Interim Refundable Rider R of 13.50 percent effective January 1, 2024. The derivation of the Rider R adjustment for 2024 is similar to the calculation for the proposed 2023 Rider R adjustment. Based on the expected timing of the Board Order and Compliance Filing to AEY's 2023-2024 GRA, being similar to AEY's 2016-2017 GRA process, AEY estimates that updated Rider R rate adjustments, in the middle of 2024, will result in minimizing future true-ups and promoting rate stability.

Terms and Conditions of Service

In its letter dated March 31, 2023, given the length of time since AEY's Terms and Conditions of Service (T&Cs) were last approved, effective July 1, 2011, and questions raised by interested parties, the Board asked AEY to address in its GRA whether the T&Cs should be changed.¹ As the T&Cs are also those of Yukon Energy Corporation (YEC), AEY reached out to YEC on this matter. Both parties consider that, given the number of changes and proposals included in AEY's GRA (and YEC's anticipated upcoming GRA), as well as simultaneous staffing resources required to properly review and address any required changes to Terms and Conditions of Service, undertaking such a review is not feasible at this time.

Notwithstanding the above, both parties also agree that there are multiple sections in the T&Cs that require review (for example: maximum investment levels, as well as updates related to new government initiatives currently being explored around transportation

¹ Yukon Utilities Board letter dated March 31, 2023.

electrification and distribution-connected generation). As such, both parties would propose to address any required changes and/or updates to the T&Cs sometime in mid to late 2024, as a standalone limited scope filing, rather than including any changes as part of a GRA.

Process & Proposed Schedule

To assist the Board with scheduling, AEY proposes the following written process schedule for consideration:

	<u>Proposed Date</u>
Filing Application	07-Jul-23
Intervener Registration	21-Jul-23
Interim Rate Decision	24-Jul-23
Procedural Conference	27-Jul-23
Information Requests to AEY	08-Aug-23
Information Responses from AEY	28-Aug-23
Application Update – Depreciation Parameters	TBD
Information Requests on Depreciation Parameters	TBD
Information Responses on Depreciation Parameters	TBD
Intervener Evidence, if necessary	18-Oct-23
Information Requests to Interveners	25-Oct-23
Information Responses from Interveners	08-Nov-23
Rebuttal Evidence, if necessary	24-Nov-23
Written Final Argument	08-Dec-23
Written Reply Argument	22-Dec-23

AEY has engaged Concentric to prepare a Depreciation Study which is not complete at the time of this filing. AEY has included placeholders within this filing and plans to file an Application update once available (preliminary timing estimate is late August or early September).

AEY proposes hosting a Procedural Conference whereby AEY can provide any clarifications parties may seek prior to information requests and AEY would like to assess

intervening parties interest in a Negotiated Settlement process. AEY's affiliates in other jurisdictions have seen success and cost savings through Negotiated Settlements, and AEY is of the view that there is opportunity to achieve similar efficiencies and engage in a collaborative process in the Yukon.

To assist in preparation for the proposed Procedural Conference, AEY has provided an issues list within Section 1 of the Application. AEY respectfully requests that the YUB ask intervening parties to scope the issues they wish to intervene on as part of the Intervener Registration process.

In addition, due to the nature of the Application, AEY's operations, and in an effort to promote regulatory efficiency, AEY proposes to limit the number of intervener Information Requests to a maximum of 50, including sub-parts.²

Should you have any questions, please contact the undersigned at Elizabeth.Rogers@atco.com. If you require a paper copy of the Application, please contact Sylvia Adams at Sylvia.Adams@atco.com.

Yours truly,

Beth Rogers, CPA CMA
Director, Regulatory

² In an effort to reduce regulatory burden measures such as this have been adopted by the Alberta Utilities Commission (AUC). Please refer to, e.g., Proceeding ID 27062, Exhibit 27062-X0273.

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SECTION 1: INTRODUCTION

1.1 Summary

1. Included in this Section is a discussion of:

- Approvals Requested;
- Background on ATCO Electric Yukon (AEY);
- Overview of Current General Rate Application (GRA or Application);
 - Tariffs Applied-For;
 - Interim Refundable Rate Rider;
 - Deferral Accounts;
 - Key Assumptions; and
 - Staff Positions.

1.2 Approvals Requested

2. AEY seeks the following approvals from the Board:

- (i) Approval of AEY's revenue requirement for the 2023-2024 Test Period;
- (ii) Approval for continuation of the currently approved deferral accounts and addition of new deferral accounts as outlined in Section 1.8;
- (iii) Approval of a 2023 Interim Refundable Rate Rider (Rider R) for implementation on August 1, 2023, as detailed in Section 13;
- (iv) Approval of a 2024 Interim Refundable Rate Rider (Rider R) for implementation on January 1, 2024, as detailed in Section 13; and
- (v) Such further and other relief as the Board may determine is appropriate.

1.3 Background on AEY

3. Yukon Electrical Company Limited (YECL), carrying on business as AEY, has been providing electrical service to Yukoners since 1901. Since then, AEY has grown to serve more than 20,000 customers in 19 communities from the Yukon border to North of the Arctic Circle. Today, AEY purchases electricity from YEC for distribution to its customers in Whitehorse, Marsh Lake, Tagish, Teslin, Haines Junction, Carmacks, Stewart Crossing, Pelly Crossing, Carcross, Keno, Ross River, Canyon Creek as well as a variety of rural areas surrounding Whitehorse. The Company generates and distributes

power in Old Crow, Beaver Creek, Destruction Bay, Burwash Landing, Upper Liard, Watson Lake and Swift River and has customer service offices in Whitehorse and Watson Lake and plant operators in ten communities.

4. AEY was last before the Board for the 2016-2017 Test Period. Since the last GRA, the Yukon has experienced population and GDP growth rates amongst the highest in Canada, led mainly by the mining sector. While the 2020 to 2022 period resulted in changes from historical trends with respect to energy usage patterns for residential and commercial customers as work from home mandates were imposed, the economy has been returning to pre-pandemic levels in 2023 and, given worldwide events (like supply chain constraints), AEY has seen upward pressure on material and labour prices over the last number of years as can be seen in the increasing inflation rates which have a compounding impact.

Table 1.1: Inflation Rates (%)

	2018	2019	2020	2021	2022	2023	2024
	Actuals					Test Period	
Inflation Rate	2.4	2.0	1.0	3.3	6.8	3.8	2.5

5. Further to the economic conditions noted above, the Yukon Government has been introducing policies geared towards transitioning the energy industry through increased electrification and reducing carbon emissions. In ‘Our Clean Future Initiative’, the Yukon Government has outlined the following goals in furtherance of these 2030 targets:

- i) Reduce diesel use for electricity generation by 30 percent in Off-Grid communities;
- ii) Independent Power Producer (IPP) policies to allow for increased energy production;
- iii) Expansion of Electric Vehicle (EV) Charger Network; and
- iv) the Micro-Generation (MG) program to increase non-utility controlled renewable energy sources connected to the grid. Please refer to Section 1B Energy Transition for more details.

1.4 Changes in Accounting Practices and Procedures

6. Changes in Accounting Practices and Procedures since the 2016-2017 GRA are due to (1) implementation of Oracle Financials changed accounting procedures for charging labour; (2) on-going transition to cloud-based IT applications which have different accounting treatment as compared to previous on-premises applications and (3) updated accounting practices related to contributions work in progress to smooth out fluctuations in rate base.

7. In 2018, AEY began utilization of Oracle Financials, which is a cloud-based financial system. As part of that system implementation AEY and its affiliates adopted leading practices utilizing standard labour rates to account for labour costs. Standard labour rates are a fully loaded labour expense inclusive of fringe benefits and based on average cost by job class. As such AEY no longer records and tracks fringe costs separate and distinct from overall labour expenses.

8. AEY previously utilized on-premises business applications for which AEY purchased capitalizable licenses. These licenses were capitalized and amortized over a period of time. As technology advances, more and more systems are cloud-based and AEY and its affiliates are making a concerted effort to transition away from on-premises applications. Cloud based technology is licensed on a subscription basis, which is not capitalizable under IFRS accounting standards. AEY's current and future subscription costs for cloud-based applications are accounted for in operating and administrative expenses.

9. Finally, AEY is proposing removal of contributions related to work in progress from the computation of rate base, consistent with the exclusion of the corresponding construction work in progress. Historically, AEY has included contribution work in progress within rate base computations, which has resulted in a temporary reduction to rate base balances due to the exclusion of the corresponding capital spend lowering revenue requirements. An offsetting amount of AFUDC would be accumulated within the projects to be later added to rate base and collected over the life of the asset in service.

10. Overall, the implications of contributions have historically been negligible to rate base on ordinary course new extension balances; however, with the recent and projected installation of renewables and the related infrastructure both construction and contribution work in progress balances are expected to be significantly larger than what AEY has previously experienced. This results in high fluctuations in rate base balances and corresponding revenue requirements. Excluding contribution work in progress from rate base smooths out the rate base and revenue requirement trends over the long term, reduces AFUDC accumulated on related projects and more accurately represents AEY's annual returns and rate base balances.

1.5 Overview of Current GRA

11. This Application outlines AEY's requested approval of the revenue requirement detailed herein for the 2023-2024 Test Period.

1.6 Tariffs Applied-For

12. The tariffs applied-for are detailed in Schedule 2.1 and are as follows:

Table 1.2: Rate (Decreases)/Increases over Existing Rates (\$000)

	2023	2024
AEY Retail Revenues	62,203	64,152
(Decrease)/Increase over Existing Rates	(1,211)	3,943
Rate (Decrease)/Increase %	-1.6%	5.2%
Year Over Year Rate (Decrease)/Increase %	-1.6%	6.8%
Rate (Decrease)/Increases % (including Fuel Adjustment)	3.3%	10.0%

13. The proposed rate decrease in 2023, is mainly attributable to the Capital Cost Allowance (CCA) Income Tax deduction related to the ATCO CIS Replacement project (Business Case #23). The proposed rate increase for 2024 is mainly due to higher Depreciation expense and Return on Rate Base resulting from an increase in capital additions related to distribution improvements and distribution extensions, as well as the full year impact in 2024 of the ATCO CIS Replacement program capitalized in 2023.

1.7 Interim Refundable Rate Rider

14. As explained in Section 13, AEY is requesting a decrease of 1.62 percent over the current Rider R of 8.30 percent. The resulting 6.68 percent interim refundable Rider R would apply to electrical consumption between August 1, 2023 and December 31, 2023. This rider will be applied to all AEY and YEC retail customer bills, excluding Secondary and Wholesale customers, in order to refund the difference between the forecast revenues on existing rates and riders and the forecast 2023 revenue requirement as applied-for in this Application. This request is similar to the approach approved by the Board for AEY's 2016-2017 GRA, where a 11.62 percent interim refundable rider was approved in Board Order 2016-02 ERRATA. By implementing the rider over the period August 1, 2023 to December 31, 2023, AEY will be refunding approximately 40 percent of the forecast total surplus in 2023.

15. Also, in Section 13, AEY is requesting approval for an Interim Refundable Rider R of 13.50 percent effective January 1, 2024. The derivation of the Rider R adjustment for 2024 is similar to the calculation for the proposed 2023 Rider R adjustment. Based on the expected timing of the Board Order and Compliance filing to AEY's 2023-2024 GRA, and assuming the process for this Application is similar to AEY's 2016-2017 GRA process, AEY estimates that updated Rider R rate adjustments, in the middle of 2024 will result in minimizing future true-ups and promoting rate stability.

1.8 Deferral Accounts

16. The previously accepted criteria for establishing a deferral account have not changed from AEY's 2016-2017 Phase I GRA. The criteria are as follows:

- (a) Costs are not under the control of the company and are not reasonably forecastable; or
- (b) A variance in forecasting could produce a loss or gain of a substantial magnitude.

17. AEY is seeking approval to use the following deferral accounts during the Test Period:

Table 1.3: Deferral Accounts

Board Orders or Legislative Changes	Section 1B
Industrial Rider R Flow Through	Section 2
Purchased Power Flow Through	Section 3
Independent Power Producers (IPP) Flow Through	Section 3
Diesel Fuel Deferral Account	Section 4

1.9 Key Assumptions

Table 1.4: Key Assumptions (%)

	2023	2024
In-scope Labour Inflation	2.00	2.50
Out-of-scope Labour Inflation	2.90	2.50
Other Inflation	3.80	2.50
Vacancy Rate	3.65	3.65
Long Term Debt Rate	4.56	4.56

18. For 2023, in-scope (subject to a Collective Agreement) labour has been escalated by 2.00 percent. This escalation is based on AEY's existing Collective Agreement that expires on December 31, 2023. For 2023, out-of-scope (not subject to a Collective Agreement) labour has been escalated by 2.90 percent, which is consistent with approved increases in Alberta. For 2024, in-scope and out-of-scope labour has been escalated by 2.50 percent. This escalation rate is consistent with the inflationary increases being applied-for and approved¹ in Alberta for 2024.

19. For non-labour costs, an inflation rate of 3.8 percent and 2.5 percent has been applied for 2023 and 2024, respectively, based on the Yukon Economic Outlook issued by Yukon Economic Development in March 2023.

20. A vacancy rate of 3.65 percent (approximately three FTEs) has been applied to labour expenses for the 2023-2024 Test Period. This is based on a five year historical average normalized for exogenous events, such as vacancies driven by vaccine policies,

¹ Decision 27062-D01-2023, ATCO Electric 2023-2025 GTA and NSA.

which AEY believes to be reasonable and is consistent with the methodology approved in Board Orders 2014-06 and 2017-01.

21. Please refer to Section 8 for discussion of the forecast long-term debt rates for 2023-2024.

1.10 Staff Positions

22. The following table provides a summary of positions added or removed from the 2017 FTEs approved in the 2016-2017 GRA to the forecast FTEs at the end of the Test Period in 2024. As shown in Table 1.4 below, AEY is forecasting an increase over the approved 2017 FTEs. The additional positions, outlined below, are required to manage system growth over the six year period and continuing into the Test Period and the energy transition. Please refer to Section 1B for more information on the energy transition initiatives.

23. Due to the growth in the new extensions program, AEY's kms of line has grown four percent since 2017 and is projected to continue growing through the Test Period. This has resulted in AEY requiring an adequate number of FTEs who will possess the training and knowledge necessary to understand how to execute a growing and more complex capital program. In addition, maintenance requirements have increased both in distribution, due to the larger asset base from growth over the last six years, and in production, as generation assets are reaching end of life and require additional maintenance to continue to operate them safely and reliably.

24. The remaining added FTEs address the needs of a growing number of customers, managing higher vendor and employee expense payment volumes, additional reporting needs, including KPI and ESG reporting, etc. and a need to strengthen strategic planning and communications with all levels of government through the energy transition. Please refer to Attachment 1.1 for AEY's Organizational Chart which details the labour complement by position.

Table 1.4: FTEs

	FTEs
2017 Approved Ending Complement	68.13
Program Manager, Renewables & Grid Modernization	1.0
Engineering Technologist, Renewables & Grid Modernization	1.0
Engineers	3.0
Team Lead, Plant	1.0
Field Services Representative	1.0
Supervisor, Business Support Services	0.75
VP and VP Support Services	-0.8
Head Office Personnel	1.18
2024 Forecast Ending Complement	76.26

25. Descriptions of the new positions are highlighted below:

- **Program Manager Renewables & Grid Modernization (2023):** This position leads the development of renewable projects and ongoing integration with AEY’s isolated grids. They will also lead grid modernization initiatives such as Automated Metering Infrastructure (AMI), smart grid and demand response programs.
- **Engineering Technologist, Renewables (2016):** This technical position is responsible for the electrical design and operational integration of renewable projects in AEY’s isolated grids. They coordinate with IPP operators on a continuous basis to monitor and adjust microgrid operations to ensure safe and reliable power system performance.
- **Electrical Engineer (2019):** This position supports system planning and execution of distribution projects. They also provide analysis of power quality, harmonic distortion and fault data to ensure reliability standards are met.
- **Mechanical Engineer (2019):** This position is responsible for mechanical design and installation of piping systems (fuel, waste heat, cooling), pressure vessels, and various ancillary mechanical systems in AEY’s power plants.
- **Electrical Engineer (2023):** This position is responsible for the Distribution Engineering group and execution of projects, including supervising 7 employees. This position will direct all technical work in the group and authenticate for approximately 300 work packages each year. This Engineer will also lead process and tool development to improve quality and efficiency.

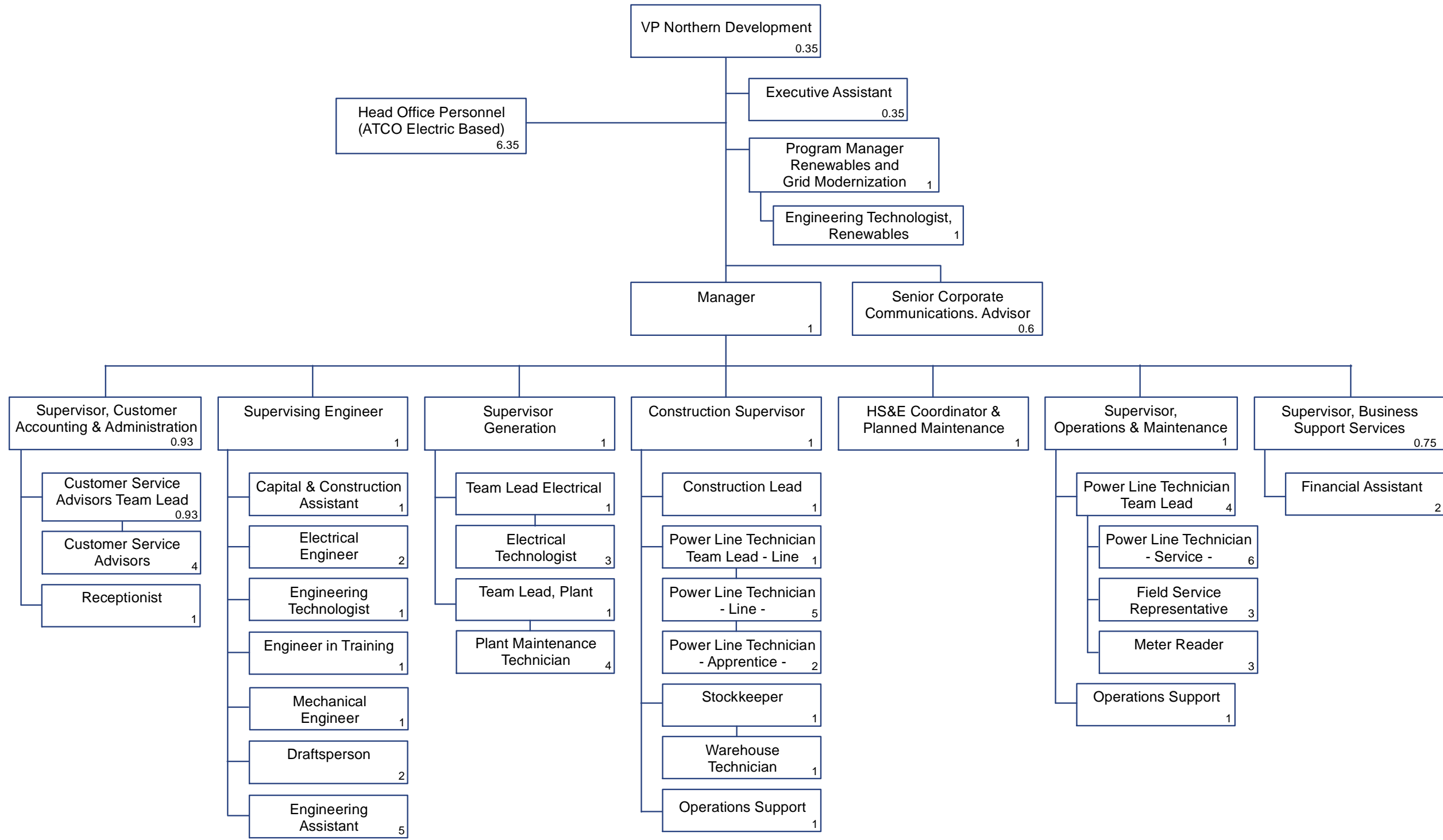
- **Team Lead, Plant (2023):** The Lead Plant Maintenance is responsible for planning, scheduling, prioritizing, directing, and coordinating the work of staff and external resources that operate and maintain hydro and diesel generating stations. This position acts as the isolated generation system operator, develop operating procedures, create maintenance manuals, ensure CMMS is updated, and train personnel. The Lead assigns, supervises, and monitors outsourcing of maintenance scope to contractors.
- **Field Services Representative Watson Lake (2022):** This position is focused on field work and providing operational support to both distribution and generation staff.
- **Supervisor, Business Support Services (2016):** This position supervises the Financial Assistants and has lead responsibility for accounts payable and accounts receivable duties. In addition, this position performs general business support services that include being the lead for financial reporting audits, fuel reconciliation, employee expense tracking and reporting, Privacy and Ethics reporting, as well as other miscellaneous reporting. This position was applied for in the 2016/2017 GRA but was denied due to the remote location.² This position is a shared resource with Northland Utilities and is located in Whitehorse.
- **VP and VP Support Services:** Both positions have current responsibilities in ATCO Electric Distribution that result in a lower percentage of their time being allocated to AEY.
- **Head Office Personnel:** Financial and Regulatory support have increased to oversee additional financial responsibilities and to oversee the GRA filing, including a depreciation study. The volume of work has increased due to rapid system growth and the added complexities surrounding the energy transition. In addition, Governance has grown to include government planning and initiatives as the energy transition continues to develop resulting in energy policy that requires utilities to adapt and adjust business requirements. The additional support requirements have been partially offset by lower Customer Care and Billing Head Office support as AEY has taken on more of these functions in house.

² 2016-2017 GRA per Board Order 2017-01, Section 5.1.3, paragraph 79.

1.11 Issues List

26. AEY has included an issues list (Attachment 1.2) to identify the issues that had the most change since the 2016-2017 GRA. With the goal of regulatory efficiency in mind, AEY requests that the focus of this GRA be on the items listed in this attachment.

Organizational Chart - ATCO Electric Yukon 2023 - 2024



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

Issues List

Issue	Section	Request
Board Orders or Legislative Provisions Deferral	Section 1B	AEY seeks the ability to flow-through (dollar for dollar) costs and savings related to Board Orders or legislative provisions resulting in changes to the rules or parameters under which AEY operates, or that bear on the nature and extent of AEY's obligations as a regulated utility, and which impact its 2023-2024 revenues or revenue requirement.
Independent Power Producers (IPP) Deferral	Section 03	AEY is requesting deferral treatment on both Constraint Payments as well as maintenance costs related to the IPP projects.
FTEs	Section 01 and 05	AEY has increased its 8.3 FTE's since the approved 2017 application. The additional FTE's are required to manage system growth over the six year period and continuing into the Test Period and the energy transition
Negative Net Salvage	Section 07	AEY is requesting the Board approve the restart of the collection of Negative Net Salvage in revenue requirement as AEY is below the \$2 million threshold previously identified by the board.
Depreciation parameters	Section 07	AEY is proposing to use placeholder depreciation rates until the third party study, which is currently underway is complete and AEY will provide an update to the GRA.
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.
Capital additions	Section 09	In order to ensure safe and reliable service AEY was required to perform capital work since the last approved application. AEY is seeking Board approval of the 2016 to 2022aactuals on a final basis and approval of its forecast for 2023 and 2024 additions and has provided business cases to support these expenditures

SECTION 1B: ENERGY TRANSITION**1B.1 Summary**

1. AEY has seen rapid population growth as well as new Government energy transition policies and legislation aimed at increased electrification and reduced carbon emissions. These two major cost drivers can lead to conflicts as the desire for renewable energy resources often cannot meet the demand required for a population growing as rapidly as that of the Yukon. This section of the Application outlines a number of cost drivers that are a direct result of the new Government policies and legislation, as well as changes in customer demands and behaviours that cause impacts outside of the control of AEY.

2. Over the past few years, Federal, Territorial, Municipal and First Nation Governments and the public have taken concrete steps to affect the displacement or reduction of diesel power generation in remote communities through the development of renewable generation facilities.

3. The Federal Government has initiated its 2030 carbon emissions plan with a set of targets to reach its goal of net zero emissions by 2050. There is uncertainty with these plans and, as such, updates through subsequent plans are released every five years.

4. In 2020, the Yukon Government released the “Our Clean Future” plan to identify actions with respect to meeting the Federal Government’s emissions targets. The Yukon’s plan is over a 10-year term with goals that include:

- By 2030, 97 percent of the electricity on Yukon’s main electricity grid will come from renewable sources;
- Use 30 percent less diesel for electricity generation in the communities that are not connected to the main electricity grid; and
- 50 percent of heating needs to come from renewable resources.

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.

1B.2 Grid Modernization

6. AEY is undertaking steps towards Grid Modernization. These steps are required to maintain service quality including the reliable, safe and economic operation of AEY's distribution system in light of the evolution of customer behaviors, and the challenges presented as a result of the distribution system's increasing size, changing utilization and complexity. Grid Modernization is increasingly recognized within the utility industry as a necessary response to changing Government policies, technologies, and customer behaviors since they will fundamentally alter the future operation of the distribution grid. These changes are driving new challenges for utilities such as bidirectional flow of power and a significant potential for localized demand spikes that cannot be ignored.

7. One of the Grid Modernization programs that AEY is initiating in this Test Period is the Advanced Metering Infrastructure (AMI) program in Whitehorse, which AEY has estimated will cost approximately \$0.4 million for:

- Purchasing and installation of materials (gateways, meters) (\$0.3 million);
- Integration of the AMI system with the new CCS system (\$0.1 million); and
- System access to the Landis and Gyr headend hub.

8. AMI is a fundamental building block of Grid Modernization and there are additional benefits beyond that which include:

- The AMI solution will eliminate the need for a person to physically read the meters for billing purposes;
- With the AMI solution, AEY will be able to gather meter reads at any required interval to present that data to its customers;
- The AMI solution will be able to provide the high granularity billing approved metering data that would be required for Time of Use (TOU) rates;
- AMI will allow for real-time monitoring and automated reaction to changing grid conditions which will assist in responding to customers' increasingly complex energy management requirements for Micro-Generation (MG) technologies, like electric vehicles, battery storage, and solar generation; and

- The AMI solution will allow for flexibility to be leveraged by other ongoing initiatives that require small amounts of data from many endpoints.

9. AEY is engaging with YEC to coordinate efforts for the AMI program to ensure an efficient and effective execution of the program as it will impact both entities.

1B.3 Independent Power Production Policy

10. The Independent Power Production (IPP) Policy was adopted by the Yukon Government in October 2015. The IPP Policy is to provide opportunities for non-utility entities to generate new power that can assist the utilities in meeting the demand for affordable, reliable, flexible and clean electrical energy.

11. One of the reasons identified by the Yukon Government for initiating the IPP Policy was the risk of demand for energy exceeding the hydro supply on the YIS. AEY is working with a number of customers to interconnect, which will result in increased energy production. These projects are customer funded and are to have no impact on rate base, although they will increase the electrical capacity for renewable resources in the area.

12. AEY is requesting a deferral on costs associated with the IPPs; further details are provided in Section 3.4.

1B.4 Expansion of the EV Charger Network

13. In its 2022-2023 budget, the Yukon Government allocated \$2.1 million of funding to zero-emissions vehicle incentives and to expand the Yukon's network of EV chargers in communities and along the Territory's highways.

14. In 2022, the Yukon Government received \$1 million from Natural Resources Canada's Zero Emission Vehicle Infrastructure Program (ZEVIP) to install 200 public EV charging stations. The proposed expansion of the EV network is expected to result in a number of new connection points to the grid in AEY's service area.

1B.5 Micro-Generation (MG) Program

15. There continues to be interest in MG in the Yukon and a focus from the Government, through policy, to assist individuals to connect renewable energy sources to the grid. As there is rapid population growth within the Yukon, resulting in new homes continuing to be built, the demand for MG has increased. This increase can be seen in Schedule 3.2,¹ where AEY is anticipating the addition of approximately 1,000 MWh to the grid in the Test Period.

16. The program continues to grow and, as this is a Yukon Government-led initiative, AEY has very little control and knowledge of the future of the program. Additionally, most of AEY's isolated communities are at peak capacity for MG based on the reliability restrictions of the program. Though the community MG peak capacity is reached, and as the energy transition continues, there is consistent demand to review or expand the reliability restrictions for MG in the isolated communities. There is concern that this increased demand may lead to policy changes in the MG program that will lead to changes to the electrical grid.

1B.6 Board Orders and Legislative Changes

17. As indicated above, there are plans from both the Federal (Canadian Net-Zero Emissions Accountability Act) and Territorial (Our Clean Future) Governments aimed at lowering carbon emissions and increasing electrification over the next several decades. With these new legislative requirements and quickly developing plans and strategies comes a significant amount of uncertainty and complexity for electric utilities.

18. AEY seeks the ability to flow-through (dollar for dollar) costs and savings related to Board Orders or legislative provisions resulting in changes to the rules or parameters under which AEY operates, or that impact the nature and extent of AEY's obligations as a regulated utility, and which impact its 2023-2024 revenues or revenue requirement.

¹ Schedule 3.2 – Schedule of Energy Losses.

19. AEY submits that this deferral account is required in light of the various initiatives currently being considered and implemented throughout the Yukon (for example – EV expansion, flow through of carbon credits/rebates and MG). This deferral account would address any future Board orders or legislative provisions that bring about savings to customers or impact AEY’s ability to recover its prudently incurred costs.

SECTION 2: SALES AND REVENUE

2.1 Overview

1. Table 2.1 below summarizes AEY’s energy sales forecast for 2023 and 2024 by customer class, along with the corresponding actuals from 2016 to 2022.

Table 2.1: AEY Sales by Customer Class (MWh)

	2016	2017	2018	2019	2020	2021	2022	2023 ¹	2024
	Actuals							Test Period	
Residential	151,351	165,654	167,596	166,455	185,235	188,526	188,388	187,499	195,966
Commercial	157,662	165,924	168,285	168,680	163,933	166,022	168,541	170,320	175,244
Streetlights	3,923	3,942	3,951	3,876	3,889	3,937	3,884	3,874	3,883
Private Lights	496	495	486	480	452	452	456	442	431
Total Retail Primary	313,432	336,016	340,318	339,491	353,508	358,936	361,269	362,136	375,523
Secondary Sales	4,835	8,385	258	1	479	4,430	3,439	2,931	2,931
Wholesale Sales	548	584	636	693	704	487	420	485	451
Total Company²	318,815	344,985	341,212	340,184	354,691	363,853	365,128	365,552	378,905

Notes:

1. 2023 forecast includes 3 months of actuals for January, February, and March.
2. Sales are shown as Earned Energy MWh for all years 2016 to 2024.

2. In Table 2.1 above, AEY forecasts its total primary retail sales to increase 0.2 percent in 2023 and to increase 3.7 percent in 2024. The forecast growth in retail sales for 2023 and 2024 follows year over year growth averaging approximately 1.1 percent over the period 2020 to 2022.

2.2 Background Information

3. In 2022, AEY provided electricity services to approximately 20,300 non-lighting customers in its service area and supplied a total of 361.3 GWh to Residential, Commercial, and lighting customers. This represents an increase in total primary sales of 0.65 percent from 2021 levels.

4. After experiencing a few years of moderate growth, the Yukon economy was disrupted by the pandemic starting in 2020. The COVID-19 global pandemic impacted Residential and Commercial Usage Per Customer (UPC) in 2020, 2021 and 2022. In

2020, Residential UPC increased significantly as more people were working from home and Commercial UPC decreased as businesses were impacted by COVID-19 restrictions as well as the decrease in employees working in offices. As pandemic restrictions have been lifted, policies and procedures are beginning to normalize, such that the 2023 forecast anticipates UPCs returning to pre-pandemic levels for both Residential and Commercial customers.

2.3 Forecast Process

5. The forecast process involves the review of historic sales data at the community level and includes the most recent data available at the time the forecast is prepared. The information is obtained through AEY's work in the community, as well as consultation with the City of Whitehorse, Yukon Government, and various local agencies and developers. The retail primary sales forecast is prepared by customer class: Residential, Commercial, street and private lighting. Table 2.2 shows the 2022 annual average customer numbers and the associated billed energy sales by community for both the Residential and Commercial classes.

Table 2.2: AEY Residential and Commercial Customers and Sales by Community

AEY (2022 Actuals)				Residential				Commercial				
	Community	Zone ¹	Diesel / Hydro	Customers ²	Share (%)	Energy ³ (MWh)	Share (%)	Community	Customers ²	Share (%)	Energy ³ (MWh)	Share (%)
1	Whitehorse ⁴	WH	Hydro	13,333	78.3	155,180	82.6	Whitehorse ³	2,352	71.9	143,530	85.4
2	Marsh Lake	WH	Hydro	463	2.7	4,550	2.4	Marsh Lake	32	1.0	574	0.3
3	Haines Junction	WH	Hydro	476	2.8	4,384	2.3	Haines Junction	143	4.4	3,700	2.2
4	Carmacks	WH	Hydro	262	1.5	2,776	1.5	Carmacks	87	2.7	2,594	1.5
5	Carcross	WH	Hydro	286	1.7	2,514	1.3	Carcross	75	2.3	1,792	1.1
6	Teslin	WH	Hydro	321	1.9	2,585	1.4	Teslin	77	2.3	2,081	1.2
7	Tagish	WH	Hydro	383	2.3	2,344	1.2	Tagish	29	0.9	443	0.3
8	Ross River	WH	Hydro	191	1.1	1,823	1.0	Ross River	46	1.4	1,264	0.8
9	Pelly Crossing	WH	Hydro	178	1.0	1,767	0.9	Pelly Crossing	34	1.0	1,227	0.7
10	Old Crow	WH	Diesel	162	1.0	1,471	0.8	Old Crow	51	1.6	1,248	0.7
11	Destruction Bay	WH	Diesel (S)	109	0.6	688	0.4	Destruction Bay	50	1.5	935	0.6
12	Beaver Creek	WH	Diesel (S)	68	0.4	656	0.3	Beaver Creek	39	1.2	852	0.5
13	Keno City	WH	Hydro	40	0.2	270	0.1	Keno City	13	0.4	98	0.1
14	Stewart Crossing	WH	Hydro	17	0.1	103	0.1	Stewart Crossing	15	0.4	341	0.2
15	Minto Landing	WH	Hydro	0	0.0	0	0.0	Minto Landing	3	0.1	74	0.0
1	Watson Lake	WL	Diesel (L)	610	3.6	5,796	3.1	Watson Lake	185	5.7	6,800	4.0
2	Lower Post B.C.	WL	Diesel (L)	67	0.4	514	0.3	Lower Post B.C.	16	0.5	276	0.2
3	Upper Liard	WL	Diesel (L)	51	0.3	468	0.2	Upper Liard	15	0.4	220	0.1
4	Swift River	WL	Diesel (S)	8	0.0	72	0.0	Swift River	11	0.3	109	0.1
	Total AEY			17,025	100.0	187,961	100.0		3,272	100.0	168,158	100.0

Notes:

1. Weather Zones, Whitehorse (WH) and Watson Lake (WL)
2. Customer numbers are on an annual average basis.
3. Energy actuals are billed.
4. Includes Deep Creek.

6. For the 2023-2024 sales forecast, AEY reviewed its two-step approach for determining weather-normalized UPC. In the first step, the historical monthly UPC is regressed on actual monthly Heating Degree Days (HDD), and in the second step, the coefficient of HDD from the regression in the first step is multiplied by the difference between the actual HDD and the “Normal” HDD. AEY has maintained the same 10-year timeframe for UPC regression and normalizing HDD the Board ordered for the 2016-2017 GRA Compliance filing.¹

2.3.1 Update to Forecast Process

7. While retaining the same time frames used for determining the weather normalized UPC, AEY has applied the growth rates experienced over the period of 2017 to 2019, prior to the pandemic, to derive the forecast UPC for the 2023-2024 Test Period.

8. It is AEY’s view that using the 2017 to 2019 timeframe for the applied growth rates, as opposed to the most recent 2020 to 2022 timeframe, encompasses trends more representative of the future of the Yukon. During the pandemic, there was a significant increase in Residential UPC and a decrease in Commercial UPC, which differs from the developments AEY is experiencing with increased time since the pandemic’s peak. AEY is of the opinion that the 2017-2019 growth rate time frame will result in the most accurate forecast while maintaining the same methodology that was approved in the previous GRA. The process and steps for determining the forecasts for the Residential and Commercial rate classes are detailed further below.

2.3.2 Residential

9. The Residential sales forecast has two key inputs: (i) the net customer additions; and (ii) the forecast UPC. The energy sales forecast is obtained by multiplying the forecast number of customers (generated based on the net customer additions forecast) by the UPC forecast.

¹ Board Order 2017-01, page 13, paragraph 40.

10. The customer additions forecast includes all known residential property developments and is based on discussion with the aforementioned third parties.

11. The Residential average UPC for the Test Period for all communities, with the exception of Keno City, Stewart Crossing and Swift River, is forecast by using the weather-normalized UPC of the previous year as a base and applying the 2017 to 2019 growth in weather-normalized UPC, as discussed above.

12. The UPC for Keno City, Stewart Crossing and Swift River is forecast by using the actual UPC of the previous year as a base and applying the 2017 to 2019 growth in actual UPC. The actual UPC for these three communities are used because there are very few customers. The community energy sales forecast is then calculated by multiplying the forecast community customer counts by the respective community UPC forecast. Detailed information used for determining the residential sales forecasts by community is provided in Attachment 2.1.

2.3.3 Commercial

13. The Commercial sales forecast also has two key inputs: (i) the net customer additions; and (ii) the forecast UPC. The energy sales forecast is obtained by multiplying the forecast number of customers (generated based on the net customer adds forecast) by the UPC forecast.

14. The Commercial UPC for the Test Period for Whitehorse is forecast by using the weather-normalized UPC of the previous year as a base and applying the 2017 to 2019 growth in weather-normalized UPC. Additionally, six new large commercial customers are anticipated to be added during the Test Period in Whitehorse as well as one new large customer in Carcross. AEY has considered these new large customers individually and has forecast the load each customer will bring to the system each year based on the start-up time and other pertinent information provided by the customers. The commercial energy sales for Whitehorse and Carcross are then calculated by adding the specific energy sales of the new large commercial additions to each of the Test Years.

15. The Commercial UPC forecast for the remaining communities (outside of Whitehorse), is determined by using the actual UPC of the previous year as a base and applying the 2017 to 2019 growth in actual UPC. Actual UPC for these communities is used because there are fewer commercial customers in these communities or there is poor correlation between their average UPC and temperature. The community energy sales forecast is then calculated by multiplying the forecast community customer counts by the respective community UPC forecast. Detailed information for determining the commercial sales forecast is provided in Attachment 2.2.

2.3.4 Industrial

16. While AEY does not forecast serving any industrial customers over the Test Period, AEY plans to continue its approved Industrial Rider R Deferral,² respecting YEC's industrial sales forecast for purposes of calculating AEY's Rider R rate adjustment. AEY proposes to true-up any differences between YEC's actual and approved industrial sales forecast in future rider adjustments.

2.3.5 Lighting

17. The energy forecast for street and private lighting is based on wattage and customer additions.

2.3.6 Wholesale Sales (Sales to YEC)

18. AEY consults with YEC staff regarding Wholesale sales to two YEC sites at Johnson Crossing and Marsh Lake Dam. Wholesale sales are forecast to remain similar to 2022 levels for the Test Period.

2.3.7 Secondary Sales

19. AEY uses information from YEC for the determination of the secondary sales forecast. Secondary sales are forecast to be available from May to October in each Test Period.

² Board Order 2022-13.

2.4 Current Forecast

20. Please refer to Schedule 2.1 for the summary of actual and forecast customers, sales and revenue by customer class compared against the proposed revenue requirement.

2.5 Revenue on Existing Rates

21. The current tariff in effect as of January 1, 2023, is applied to the sales and customer forecast, resulting in the forecast revenue on existing rates provided in Schedule 2.1. The revenue excludes the YEC Revenue Shortfall Rider, the YEC DCF Rider, and the Fuel Adjustment Rider, Rider F.

2.6 Other Revenues

22. AEY's other revenues have been included with retail sales revenues as part of the revenue requirement. These amounts are detailed in Schedule 2.2.

23. Reconnect, Joint Use, and Services to Outside Parties revenues are forecast to increase in each year of the Test Period due to inflation. Revenues associated with billing services to YEC increase in the Test Period mainly due to the replacement of AEY's billing system.

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

Residential - Yukon - Beaver Creek

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,137.3		852.0	1,139.5	
Feb-13	1,006.1		665.4	1,117.3	
Mar-13	843.4		851.1	798.6	
Apr-13	777.2		639.9	707.7	
May-13	656.2		294.0	648.3	
Jun-13	713.0		112.4	731.5	
Jul-13	524.3		88.2	527.6	
Aug-13	601.9		106.5	620.5	
Sep-13	614.7		264.3	629.7	
Oct-13	671.7		388.8	737.1	
Nov-13	892.8		856.5	861.6	
Dec-13	791.9	9,230.4	1,008.2	765.5	9,284.7
Jan-14	1,075.7		745.8	1,189.6	
Feb-14	1,006.6		992.4	940.6	
Mar-14	662.4		855.1	615.4	
Apr-14	538.5		499.8	574.9	
May-14	727.1		269.5	732.4	
Jun-14	566.8		200.5	537.5	
Jul-14	530.0		98.0	528.0	
Aug-14	571.6		144.0	569.9	
Sep-14	588.1		307.1	579.9	
Oct-14	612.3		515.6	608.9	
Nov-14	816.4		772.8	830.6	
Dec-14	839.3	8,534.8	854.4	896.3	8,574.1
Jan-15	1,167.1		927.0	1,182.9	
Feb-15	773.6		851.4	784.0	
Mar-15	716.1		671.3	768.8	
Apr-15	743.1		453.5	774.6	
May-15	597.0		192.9	643.9	
Jun-15	554.5		127.2	564.9	
Jul-15	533.8		115.7	522.2	
Aug-15	545.1		183.2	522.2	
Sep-15	668.1		332.7	646.0	
Oct-15	519.5		469.8	540.9	
Nov-15	833.3		759.2	854.9	
Dec-15	761.8	8,413.1	947.9	768.1	8,573.3
Jan-16	1,076.4		827.6	1,146.0	
Feb-16	772.0		688.0	870.9	
Mar-16	820.0		611.6	905.0	
Apr-16	558.0		386.4	625.8	
May-16	627.1		252.1	641.8	
Jun-16	661.4		119.0	676.3	
Jul-16	366.9		79.2	375.1	
Aug-16	540.0		111.5	555.9	
Sep-16	638.5		278.8	645.7	
Oct-16	592.1		604.3	540.7	
Nov-16	736.4		694.7	793.0	
Dec-16	729.5	8,118.3	1,056.2	677.1	8,453.3
Jan-17	1,137.2		975.9	1,126.5	
Feb-17	1,266.3		864.8	1,269.4	
Mar-17	844.9		947.0	748.1	
Apr-17	677.5		455.5	707.9	
May-17	789.4		294.8	781.0	
Jun-17	613.2		164.5	603.4	
Jul-17	609.6		127.6	591.5	
Aug-17	566.0		115.2	580.0	
Sep-17	423.4		269.7	435.5	
Oct-17	650.9		509.9	650.6	
Nov-17	865.1		979.6	767.3	
Dec-17	815.6	9,359.0	832.1	930.5	9,191.5
Jan-18	837.5		1,000.0	913.7	
Feb-18	1,365.2		1,017.3	1,285.7	
Mar-18	860.4		788.7	849.4	
Apr-18	961.3		552.3	939.2	
May-18	610.7		294.7	602.4	
Jun-18	636.4		170.0	623.6	
Jul-18	499.6		75.7	509.7	
Aug-18	488.3		130.1	494.1	
Sep-18	714.1		349.2	683.1	
Oct-18	537.0		475.8	555.2	
Nov-18	883.0		695.1	939.4	
Dec-18	892.5	9,376.0	840.5	947.0	9,342.5
Jan-19	1,137.3		998.1	1,114.5	
Feb-19	1,378.2		997.2	1,309.6	
Mar-19	508.9		610.4	594.6	
Apr-19	588.8		473.8	609.3	
May-19	573.0		229.1	600.2	
Jun-19	620.5		134.2	627.1	
Jul-19	570.2		52.4	592.9	
Aug-19	439.5		171.6	422.8	
Sep-19	543.1		239.3	571.7	
Oct-19	756.8		557.4	730.7	
Nov-19	923.7	8,787.8	687.2	984.3	8,970.5
Dec-19	747.9		839.8	812.8	
Jan-20	1,140.8		1,235.8	989.2	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.781653702					
R Square	0.610982509					
Adjusted R Square	0.607685751					
Standard Error	143.5795586					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	3820558.767	3820558.767	185.3282636	5.99747E-26	
Residual	118	2432580.578	20615.08964			
Total	119	6253139.345				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	473.5455916	24.74826026	19.13450023	5.66125E-38	424.5372986	522.5538847
MHDD	0.541981644	0.039811977	13.61353237	5.99747E-26	0.46314309	0.620820198

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) ^{(1/(2019 - 2017)) - 1} =$
 $(8970.5 / 9191.5) ^{(1/2) - 1} = -1.2\%$

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

Residential - Yukon - Beaver Creek

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,317.6		847.2	1,330.3		
Mar-20	765.8		849.6	721.8		
Apr-20	702.0		500.7	707.9		
May-20	637.0		271.5	641.3		
Jun-20	842.4		189.0	819.4		
Jul-20	536.8		122.3	521.7		
Aug-20	601.2		185.6	577.0		
Sep-20	613.8		298.9	610.1		
Oct-20	639.9		596.6	592.6		
Nov-20	846.2		899.0	792.1		
Dec-20	1,024.8	9,668.6	863.2	1,077.0	9,380.3	
Jan-21	1,457.4		887.5	1,494.5		
Feb-21	923.7		1,051.4	825.7		
Mar-21	1,000.7		821.5	972.0		
Apr-21	1,019.9		565.1	990.9		
May-21	538.8		337.8	507.1		
Jun-21	613.2		127.4	623.5		
Jul-21	539.3		87.3	543.1		
Aug-21	510.8		153.2	504.1		
Sep-21	618.6		320.9	602.9		
Oct-21	656.2		523.3	648.7		
Nov-21	921.6		877.4	879.2		
Dec-21	1,087.1	9,887.6	1,131.7	993.8	9,585.7	
Jan-22	1,385.0		1,010.7	1,355.4		
Feb-22	1,022.8		731.0	1,098.5		
Mar-22	809.8		678.3	858.7		
Apr-22	957.0		588.6	915.2		
May-22	662.8		356.8	620.8		
Jun-22	489.3		119.9	483.7		
Jul-22	648.4		96.5	645.2		
Aug-22	548.1		108.0	566.0		
Sep-22	659.9		258.4	678.1		
Oct-22	660.6		452.2	691.6		
Nov-22	878.8		769.6	894.8		
Dec-22	1,043.0	9,743.7	1,121.0	955.5	9,763.4	
Jan-23	1,444.0		799.5	1,528.8		
Feb-23	1,080.8		826.3	1,104.8		
Mar-23	1,077.3		821.1	1,048.8		
Apr-23	904.1					
May-23	613.3					
Jun-23	477.8					
Jul-23	637.4					
Aug-23	559.1					
Sep-23	669.9					
Oct-23	683.2					
Nov-23	884.0					
Dec-23	944.0	9,974.9			10,055.3	
Jan-24	1,510.3					
Feb-24	1,091.5					
Mar-24	1,036.1					
Apr-24	893.2					
May-24	605.9					
Jun-24	472.0					
Jul-24	629.7					
Aug-24	552.3					
Sep-24	661.8					
Oct-24	674.9					
Nov-24	873.3					
Dec-24	932.5	9,933.6			9,933.6	

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

Residential - Yukon - Carcross

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,108.8		852.0	1,111.8	
Feb-13	930.9		665.4	1,031.9	
Mar-13	770.6		851.1	729.9	
Apr-13	793.2		639.9	730.0	
May-13	742.3		294.0	735.1	
Jun-13	552.9		112.4	569.6	
Jul-13	458.9		88.2	461.9	
Aug-13	449.8		106.5	466.7	
Sep-13	449.9		264.3	463.5	
Oct-13	485.5		388.8	544.9	
Nov-13	659.7		856.5	631.5	
Dec-13	754.9	8,158.4	1,008.2	730.9	8,207.7
Jan-14	1,035.2		745.8	1,138.8	
Feb-14	784.0		992.4	724.0	
Mar-14	915.4		855.1	872.8	
Apr-14	796.3		499.8	802.1	
May-14	716.6		269.5	721.4	
Jun-14	487.0		200.5	460.3	
Jul-14	517.5		98.0	515.7	
Aug-14	437.1		144.0	435.6	
Sep-14	465.3		307.1	457.8	
Oct-14	547.8		515.6	544.7	
Nov-14	629.4		772.8	642.4	
Dec-14	709.3	8,040.9	854.4	761.0	8,076.6
Jan-15	989.5		927.0	1,003.8	
Feb-15	874.2		851.4	883.7	
Mar-15	858.9		671.3	906.8	
Apr-15	695.3		453.5	723.9	
May-15	679.7		192.9	722.3	
Jun-15	475.4		127.2	484.9	
Jul-15	405.4		115.7	394.9	
Aug-15	479.4		183.2	458.6	
Sep-15	447.4		332.7	427.4	
Oct-15	602.6		469.8	622.1	
Nov-15	593.3		613.0	759.2	
Dec-15	782.7	7,884.0	947.9	788.4	8,029.7
Jan-16	993.3		827.6	1,056.6	
Feb-16	847.5		688.0	937.4	
Mar-16	834.1		611.6	911.3	
Apr-16	712.4		386.4	774.0	
May-16	560.5		252.1	573.9	
Jun-16	570.8		119.0	584.3	
Jul-16	442.0		79.2	449.4	
Aug-16	460.5		111.5	475.0	
Sep-16	492.7		278.8	499.1	
Oct-16	550.1		604.3	503.4	
Nov-16	684.1		694.7	735.5	
Dec-16	854.4	8,002.3	1,056.2	806.8	8,306.8
Jan-17	1,057.7		975.9	1,047.9	
Feb-17	1,015.8		864.8	1,018.6	
Mar-17	1,039.4		947.0	951.4	
Apr-17	881.1		455.5	908.7	
May-17	630.5		294.8	622.9	
Jun-17	575.6		164.5	566.7	
Jul-17	484.8		127.6	468.4	
Aug-17	484.2		115.2	496.8	
Sep-17	522.1		269.7	533.0	
Oct-17	505.8		509.9	505.6	
Nov-17	581.6		979.6	492.7	
Dec-17	917.1	8,695.5	932.1	930.6	8,543.3
Jan-18	866.0		1,000.0	844.4	
Feb-18	1,060.0		1,017.3	987.7	
Mar-18	1,093.1		788.7	1,083.1	
Apr-18	1,015.6		552.3	995.6	
May-18	748.2		294.7	740.7	
Jun-18	576.6		170.0	565.0	
Jul-18	478.1		75.7	487.3	
Aug-18	437.1		130.1	442.4	
Sep-18	508.3		349.2	480.1	
Oct-18	534.4		475.8	550.9	
Nov-18	632.9		695.1	684.1	
Dec-18	805.9	8,756.2	840.5	864.5	8,725.7
Jan-19	873.0		998.1	852.2	
Feb-19	1,097.2		997.2	1,034.8	
Mar-19	1,075.1		610.4	1,153.0	
Apr-19	773.2		473.8	791.8	
May-19	655.0		229.1	679.7	
Jun-19	558.9		134.2	564.9	
Jul-19	460.2		52.4	480.8	
Aug-19	436.3		171.6	421.2	
Sep-19	533.2		239.3	559.1	
Oct-19	503.9		557.4	480.3	
Nov-19	689.3		687.2	744.5	
Dec-19	822.0	8,477.3	839.8	881.0	8,643.3
Jan-20	949.9		1,235.8	812.1	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.748561387					
R Square	0.560344151					
Adjusted R Square	0.556618254					
Standard Error	144.8567263					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	3155740.815	3155740.815	150.3917437	8.54505E-23	
Residual	118	2476049.596	20983.47115			
Total	119	5631790.411				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	446.2734918	24.96840078	17.87353126	2.27775E-35	396.8292606	495.717723
MHDD	0.492574357	0.040166113	12.26343115	8.54505E-23	0.413034519	0.572114195
	Lower 95.0%	Upper 95.0%				
Intercept	396.8292606	495.717723				
MHDD	0.413034519	0.572114195				

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(8643.3 / 8543.3) \wedge (1/2) - 1 = 0.6\%$

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

Residential - Yukon - Carcross

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,251.2		847.2	1,262.8		
Mar-20	919.3		849.6	879.4		
Apr-20	852.8		500.7	858.1		
May-20	859.5		271.5	863.4		
Jun-20	549.0		189.0	528.0		
Jul-20	503.0		122.3	489.2		
Aug-20	491.9		185.6	469.9		
Sep-20	458.9		298.9	455.4		
Oct-20	525.8		596.6	482.8		
Nov-20	737.7		899.0	688.4		
Dec-20	940.1	9,039.0	863.2	987.5	8,777.0	
Jan-21	1,106.4		887.5	1,140.1		
Feb-21	868.7		1,051.4	779.6		
Mar-21	1,150.0		821.5	1,123.9		
Apr-21	952.5		565.1	926.2		
May-21	732.4		337.8	703.6		
Jun-21	583.3		127.4	592.7		
Jul-21	491.9		87.3	495.3		
Aug-21	436.8		153.2	430.8		
Sep-21	455.2		320.9	441.0		
Oct-21	568.6		523.3	561.8		
Nov-21	658.8		877.4	620.3		
Dec-21	866.6	8,871.3	1,131.7	781.7	8,596.9	
Jan-22	1,188.6		1,010.7	1,161.7		
Feb-22	1,127.1		731.0	1,195.9		
Mar-22	942.3		678.3	986.7		
Apr-22	873.0		588.6	835.1		
May-22	697.9		356.8	659.7		
Jun-22	554.9		119.9	567.9		
Jul-22	507.1		96.5	506.0		
Aug-22	459.8		108.0	476.0		
Sep-22	461.5		258.4	478.0		
Oct-22	563.9		452.2	592.1		
Nov-22	601.4		769.6	615.9		
Dec-22	818.0	8,795.4	1,121.0	738.5	8,813.4	
Jan-23	1,239.9		799.5	1,317.0		
Feb-23	986.6		826.3	1,008.4		
Mar-23	844.3		821.1	818.3		
Apr-23	839.9					
May-23	663.6					
Jun-23	571.2					
Jul-23	508.9					
Aug-23	478.8					
Sep-23	480.8					
Oct-23	595.5					
Nov-23	619.5					
Dec-23	742.8	8,571.9			8,644.9	
Jan-24	1,324.7					
Feb-24	1,014.3					
Mar-24	823.1					
Apr-24	844.8					
May-24	667.5					
Jun-24	574.6					
Jul-24	511.9					
Aug-24	481.6					
Sep-24	483.6					
Oct-24	599.0					
Nov-24	623.1					
Dec-24	747.1	8,695.3			8,695.3	

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

Residential - Yukon - Carmacks

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,351.4		952.0	1,354.5	
Feb-13	1,103.7		865.4	1,261.9	
Mar-13	1,129.4		851.1	1,065.7	
Apr-13	1,261.5		639.9	1,162.6	
May-13	857.1		294.0	845.8	
Jun-13	568.8		112.4	595.0	
Jul-13	626.6		88.2	631.3	
Aug-13	696.6		106.5	723.1	
Sep-13	614.4		264.3	635.7	
Oct-13	983.9		388.8	1,076.9	
Nov-13	947.9		856.5	903.6	
Dec-13	1,003.9	11,345.3	1,008.2	966.4	11,422.5
Jan-14	1,708.4		745.8	1,870.4	
Feb-14	1,210.7		992.4	1,116.8	
Mar-14	1,052.8		855.1	986.0	
Apr-14	921.1		499.8	930.2	
May-14	896.7		269.5	904.3	
Jun-14	589.1		200.5	547.4	
Jul-14	549.7		98.0	546.8	
Aug-14	734.6		144.0	732.2	
Sep-14	621.8		307.1	610.1	
Oct-14	943.9		515.6	939.1	
Nov-14	960.6		772.8	980.9	
Dec-14	1,431.2	11,620.4	854.4	1,512.2	11,676.3
Jan-15	1,265.4		927.0	1,287.8	
Feb-15	1,129.5		851.4	1,144.3	
Mar-15	1,179.2		671.3	1,254.0	
Apr-15	878.6		453.5	923.3	
May-15	771.9		192.9	838.5	
Jun-15	515.3		127.2	530.1	
Jul-15	662.1		115.7	645.6	
Aug-15	562.8		183.2	530.2	
Sep-15	767.6		332.7	736.1	
Oct-15	925.5		469.8	956.0	
Nov-15	1,084.0		759.2	1,114.8	
Dec-15	1,384.8	11,126.7	947.9	1,393.7	11,354.5
Jan-16	1,073.3		827.6	1,172.3	
Feb-16	1,045.3		688.0	1,186.1	
Mar-16	928.6		611.6	1,049.5	
Apr-16	1,012.8		386.4	1,109.3	
May-16	707.6		252.1	728.6	
Jun-16	488.1		119.0	509.2	
Jul-16	718.0		79.2	729.6	
Aug-16	557.4		111.5	580.1	
Sep-16	738.9		278.8	749.0	
Oct-16	779.9		604.3	706.8	
Nov-16	952.6		694.7	1,033.0	
Dec-16	1,082.2	10,084.8	1,056.2	1,007.7	10,561.1
Jan-17	1,631.7		975.9	1,616.3	
Feb-17	961.8		864.8	966.3	
Mar-17	1,411.6		947.0	1,274.0	
Apr-17	878.0		455.5	921.2	
May-17	702.7		294.8	690.8	
Jun-17	697.0		164.5	683.1	
Jul-17	587.0		127.6	561.3	
Aug-17	681.0		115.2	700.8	
Sep-17	711.0		269.7	728.1	
Oct-17	884.4		509.9	883.9	
Nov-17	922.3		979.6	783.2	
Dec-17	1,227.8	11,296.2	932.1	1,249.0	11,058.0
Jan-18	1,735.9		1,000.0	1,702.0	
Feb-18	1,390.5		1,017.3	1,277.5	
Mar-18	1,243.2		788.7	1,227.6	
Apr-18	944.0		552.3	912.6	
May-18	818.2		294.7	806.3	
Jun-18	616.9		170.0	598.8	
Jul-18	562.2		75.7	576.6	
Aug-18	690.1		130.1	698.4	
Sep-18	713.5		349.2	669.4	
Oct-18	843.4		475.8	869.2	
Nov-18	1,104.4		695.1	1,184.5	
Dec-18	812.4	11,474.6	840.5	904.1	11,426.9
Jan-19	1,778.9		998.1	1,746.5	
Feb-19	1,188.1		997.2	1,090.6	
Mar-19	994.6		610.4	1,116.4	
Apr-19	762.0		473.8	791.1	
May-19	847.2		229.1	885.9	
Jun-19	580.4		134.2	589.9	
Jul-19	526.0		52.4	558.2	
Aug-19	724.9		171.6	701.2	
Sep-19	622.6		239.3	663.1	
Oct-19	1,009.4		557.4	972.4	
Nov-19	946.1		687.2	1,032.4	
Dec-19	1,147.7	11,127.9	839.8	1,239.9	11,387.6
Jan-20	1,615.7		1,235.8	1,400.1	

Regression Output:

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.859569674							
R Square	0.738860025							
Adjusted R Square	0.736646974							
Standard Error	152.0993745							
Observations	120							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	7723704.958	7723704.958	333.8649434	3.35009E-36			
Residual	118	2729837.927	23134.21972					
Total	119	10453542.89						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	523.8635446	26.2167884	19.98198775	1.12583E-39	471.9471661	575.7799232	471.9471661	575.7799232
MHDD	0.770608817	0.042174366	18.27197153	3.35009E-36	0.68709209	0.854125543	0.68709209	0.854125543

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(11387.6 / 11058) \wedge (1/2) - 1 = 1.5\%$

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

Residential - Yukon - Carmacks

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,269.9		847.2	1,287.9		
Mar-20	1,015.3		849.6	952.7		
Apr-20	1,057.7		500.7	1,066.1		
May-20	871.9		271.5	877.9		
Jun-20	669.3		189.0	636.4		
Jul-20	678.7		122.3	657.1		
Aug-20	600.5		185.6	566.0		
Sep-20	680.9		298.9	675.6		
Oct-20	1,026.4		596.6	959.2		
Nov-20	998.4		899.0	921.4		
Dec-20	1,170.2	11,654.9	863.2	1,244.5	11,245.0	
Jan-21	1,435.2		887.5	1,488.0		
Feb-21	1,352.2		1,051.4	1,212.9		
Mar-21	1,101.8		821.5	1,060.9		
Apr-21	1,091.4		565.1	1,050.1		
May-21	723.8		337.8	684.7		
Jun-21	606.4		127.4	621.1		
Jul-21	636.8		87.3	642.2		
Aug-21	565.1		153.2	555.6		
Sep-21	764.2		320.9	741.9		
Oct-21	818.2		523.3	807.5		
Nov-21	991.1		877.4	930.8		
Dec-21	1,212.5	11,304.8	1,131.7	1,079.8	10,875.6	
Jan-22	1,465.1		1,010.7	1,423.0		
Feb-22	1,125.0		731.0	1,232.6		
Mar-22	982.3		678.3	1,051.8		
Apr-22	1,043.8		588.6	984.4		
May-22	605.7		356.8	546.0		
Jun-22	708.4		119.9	728.8		
Jul-22	538.1		96.5	536.4		
Aug-22	522.5		108.0	547.9		
Sep-22	729.9		258.4	755.7		
Oct-22	756.3		452.2	800.3		
Nov-22	943.2		769.6	966.0		
Dec-22	1,167.8	10,588.1	1,121.0	1,043.3	10,616.2	
Jan-23	1,428.2		799.5	1,548.8		
Feb-23	1,091.5		826.3	1,125.7		
Mar-23	1,131.0		821.1	1,090.4		
Apr-23	999.0					
May-23	554.1					
Jun-23	739.6					
Jul-23	544.4					
Aug-23	556.0					
Sep-23	766.9					
Oct-23	812.2					
Nov-23	980.2					
Dec-23	1,058.8	10,661.8			10,776.0	
Jan-24	1,571.7					
Feb-24	1,142.3					
Mar-24	1,106.6					
Apr-24	1,013.8					
May-24	562.3					
Jun-24	750.5					
Jul-24	552.4					
Aug-24	564.2					
Sep-24	778.3					
Oct-24	824.2					
Nov-24	994.7					
Dec-24	1,074.4	10,935.4			10,935.4	

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

Residential - Yukon - Destruction Bay

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	868.1		852.0	870.5	
Feb-13	724.1		665.4	794.0	
Mar-13	638.8		851.1	610.7	
Apr-13	674.9		639.9	631.2	
May-13	511.9		294.0	506.9	
Jun-13	496.3		112.4	507.9	
Jul-13	505.1		88.2	507.2	
Aug-13	460.4		106.5	472.1	
Sep-13	482.9		264.3	492.3	
Oct-13	527.6		388.8	568.7	
Nov-13	563.5		856.5	543.9	
Dec-13	769.4	7,224.0	1,008.2	752.8	7,258.2
Jan-14	937.9		745.8	1,009.5	
Feb-14	728.2		992.4	686.7	
Mar-14	794.9		855.1	765.4	
Apr-14	608.3		499.8	612.3	
May-14	551.3		269.5	554.6	
Jun-14	463.0		200.5	444.6	
Jul-14	506.2		98.0	504.9	
Aug-14	326.7		144.0	325.6	
Sep-14	513.2		307.1	508.0	
Oct-14	367.5		515.6	365.4	
Nov-14	570.6		772.8	579.6	
Dec-14	627.2	6,995.0	854.4	663.0	7,019.7
Jan-15	909.9		927.0	919.8	
Feb-15	718.0		851.4	724.6	
Mar-15	592.8		671.3	625.9	
Apr-15	588.6		453.5	608.4	
May-15	479.4		192.9	508.9	
Jun-15	415.9		127.2	422.4	
Jul-15	475.7		115.7	468.4	
Aug-15	374.6		183.2	360.2	
Sep-15	539.3		332.7	525.4	
Oct-15	477.6		469.8	491.0	
Nov-15	642.8		759.2	656.4	
Dec-15	768.2	6,982.8	947.9	772.2	7,083.6
Jan-16	762.3		827.6	806.0	
Feb-16	604.9		688.0	667.1	
Mar-16	663.4		611.6	716.8	
Apr-16	529.6		386.4	572.2	
May-16	444.2		252.1	453.5	
Jun-16	449.6		119.0	458.9	
Jul-16	489.9		79.2	495.0	
Aug-16	443.5		111.5	453.5	
Sep-16	365.7		278.8	370.2	
Oct-16	589.9		604.3	557.6	
Nov-16	598.1		694.7	633.7	
Dec-16	676.4	6,617.4	1,056.2	643.4	6,828.0
Jan-17	775.1		975.9	768.3	
Feb-17	705.3		864.8	707.3	
Mar-17	651.0		947.0	590.2	
Apr-17	680.9		455.5	700.0	
May-17	480.1		294.8	474.8	
Jun-17	530.9		164.5	524.8	
Jul-17	433.7		127.6	422.4	
Aug-17	455.7		115.2	464.4	
Sep-17	462.7		269.7	470.3	
Oct-17	470.8		509.9	470.6	
Nov-17	576.1		979.6	514.6	
Dec-17	720.8	6,943.1	832.1	730.1	6,837.8
Jan-18	893.8		1,000.0	878.8	
Feb-18	741.5		1,017.3	691.5	
Mar-18	718.0		788.7	711.1	
Apr-18	701.0		552.3	687.1	
May-18	477.2		294.7	472.0	
Jun-18	489.8		170.0	481.7	
Jul-18	428.5		75.7	434.8	
Aug-18	440.0		130.1	443.6	
Sep-18	536.7		349.2	517.1	
Oct-18	474.7		475.8	486.1	
Nov-18	528.7		695.1	564.1	
Dec-18	713.2	7,142.8	840.5	753.8	7,121.7
Jan-19	844.9		998.1	830.6	
Feb-19	890.8		997.2	847.7	
Mar-19	475.0		610.4	528.9	
Apr-19	580.4		473.8	593.3	
May-19	543.0		229.1	560.1	
Jun-19	416.1		134.2	420.3	
Jul-19	387.3		52.4	401.6	
Aug-19	462.0		171.6	451.5	
Sep-19	428.5		239.3	446.5	
Oct-19	458.8		557.4	442.4	
Nov-19	654.4		687.2	692.5	
Dec-19	544.2	6,685.5	839.8	585.0	6,800.3
Jan-20	715.1		1,235.8	619.8	

Regression Output:

SUMMARY OUTPUT					
Regression Statistics					
Multiple R	0.776476248				
R Square	0.602915364				
Adjusted R Square	0.59955024				
Standard Error	91.80496416				
Observations	120				
ANOVA					
	df	SS	MS	F	Significance F
Regression	1	1510037.058	1510037.058	179.1658666	2.02628E-25
Residual	118	994521.8705	8428.151445		
Total	119	2504558.928			
Coefficients					
	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	392.6156073	15.82407112	24.81128935	1.20616E-48	361.2796384
MHDD	0.340733582	0.025455832	13.38528545	2.02628E-25	0.290324103
	Lower 95.0%	Upper 95.0%	Lower 95.0%	Upper 95.0%	
Intercept	361.2796384	423.9515762	361.2796384	423.9515762	
MHDD	0.290324103	0.39114306	0.290324103	0.39114306	

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) ^{(1/(2019 - 2017)) - 1} =$
 $(6800.3 / 6837.8) ^{(1/2) - 1} =$ **-0.3%**

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

Residential - Yukon - Destruction Bay

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	684.5		847.2	692.4		
Mar-20	924.6		849.6	897.0		
Apr-20	805.7		500.7	809.4		
May-20	437.2		271.5	439.9		
Jun-20	440.0		189.0	425.5		
Jul-20	512.3		122.3	502.8		
Aug-20	389.2		185.6	374.0		
Sep-20	464.4		298.9	462.0		
Oct-20	504.4		596.6	474.7		
Nov-20	617.9		899.0	583.8		
Dec-20	787.0	7,282.3	863.2	819.8	7,101.0	
Jan-21	787.1		887.5	810.4		
Feb-21	684.1		1,051.4	622.5		
Mar-21	710.6		821.5	692.5		
Apr-21	592.8		565.1	574.6		
May-21	497.9		337.8	478.0		
Jun-21	411.5		127.4	418.0		
Jul-21	466.4		87.3	468.8		
Aug-21	324.3		153.2	320.1		
Sep-21	452.1		320.9	442.3		
Oct-21	412.9		523.3	408.2		
Nov-21	581.3		877.4	554.6		
Dec-21	593.0	6,514.1	1,131.7	534.3	6,324.3	
Jan-22	935.4		1,010.7	916.8		
Feb-22	551.7		731.0	599.3		
Mar-22	530.2		678.3	560.9		
Apr-22	466.8		588.6	440.6		
May-22	559.2		356.8	532.8		
Jun-22	459.6		119.9	468.7		
Jul-22	426.7		96.5	426.0		
Aug-22	372.5		108.0	383.7		
Sep-22	439.8		258.4	451.2		
Oct-22	478.7		452.2	498.2		
Nov-22	496.8		769.6	506.8		
Dec-22	569.4	6,286.8	1,121.0	514.4	6,299.2	
Jan-23	884.0		799.5	937.4		
Feb-23	584.8		826.3	599.9		
Mar-23	702.3		821.1	684.4		
Apr-23	439.4					
May-23	531.3					
Jun-23	467.4					
Jul-23	424.8					
Aug-23	382.6					
Sep-23	449.9					
Oct-23	496.9					
Nov-23	505.4					
Dec-23	513.0	6,381.8			6,432.3	
Jan-24	934.8					
Feb-24	598.3					
Mar-24	682.5					
Apr-24	438.2					
May-24	529.8					
Jun-24	466.1					
Jul-24	423.6					
Aug-24	381.6					
Sep-24	448.7					
Oct-24	495.5					
Nov-24	504.0					
Dec-24	511.5	6,414.7			6,414.7	

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

Residential - Yukon - Haines Junction

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	990.8		952.0	992.7	
Feb-13	851.0		665.4	646.7	
Mar-13	775.5		851.1	736.2	
Apr-13	729.3		639.9	668.2	
May-13	620.4		294.0	613.4	
Jun-13	632.9		112.4	649.1	
Jul-13	553.4		88.2	556.3	
Aug-13	387.2		106.5	403.5	
Sep-13	554.0		264.3	567.1	
Oct-13	550.7		388.8	608.1	
Nov-13	622.8		856.5	595.5	
Dec-13	819.7	8,087.6	1,008.2	796.5	8,135.3
Jan-14	1,024.4		745.8	1,124.5	
Feb-14	733.8		992.4	675.8	
Mar-14	844.8		855.1	803.6	
Apr-14	635.8		499.8	641.4	
May-14	627.0		269.5	631.7	
Jun-14	523.0		200.5	497.2	
Jul-14	519.9		98.0	518.2	
Aug-14	494.3		144.0	492.9	
Sep-14	556.2		307.1	549.0	
Oct-14	541.6		515.6	538.6	
Nov-14	602.3		772.8	614.9	
Dec-14	825.1	7,928.3	854.4	875.1	7,962.8
Jan-15	974.7		927.0	988.6	
Feb-15	910.6		851.4	919.8	
Mar-15	632.5		671.3	678.7	
Apr-15	724.0		453.5	751.6	
May-15	493.9		192.9	535.0	
Jun-15	513.3		127.2	522.4	
Jul-15	524.5		115.7	514.3	
Aug-15	462.5		183.2	442.3	
Sep-15	585.5		332.7	566.0	
Oct-15	548.3		469.8	567.2	
Nov-15	650.2		759.2	669.2	
Dec-15	868.8	7,888.6	947.9	874.3	8,029.4
Jan-16	932.4		827.6	993.5	
Feb-16	777.1		688.0	864.0	
Mar-16	742.0		611.6	816.7	
Apr-16	711.9		386.4	771.4	
May-16	550.7		252.1	563.6	
Jun-16	550.8		119.0	563.9	
Jul-16	541.7		79.2	548.9	
Aug-16	497.1		111.5	511.1	
Sep-16	453.8		278.8	460.0	
Oct-16	643.7		604.3	598.5	
Nov-16	670.5		694.7	720.2	
Dec-16	770.7	7,842.3	1,056.2	724.7	8,136.5
Jan-17	1,206.7		975.9	1,197.3	
Feb-17	847.7		864.8	850.5	
Mar-17	821.8		947.0	736.8	
Apr-17	758.9		455.5	785.6	
May-17	605.9		294.8	598.5	
Jun-17	606.5		164.5	597.9	
Jul-17	513.4		127.6	497.5	
Aug-17	576.9		115.2	589.1	
Sep-17	448.2		269.7	458.8	
Oct-17	559.6		509.9	559.3	
Nov-17	715.3		979.6	629.3	
Dec-17	897.5	8,558.3	932.1	910.5	8,411.2
Jan-18	1,091.8		1,000.0	1,070.9	
Feb-18	927.5		1,017.3	857.7	
Mar-18	867.0		788.7	857.4	
Apr-18	860.9		552.3	841.5	
May-18	586.8		294.7	579.5	
Jun-18	542.1		170.0	530.9	
Jul-18	547.7		75.7	556.5	
Aug-18	491.2		130.1	496.4	
Sep-18	575.0		349.2	547.7	
Oct-18	555.4		475.8	571.3	
Nov-18	718.8		695.1	768.3	
Dec-18	800.3	8,564.5	840.5	856.9	8,535.0
Jan-19	1,102.3		998.1	1,082.3	
Feb-19	1,016.0		997.2	955.7	
Mar-19	886.9		610.4	962.2	
Apr-19	745.6		473.8	763.6	
May-19	718.2		229.1	742.1	
Jun-19	590.9		134.2	596.7	
Jul-19	529.2		52.4	549.1	
Aug-19	518.1		171.6	503.5	
Sep-19	559.6		239.3	584.6	
Oct-19	530.0		557.4	507.1	
Nov-19	878.6		687.2	931.8	
Dec-19	863.8	8,939.2	839.8	920.8	9,099.7
Jan-20	1,080.8		1,235.8	947.6	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.789184066					
R Square	0.622811489					
Adjusted R Square	0.619614977					
Standard Error	122.9859516					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	2947074.935	2947074.935	194.8409181	9.60913E-27	
Residual	118	1784814.225	15125.54428			
Total	119	4731889.161				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	465.2661199	21.19861886	21.94794496	1.79547E-43	-423.2870833	507.2451566
MHDD	0.476010711	0.034101748	13.95854284	9.60913E-27	0.408479966	0.543541456

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(9099.7 / 8411.2)^{(1/2)} - 1 = 4.0\%$

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

Residential - Yukon - Haines Junction

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,108.8		847.2	1,119.9		
Mar-20	852.8		849.6	814.2		
Apr-20	1,193.9		500.7	1,199.1		
May-20	650.1		271.5	653.8		
Jun-20	555.0		189.0	534.8		
Jul-20	605.3		122.3	592.0		
Aug-20	519.5		185.6	498.2		
Sep-20	537.2		298.9	533.9		
Oct-20	646.7		596.6	605.1		
Nov-20	802.2		899.0	754.7		
Dec-20	948.0	9,500.3	863.2	993.9	9,247.1	
Jan-21	1,233.6		887.5	1,266.2		
Feb-21	896.0		1,051.4	810.0		
Mar-21	1,021.8		821.5	996.5		
Apr-21	901.5		565.1	876.0		
May-21	707.8		337.8	680.0		
Jun-21	650.8		127.4	659.9		
Jul-21	562.1		87.3	565.4		
Aug-21	462.9		153.2	457.0		
Sep-21	535.2		320.9	521.5		
Oct-21	593.2		523.3	586.6		
Nov-21	820.6		877.4	783.4		
Dec-21	1,052.8	9,438.4	1,131.7	970.9	9,173.2	
Jan-22	1,184.1		1,010.7	1,158.1		
Feb-22	1,196.2		731.0	1,262.7		
Mar-22	833.5		678.3	876.4		
Apr-22	787.3		588.6	750.6		
May-22	761.4		356.8	724.5		
Jun-22	598.6		119.9	611.2		
Jul-22	403.6		96.5	402.5		
Aug-22	637.5		108.0	653.2		
Sep-22	539.0		258.4	555.0		
Oct-22	668.4		452.2	695.6		
Nov-22	657.9		769.6	672.0		
Dec-22	936.4	9,203.9	1,121.0	859.5	9,221.3	
Jan-23	1,210.7		799.5	1,285.2		
Feb-23	970.3		826.3	991.4		
Mar-23	876.1		821.1	851.1		
Apr-23	780.7					
May-23	753.6					
Jun-23	635.7					
Jul-23	418.7					
Aug-23	679.4					
Sep-23	577.3					
Oct-23	723.5					
Nov-23	698.9					
Dec-23	894.0	9,218.9			9,289.5	
Jan-24	1,336.8					
Feb-24	1,031.2					
Mar-24	885.2					
Apr-24	812.0					
May-24	783.8					
Jun-24	661.2					
Jul-24	435.5					
Aug-24	706.7					
Sep-24	600.4					
Oct-24	752.6					
Nov-24	727.0					
Dec-24	929.9	9,662.2			9,662.2	

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

Residential - Yukon - Keno City

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	524.3		852.0	525.4	
Feb-13	373.4		665.4	427.9	
Mar-13	472.0		851.1	450.0	
Apr-13	563.1		639.9	529.1	
May-13	327.9		294.0	324.0	
Jun-13	278.9		112.4	287.9	
Jul-13	359.9		88.2	361.5	
Aug-13	196.7		106.5	205.8	
Sep-13	280.4		264.3	287.7	
Oct-13	359.3		388.8	391.3	
Nov-13	432.8		856.5	417.6	
Dec-13	406.0	4,574.7	1,008.2	393.1	4,601.3
Jan-14	489.4		745.8	545.2	
Feb-14	449.6		992.4	417.2	
Mar-14	396.2		855.1	373.2	
Apr-14	418.8		499.2	421.9	
May-14	288.3		269.5	290.9	
Jun-14	341.8		200.5	327.4	
Jul-14	304.0		98.0	303.0	
Aug-14	288.1		144.0	287.3	
Sep-14	517.9		307.1	513.9	
Oct-14	540.8		515.6	539.2	
Nov-14	408.6		772.8	415.5	
Dec-14	504.5	4,948.0	854.4	532.4	4,967.2
Jan-15	603.7		927.0	611.4	
Feb-15	291.3		851.4	296.4	
Mar-15	437.6		671.3	463.4	
Apr-15	119.7		453.5	135.1	
May-15	351.7		192.9	374.6	
Jun-15	120.1		127.2	125.2	
Jul-15	386.4		115.7	380.8	
Aug-15	263.5		183.2	252.3	
Sep-15	388.2		332.7	377.4	
Oct-15	377.4		469.8	387.9	
Nov-15	400.4		759.2	411.0	
Dec-15	530.9	4,270.9	947.9	534.0	4,349.3
Jan-16	258.8		827.6	292.9	
Feb-16	499.8		688.0	548.3	
Mar-16	294.4		611.6	336.0	
Apr-16	415.7		386.4	449.0	
May-16	274.0		252.1	281.2	
Jun-16	302.6		119.0	309.9	
Jul-16	273.3		79.2	277.3	
Aug-16	300.6		111.5	308.3	
Sep-16	521.0		278.8	524.5	
Oct-16	339.9		604.3	314.7	
Nov-16	573.6		694.7	601.3	
Dec-16	509.9	4,563.6	1,056.2	484.2	4,727.6
Jan-17	591.0		975.9	585.7	
Feb-17	458.4		864.8	459.9	
Mar-17	544.9		947.0	497.6	
Apr-17	410.0		455.5	424.9	
May-17	313.9		294.8	309.8	
Jun-17	389.5		164.5	384.7	
Jul-17	229.4		127.6	220.5	
Aug-17	380.1		115.2	386.9	
Sep-17	453.2		269.7	459.1	
Oct-17	419.4		509.9	419.3	
Nov-17	498.3		979.6	450.4	
Dec-17	590.1	5,278.1	932.1	597.4	5,196.1
Jan-18	250.8		1,000.0	239.1	
Feb-18	524.2		1,017.3	485.2	
Mar-18	506.3		788.7	500.9	
Apr-18	433.6		552.3	422.8	
May-18	315.6		294.7	311.5	
Jun-18	351.2		170.0	345.0	
Jul-18	512.1		75.7	517.1	
Aug-18	337.3		130.1	340.2	
Sep-18	567.5		349.2	552.3	
Oct-18	398.3		475.8	407.2	
Nov-18	481.9		695.1	509.5	
Dec-18	580.4	5,259.0	840.5	611.9	5,242.6
Jan-19	405.4		998.1	394.3	
Feb-19	584.2		997.2	550.6	
Mar-19	529.4		610.4	571.3	
Apr-19	429.4		473.8	439.4	
May-19	469.3		229.1	482.6	
Jun-19	404.0		134.2	407.2	
Jul-19	256.9		52.4	268.0	
Aug-19	419.6		171.6	411.5	
Sep-19	491.5		239.3	505.5	
Oct-19	423.6		557.4	410.9	
Nov-19	535.3	5,905.4	687.2	565.0	5,994.8
Dec-19	956.9		839.8	988.7	
Jan-20	496.8		1,235.8	422.6	

Regression Output:

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.538256562							
R Square	0.289720127							
Adjusted R Square	0.283700806							
Standard Error	137.936635							
Observations	120							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	915778.4495	915778.4495	48.13169603	2.29068E-10			
Residual	118	2245128.802	19026.51527					
Total	119	3160907.251						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	315.3070699	23.77561107	13.26178616	3.9229E-25	268.2248871	362.3892527	268.2248871	362.3892527
MHDD	0.265348322	0.038247298	6.937701063	2.29068E-10	0.189608258	0.341088385	0.189608258	0.341088385

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(5994.8 / 5196.1)^{(1/2)} - 1 = 7.4\%$

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

Residential - Yukon - Keno City

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	541.1		847.2	547.3		
Mar-20	322.6		849.6	301.0		
Apr-20	259.7		500.7	262.6		
May-20	428.3		428.3	430.4		
Jun-20	322.3		189.0	311.0		
Jul-20	317.1		122.3	309.7		
Aug-20	377.5		185.6	365.6		
Sep-20	563.0		298.9	561.2		
Oct-20	598.4		596.6	575.2		
Nov-20	733.1		899.0	706.6		
Dec-20	839.1	5,799.0	863.2	864.7	5,657.8	
Jan-21	769.0		887.5	787.2		
Feb-21	491.9		1,051.4	443.9		
Mar-21	979.5		821.5	965.4		
Apr-21	511.4		565.1	497.1		
May-21	585.7		337.8	570.2		
Jun-21	410.2		127.4	415.2		
Jul-21	523.1		87.3	524.9		
Aug-21	462.7		153.2	459.5		
Sep-21	169.9		320.9	162.2		
Oct-21	603.1		523.3	599.4		
Nov-21	956.2		877.4	935.4		
Dec-21	763.7	7,226.3	1,131.7	718.0	7,078.5	
Jan-22	913.6		1,010.7	899.1		
Feb-22	676.1		731.0	713.2		
Mar-22	540.8		678.3	564.7		
Apr-22	682.9		588.6	662.5		
May-22	447.6		356.8	427.1		
Jun-22	452.0		119.9	459.1		
Jul-22	284.6		96.5	284.0		
Aug-22	456.8		108.0	465.5		
Sep-22	397.3		258.4	406.2		
Oct-22	524.0		452.2	539.2		
Nov-22	672.4		769.6	680.2		
Dec-22	753.5	6,801.8	1,121.0	710.7	6,811.4	
Jan-23	530.1		799.5	571.6		
Feb-23	650.8		826.3	662.6		
Mar-23	605.9		821.1	592.0		
Apr-23	733.5					
May-23	480.8					
Jun-23	485.6					
Jul-23	305.7					
Aug-23	490.7					
Sep-23	426.8					
Oct-23	562.9					
Nov-23	722.2					
Dec-23	809.4	6,804.3			6,843.6	
Jan-24	569.3					
Feb-24	699.1					
Mar-24	650.9					
Apr-24	787.9					
May-24	516.4					
Jun-24	521.5					
Jul-24	328.4					
Aug-24	527.0					
Sep-24	458.4					
Oct-24	604.6					
Nov-24	775.7					
Dec-24	869.4	7,308.6			7,308.6	

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

Residential - Yukon - Lower Post

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,365.5		1,129.1	1,364.1	
Feb-13	760.6		765.8	871.8	
Mar-13	1,157.2		950.7	1,121.7	
Apr-13	982.1		690.1	924.6	
May-13	363.2		304.5	357.2	
Jun-13	698.5		96.3	715.9	
Jul-13	432.2		105.1	421.5	
Aug-13	685.2		82.2	709.3	
Sep-13	334.0		239.1	362.4	
Oct-13	647.0		490.2	671.9	
Nov-13	632.5		1,021.3	601.4	
Dec-13	1,121.1	9,179.1	1,248.8	1,100.2	9,221.9
Jan-14	1,343.0		937.7	1,429.7	
Feb-14	1,005.4		1,204.4	914.7	
Mar-14	1,038.9		1,008.9	976.6	
Apr-14	914.5		570.5	912.0	
May-14	752.2		331.1	733.9	
Jun-14	547.6		186.8	523.6	
Jul-14	583.8		87.6	581.1	
Aug-14	486.4		144.8	481.6	
Sep-14	545.5		295.8	547.9	
Oct-14	639.8		539.7	641.9	
Nov-14	630.9		936.4	638.9	
Dec-14	937.6	9,425.9	1,176.7	949.9	9,331.9
Jan-15	1,115.7		1,022.8	1,163.3	
Feb-15	824.6		956.7	847.9	
Mar-15	816.2		766.3	865.6	
Apr-15	537.5		497.4	568.7	
May-15	543.9		210.8	580.9	
Jun-15	431.2		111.8	441.6	
Jul-15	529.8		92.4	524.9	
Aug-15	475.6		147.5	469.6	
Sep-15	610.7		336.1	594.5	
Oct-15	652.3		523.7	661.9	
Nov-15	770.8		672.4	887.8	
Dec-15	829.3	8,039.4	1,160.3	849.1	8,270.7
Jan-16	1,197.6		1,099.3	1,209.9	
Feb-16	900.2		930.8	935.4	
Mar-16	848.4		724.3	917.1	
Apr-16	714.0		413.0	784.0	
May-16	579.9		252.4	597.8	
Jun-16	581.0		100.8	596.3	
Jul-16	510.0		45.0	527.0	
Aug-16	529.7		117.1	537.6	
Sep-16	572.2		301.7	571.9	
Oct-16	638.2		623.1	602.9	
Nov-16	770.8		614.0	789.1	
Dec-16	1,073.8	8,916.7	1,300.2	1,029.2	9,098.3
Jan-17	1,164.4		1,081.0	1,185.1	
Feb-17	918.6		925.7	956.2	
Mar-17	981.0		1,015.8	915.5	
Apr-17	704.4		523.7	723.4	
May-17	611.5		295.8	609.4	
Jun-17	637.5		150.0	630.2	
Jul-17	517.7		101.9	508.4	
Aug-17	490.8		124.8	495.2	
Sep-17	440.2		254.7	461.5	
Oct-17	510.6		514.6	524.3	
Nov-17	764.5		1,120.2	687.9	
Dec-17	771.8	8,512.8	1,176.2	784.3	8,481.5
Jan-18	1,015.8		1,214.2	975.3	
Feb-18	897.4		1,127.6	842.0	
Mar-18	883.9		895.5	873.8	
Apr-18	813.6		622.5	787.2	
May-18	492.8		276.7	499.5	
Jun-18	523.3		136.3	522.3	
Jul-18	439.8		68.0	446.1	
Aug-18	434.7		123.7	439.7	
Sep-18	321.1		410.9	270.5	
Oct-18	525.3		551.0	522.3	
Nov-18	718.7		872.6	756.0	
Dec-18	763.0	7,829.4	1,175.5	775.8	7,710.5
Jan-19	951.2		1,105.0	961.0	
Feb-19	942.7		1,116.0	892.7	
Mar-19	756.5		755.4	810.8	
Apr-19	555.9		519.4	576.9	
May-19	498.7		229.6	527.1	
Jun-19	464.5		152.8	456.0	
Jul-19	410.4		58.6	421.1	
Aug-19	465.2		198.9	435.5	
Sep-19	361.1		281.6	370.0	
Oct-19	455.1		575.9	440.6	
Nov-19	686.5	7,257.9	871.9	724.1	7,396.8
Dec-19	710.0		1,049.5	780.9	
Jan-20	1,174.2		1,353.4	1,069.6	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.788212843					
R Square	0.621279486					
Adjusted R Square	0.61806999					
Standard Error	146.8348356					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	4173576.649	4173576.649	193.5754115	1.22199E-26	
Residual	118	2544135.336	21560.46895			
Total	119	6717711.985				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	404.7679036	23.98683145	16.87458823	3.03884E-33	357.2674469	452.2683603
MHDD	0.460232041	0.033078953	13.91313809	1.22199E-26	0.394726708	0.525737373

10 Year	
Month	Normal HDD
JAN	1126.1
FEB	1007.3
MAR	873.6
APR	565.1
MAY	291.3
JUN	134.2
JUL	81.8
AUG	134.5
SEP	300.9
OCT	544.4
NOV	953.7
DEC	1203.4

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) ^{(1/(2019 - 2017)) - 1} =$
 $(7396.8 / 8481.5) ^{(1/2)} - 1 =$ **-6.6%**

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

Residential - Yukon - Lower Post

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	744.3		957.7	767.1		
Mar-20	637.3		889.6	629.9		
Apr-20	745.3		569.8	743.1		
May-20	448.7		284.0	452.1		
Jun-20	434.8		176.5	415.3		
Jul-20	447.2		107.5	435.4		
Aug-20	439.0		177.4	419.3		
Sep-20	397.6		317.7	389.9		
Oct-20	566.8		623.5	530.4		
Nov-20	717.6		1,030.7	682.1		
Dec-20	672.6	7,425.3	1,040.3	747.6	7,281.8	
Jan-21	1,003.1		1,117.9	1,006.9		
Feb-21	919.2		1,159.7	849.1		
Mar-21	760.9		886.8	754.8		
Apr-21	724.3		603.7	706.5		
May-21	452.4		358.1	421.7		
Jun-21	447.2		114.7	456.1		
Jul-21	461.5		87.5	458.9		
Aug-21	386.3		133.5	386.8		
Sep-21	458.4		320.2	449.5		
Oct-21	467.8		553.5	463.6		
Nov-21	583.2		931.6	593.4		
Dec-21	879.0	7,543.3	1,454.2	763.5	7,310.9	
Jan-22	1,300.4		1,200.8	1,266.0		
Feb-22	691.8		928.8	728.0		
Mar-22	791.1		842.6	805.4		
Apr-22	807.7		641.0	772.8		
May-22	516.7		370.3	480.3		
Jun-22	422.5		116.2	430.8		
Jul-22	433.4		64.0	441.5		
Aug-22	365.6		94.8	383.8		
Sep-22	451.5		251.5	474.3		
Oct-22	572.6		448.8	616.6		
Nov-22	486.0		950.2	487.7		
Dec-22	814.5	7,653.8	1,252.1	792.1	7,679.3	
Jan-23	1,041.0		931.1	1,130.8		
Feb-23	770.8		945.4	799.3		
Mar-23	798.2		893.9	788.9		
Apr-23	721.7					
May-23	448.6					
Jun-23	402.3					
Jul-23	412.3					
Aug-23	359.5					
Sep-23	442.9					
Oct-23	575.9					
Nov-23	455.4					
Dec-23	739.7	7,167.3			7,276.2	
Jan-24	1,056.0					
Feb-24	746.4					
Mar-24	736.7					
Apr-24	674.0					
May-24	418.9					
Jun-24	375.7					
Jul-24	385.1					
Aug-24	334.7					
Sep-24	413.6					
Oct-24	537.8					
Nov-24	425.3					
Dec-24	690.8	6,795.0			6,795.0	

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

Residential - Yukon - Marsh Lake

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,030.8		852.0	1,033.8	
Feb-13	1,020.2		665.4	1,173.0	
Mar-13	885.4		851.1	823.8	
Apr-13	823.2		639.9	727.6	
May-13	650.7		294.0	639.7	
Jun-13	531.7		112.4	557.0	
Jul-13	488.7		88.2	493.3	
Aug-13	574.7		106.5	600.3	
Sep-13	452.1		264.3	472.7	
Oct-13	717.3		388.8	807.1	
Nov-13	890.0		856.5	847.3	
Dec-13	1,144.2	9,208.9	1,008.2	1,107.9	9,283.5
Jan-14	1,034.0		745.8	1,190.6	
Feb-14	981.4		992.4	890.7	
Mar-14	981.7		855.1	817.2	
Apr-14	785.7		499.2	794.4	
May-14	504.8		269.5	512.1	
Jun-14	501.4		200.5	461.1	
Jul-14	511.3		98.0	508.5	
Aug-14	486.0		144.0	483.7	
Sep-14	537.9		307.1	526.6	
Oct-14	669.5		515.6	664.8	
Nov-14	761.6		772.8	781.2	
Dec-14	1,119.5	8,774.9	854.4	1,197.8	8,828.9
Jan-15	989.1		927.0	1,010.7	
Feb-15	1,012.7		851.4	1,027.0	
Mar-15	702.1		671.3	774.4	
Apr-15	754.3		453.5	797.6	
May-15	528.1		192.9	592.5	
Jun-15	451.8		127.2	466.1	
Jul-15	528.7		115.7	512.8	
Aug-15	475.3		183.2	443.8	
Sep-15	655.4		332.7	625.1	
Oct-15	624.3		469.8	653.7	
Nov-15	857.3		759.2	887.0	
Dec-15	1,102.5	8,681.6	947.9	1,111.2	8,901.8
Jan-16	936.7		827.6	1,032.4	
Feb-16	842.3		688.0	978.3	
Mar-16	830.2		611.6	947.1	
Apr-16	609.9		386.4	703.1	
May-16	523.3		252.1	543.6	
Jun-16	522.0		119.0	542.5	
Jul-16	459.4		79.2	470.6	
Aug-16	502.0		111.5	523.9	
Sep-16	580.2		278.8	589.9	
Oct-16	690.5		604.3	619.8	
Nov-16	839.4		694.7	917.2	
Dec-16	1,051.5	8,387.5	1,056.2	979.5	8,847.8
Jan-17	1,165.5		975.9	1,150.7	
Feb-17	1,170.7		864.8	1,175.0	
Mar-17	1,137.0		947.0	1,004.0	
Apr-17	719.9		455.5	761.6	
May-17	600.6		294.8	589.1	
Jun-17	545.1		164.5	531.7	
Jul-17	480.8		127.6	455.9	
Aug-17	573.6		115.2	592.7	
Sep-17	466.8		269.7	483.4	
Oct-17	632.1		509.9	631.7	
Nov-17	961.9		979.6	827.5	
Dec-17	852.1	9,406.1	832.1	932.6	9,175.9
Jan-18	1,355.3		1,000.0	1,322.6	
Feb-18	1,247.2		1,017.3	1,137.9	
Mar-18	933.7		788.7	918.6	
Apr-18	894.6		552.3	864.2	
May-18	658.0		294.7	646.5	
Jun-18	527.3		170.0	509.7	
Jul-18	481.5		75.7	495.3	
Aug-18	466.4		130.1	474.4	
Sep-18	607.3		349.2	564.6	
Oct-18	643.7		475.8	668.7	
Nov-18	894.4		695.1	971.9	
Dec-18	928.8	9,638.1	840.5	1,017.4	9,592.0
Jan-19	1,221.7		998.1	1,190.4	
Feb-19	1,269.6		997.2	1,175.3	
Mar-19	944.4		610.4	1,062.1	
Apr-19	738.5		473.8	766.6	
May-19	548.1		229.1	585.5	
Jun-19	531.2		134.2	540.3	
Jul-19	437.1		52.4	468.3	
Aug-19	524.8		171.6	501.9	
Sep-19	490.9		239.3	530.1	
Oct-19	627.3		557.4	591.6	
Nov-19	907.5	9,187.9	687.2	990.9	9,438.9
Dec-19	946.7		839.8	1,035.9	
Jan-20	1,343.2		1,235.8	1,134.8	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.931933934					
R Square	0.868500858					
Adjusted R Square	0.867386458					
Standard Error	96.21215348					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	7214217.145	7214217.145	779.3442571	8.1583E-54	
Residual	118	1092299.86	9256.778477			
Total	119	8306517.006				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	385.3228419	16.58372151	23.23500438	7.55386E-46	352.4825684	418.1631254
MHDD	0.744758967	0.026677865	27.91673794	8.1583E-54	0.691929531	0.797588403

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(9438.9 / 9175.9)^{(1/2) - 1} = 1.4\%$

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

Residential - Yukon - Marsh Lake

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,141.0		847.2	1,158.4		
Mar-20	1,002.6		849.6	942.1		
Apr-20	898.7		500.7	906.8		
May-20	643.8		271.5	649.6		
Jun-20	517.0		189.0	485.2		
Jul-20	508.0		122.3	487.2		
Aug-20	542.6		185.6	509.3		
Sep-20	571.8		298.9	566.6		
Oct-20	785.1		596.6	720.1		
Nov-20	998.8		899.0	924.4		
Dec-20	1,137.3	10,089.8	863.2	1,209.0	9,693.6	
Jan-21	1,152.1		887.5	1,203.2		
Feb-21	1,315.5		1,051.4	1,180.8		
Mar-21	1,096.3		821.5	1,056.8		
Apr-21	948.2		565.1	908.4		
May-21	636.8		337.8	593.3		
Jun-21	532.3		127.4	546.5		
Jul-21	510.9		87.3	516.1		
Aug-21	525.6		153.2	516.4		
Sep-21	546.5		320.9	524.9		
Oct-21	738.9		523.3	728.5		
Nov-21	943.4		877.4	885.1		
Dec-21	1,198.5	10,145.1	1,131.7	1,070.3	9,730.2	
Jan-22	1,629.7		1,010.7	1,589.0		
Feb-22	1,042.0		731.0	1,146.0		
Mar-22	911.9		678.3	979.1		
Apr-22	949.9		588.6	892.5		
May-22	618.1		356.8	560.4		
Jun-22	484.2		119.9	503.9		
Jul-22	494.0		96.5	492.3		
Aug-22	467.5		108.0	492.0		
Sep-22	629.1		258.4	654.0		
Oct-22	564.9		452.2	607.5		
Nov-22	890.4		769.6	912.4		
Dec-22	1,161.8	9,843.4	1,121.0	1,041.5	9,870.6	
Jan-23	1,346.8		799.5	1,463.4		
Feb-23	967.3		826.3	1,000.3		
Mar-23	1,087.3		821.1	1,048.1		
Apr-23	905.2					
May-23	568.4					
Jun-23	511.1					
Jul-23	499.3					
Aug-23	499.0					
Sep-23	663.3					
Oct-23	616.1					
Nov-23	925.4					
Dec-23	1,056.4	9,645.6			9,756.0	
Jan-24	1,484.3					
Feb-24	1,014.5					
Mar-24	1,063.0					
Apr-24	918.1					
May-24	576.5					
Jun-24	518.4					
Jul-24	506.4					
Aug-24	506.1					
Sep-24	672.8					
Oct-24	624.9					
Nov-24	938.5					
Dec-24	1,071.4	9,894.8			9,894.8	

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

Residential - Yukon - Old Crow

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	818.8			852.0	821.7
Feb-13	900.1			865.4	896.7
Mar-13	725.9			851.1	887.0
Apr-13	676.2			639.9	615.8
May-13	606.9			294.0	600.0
Jun-13	630.1			112.4	646.1
Jul-13	427.0			88.2	429.9
Aug-13	473.0			106.5	489.2
Sep-13	493.8			264.3	506.8
Oct-13	615.3			388.8	672.1
Nov-13	685.1			856.5	658.1
Dec-13	727.7	7,781.0	1,008.2	704.8	7,828.1
Jan-14	985.8			745.8	1,084.8
Feb-14	705.6			992.4	648.3
Mar-14	812.8			855.1	772.0
Apr-14	707.5			499.8	713.1
May-14	705.7			269.5	710.3
Jun-14	494.4			200.5	468.9
Jul-14	622.2			98.0	620.4
Aug-14	419.2			144.0	417.7
Sep-14	358.7			307.1	351.5
Oct-14	607.7			515.6	604.8
Nov-14	662.8			772.8	675.2
Dec-14	765.7	7,848.1	854.4	815.2	7,882.2
Jan-15	956.9			927.0	970.5
Feb-15	789.9			851.4	798.9
Mar-15	862.2			671.3	908.0
Apr-15	770.1			453.5	797.4
May-15	537.8			192.9	578.5
Jun-15	443.5			127.2	452.5
Jul-15	498.8			115.7	488.7
Aug-15	436.9			183.2	416.9
Sep-15	550.7			332.7	531.5
Oct-15	532.7			469.8	551.4
Nov-15	615.7			759.2	634.5
Dec-15	667.8	7,662.9	947.9	673.2	7,802.1
Jan-16	849.1			827.6	909.5
Feb-16	715.3			688.0	801.2
Mar-16	717.3			611.6	791.1
Apr-16	761.2			386.4	820.1
May-16	584.1			252.1	596.9
Jun-16	479.6			119.0	492.5
Jul-16	529.0			79.2	536.1
Aug-16	396.1			111.5	409.9
Sep-16	550.2			278.8	556.3
Oct-16	511.9			604.3	467.2
Nov-16	606.6			694.7	655.7
Dec-16	846.1	7,546.3	1,056.2	800.6	7,837.2
Jan-17	902.8			975.9	893.5
Feb-17	804.3			864.8	807.0
Mar-17	759.5			947.0	675.5
Apr-17	881.4			455.5	907.8
May-17	690.0			294.8	682.7
Jun-17	563.3			164.5	554.8
Jul-17	429.7			127.6	414.0
Aug-17	390.2			115.2	402.3
Sep-17	529.7			269.7	540.2
Oct-17	525.6			509.9	525.3
Nov-17	621.2			979.6	536.3
Dec-17	853.9	7,951.6	932.1	866.8	7,806.2
Jan-18	805.0			1,000.0	784.3
Feb-18	995.1			1,017.3	926.1
Mar-18	723.0			788.7	713.5
Apr-18	696.9			552.3	677.7
May-18	605.8			294.7	598.5
Jun-18	553.6			170.0	542.5
Jul-18	411.8			75.7	420.6
Aug-18	506.2			130.1	511.2
Sep-18	429.4			349.2	402.4
Oct-18	548.4			475.8	564.2
Nov-18	826.7			695.1	875.7
Dec-18	779.0	7,880.8	940.5	840.5	7,851.6
Jan-19	899.2			998.1	879.4
Feb-19	1,081.0			997.2	1,021.4
Mar-19	606.7			610.4	681.0
Apr-19	815.7			473.8	833.4
May-19	660.5			229.1	684.2
Jun-19	543.1			134.2	548.8
Jul-19	392.7			52.4	412.4
Aug-19	453.4			171.6	438.9
Sep-19	534.4			239.3	559.2
Oct-19	390.0			557.4	367.4
Nov-19	752.4			687.2	805.1
Dec-19	791.0	7,920.0	839.8	847.4	8,078.6
Jan-20	1,073.1			1,235.8	941.4

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.755153576					
R Square	0.570256923					
Adjusted R Square	0.566615033					
Standard Error	135.6608934					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	2881728.295	2881728.295	156.5826667	2.20639E-23	
Residual	118	2171657.603	18403.878			
Total	119	5053385.898				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	432.3569014	23.38335018	18.48994683	1.18397E-36	386.051502	478.6623009
MHDD	0.470703742	0.037616277	12.51329959	2.20639E-23	0.396213273	0.545194211

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(8078.6 / 7806.2)^{(1/2)} - 1 = 1.7\%$

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

Residential - Yukon - Old Crow

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,020.8		847.2	1,031.8		
Mar-20	1,038.7		849.6	1,000.5		
Apr-20	621.4		500.7	626.6		
May-20	666.3		271.5	670.0		
Jun-20	600.5		189.0	580.4		
Jul-20	692.4		122.3	679.2		
Aug-20	536.5		185.6	515.5		
Sep-20	452.0		298.9	448.7		
Oct-20	421.9		596.6	380.8		
Nov-20	926.5		899.0	879.4		
Dec-20	909.5	8,959.5	863.2	954.8	8,709.2	
Jan-21	1,221.1		887.5	1,253.4		
Feb-21	1,009.2		1,051.4	924.1		
Mar-21	1,014.9		821.5	989.9		
Apr-21	1,161.0		565.1	1,135.8		
May-21	687.7		337.8	660.2		
Jun-21	625.4		127.4	634.4		
Jul-21	386.7		87.3	390.0		
Aug-21	375.4		153.2	369.6		
Sep-21	424.8		320.9	411.2		
Oct-21	577.9		523.3	571.3		
Nov-21	711.2		877.4	674.3		
Dec-21	864.8	9,060.1	1,131.7	783.7	8,797.9	
Jan-22	1,155.3		1,010.7	1,129.5		
Feb-22	818.3		731.0	884.0		
Mar-22	1,064.8		678.3	1,107.2		
Apr-22	1,027.4		588.6	991.2		
May-22	707.1		356.8	670.6		
Jun-22	528.3		119.9	540.7		
Jul-22	426.5		96.5	425.4		
Aug-22	399.4		108.0	414.9		
Sep-22	521.9		258.4	537.6		
Oct-22	596.1		452.2	623.0		
Nov-22	626.2		769.6	640.0		
Dec-22	1,185.0	9,056.2	1,121.0	1,109.0	9,073.3	
Jan-23	995.9		799.5	1,069.6		
Feb-23	655.0		826.3	675.8		
Mar-23	751.1		821.1	726.3		
Apr-23	1,008.3					
May-23	682.3					
Jun-23	550.1					
Jul-23	432.8					
Aug-23	422.1					
Sep-23	547.0					
Oct-23	633.8					
Nov-23	651.1					
Dec-23	1,128.2	8,457.5			8,527.3	
Jan-24	1,088.1					
Feb-24	687.5					
Mar-24	738.9					
Apr-24	1,025.7					
May-24	694.1					
Jun-24	559.6					
Jul-24	440.3					
Aug-24	429.4					
Sep-24	556.4					
Oct-24	644.8					
Nov-24	662.4					
Dec-24	1,147.7	8,674.8			8,674.8	

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

Residential - Yukon - Pelly Crossing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,184.6		852.0	1,187.2	
Feb-13	1,016.8		865.4	1,149.2	
Mar-13	907.0		851.1	853.7	
Apr-13	1,039.8		639.9	957.0	
May-13	877.2		294.0	867.7	
Jun-13	564.2		112.4	586.1	
Jul-13	606.9		88.2	610.8	
Aug-13	656.8		106.5	679.0	
Sep-13	667.4		264.3	685.3	
Oct-13	905.7		388.8	983.5	
Nov-13	940.4		856.5	903.4	
Dec-13	943.7	10,310.4	1,008.2	912.3	10,375.1
Jan-14	1,579.6		745.8	1,715.3	
Feb-14	1,191.5		992.4	1,113.0	
Mar-14	969.4		855.1	913.5	
Apr-14	868.5		499.8	876.1	
May-14	822.2		269.5	828.5	
Jun-14	627.2		200.5	592.3	
Jul-14	623.7		98.0	621.3	
Aug-14	636.8		144.0	634.8	
Sep-14	747.6		307.1	737.8	
Oct-14	920.4		515.6	916.4	
Nov-14	911.2		772.8	928.2	
Dec-14	1,263.7	11,162.0	854.4	1,331.5	11,208.7
Jan-15	1,147.2		927.0	1,165.9	
Feb-15	1,015.8		851.4	1,028.2	
Mar-15	953.5		671.3	1,016.2	
Apr-15	883.2		453.5	920.7	
May-15	562.3		192.9	618.1	
Jun-15	593.2		127.2	605.6	
Jul-15	635.5		115.7	621.7	
Aug-15	561.8		183.2	534.5	
Sep-15	677.3		332.7	651.0	
Oct-15	630.3		469.8	655.8	
Nov-15	841.7		759.2	967.4	
Dec-15	1,288.1	10,089.8	947.9	1,295.6	10,280.6
Jan-16	844.5		827.6	927.3	
Feb-16	901.4		688.0	1,019.2	
Mar-16	756.7		611.6	857.9	
Apr-16	841.3		386.4	922.1	
May-16	656.6		252.1	674.1	
Jun-16	603.7		119.0	621.4	
Jul-16	704.8		79.2	714.5	
Aug-16	451.2		111.5	470.2	
Sep-16	740.6		278.8	749.1	
Oct-16	729.5		604.3	688.2	
Nov-16	936.3		694.7	1,003.7	
Dec-16	1,187.7	9,354.3	1,056.2	1,125.3	9,753.0
Jan-17	1,545.5		975.9	1,532.7	
Feb-17	1,026.4		864.8	1,030.1	
Mar-17	1,225.0		947.0	1,109.8	
Apr-17	736.8		455.5	772.9	
May-17	705.9		294.8	695.9	
Jun-17	724.8		164.5	713.1	
Jul-17	562.0		127.6	540.5	
Aug-17	683.7		115.2	700.3	
Sep-17	664.2		269.7	678.6	
Oct-17	751.6		509.9	751.2	
Nov-17	963.4		979.6	847.0	
Dec-17	1,190.6	10,779.9	832.1	1,208.3	10,580.6
Jan-18	1,263.2		1,000.0	1,234.8	
Feb-18	1,205.2		1,017.3	1,110.5	
Mar-18	1,092.6		788.7	1,079.6	
Apr-18	752.8		552.3	726.5	
May-18	861.6		294.7	851.7	
Jun-18	546.9		170.0	531.7	
Jul-18	552.2		75.7	564.2	
Aug-18	677.6		130.1	684.5	
Sep-18	669.0		349.2	632.0	
Oct-18	685.7		475.8	707.3	
Nov-18	1,154.7		695.1	1,221.8	
Dec-18	751.5	10,212.9	840.5	828.3	10,172.9
Jan-19	1,719.5		998.1	1,692.4	
Feb-19	1,224.4		997.2	1,142.7	
Mar-19	911.5		610.4	1,013.5	
Apr-19	836.2		473.8	860.6	
May-19	750.4		229.1	782.8	
Jun-19	551.5		134.2	559.4	
Jul-19	530.3		52.4	557.3	
Aug-19	647.7		171.6	627.9	
Sep-19	589.4		239.3	623.3	
Oct-19	836.5		557.4	805.5	
Nov-19	903.4	10,550.2	687.2	975.5	10,767.6
Dec-19	1,049.3		839.8	1,126.5	
Jan-20	1,344.0		1,235.8	1,163.5	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.852478444					
R Square	0.726719497					
Adjusted R Square	0.72440356					
Standard Error	131.3340644					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	5412462.993	5412462.993	313.790774	4.93123E-35	
Residual	118	2035339.105	17248.63648			
Total	119	7447802.098				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	522.4375673	22.6375912	23.0783605	1.45487E-45	477.6090528	567.2660817
MHDD	0.645087469	0.036416527	17.71414051	4.93123E-35	0.572972832	0.717202106

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(10767.6 / 10580.6) \wedge (1/2) - 1 =$ **0.9%**

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

Residential - Yukon - Pelly Crossing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,100.5		847.2	1,115.6		
Mar-20	906.1		849.6	853.7		
Apr-20	1,085.4		500.7	1,092.4		
May-20	705.4		271.5	710.5		
Jun-20	644.8		189.0	617.4		
Jul-20	706.1		122.3	688.0		
Aug-20	576.4		185.6	547.5		
Sep-20	644.1		298.9	639.6		
Oct-20	842.3		596.6	786.1		
Nov-20	891.0		899.0	826.5		
Dec-20	1,063.1	10,509.1	863.2	1,125.2	10,166.0	
Jan-21	1,283.9		887.5	1,328.1		
Feb-21	1,240.2		1,051.4	1,123.6		
Mar-21	1,012.3		821.5	978.1		
Apr-21	965.7		565.1	931.2		
May-21	695.9		337.8	658.1		
Jun-21	604.9		127.4	617.1		
Jul-21	621.9		87.3	626.4		
Aug-21	590.8		153.2	582.8		
Sep-21	845.3		320.9	826.6		
Oct-21	638.2		523.3	629.2		
Nov-21	876.3		877.4	825.8		
Dec-21	1,196.5	10,571.8	1,131.7	1,085.4	10,212.5	
Jan-22	1,266.1		1,010.7	1,230.8		
Feb-22	1,031.9		731.0	1,121.9		
Mar-22	1,012.4		678.3	1,070.6		
Apr-22	960.4		588.6	910.7		
May-22	644.2		356.8	594.2		
Jun-22	723.2		119.9	740.3		
Jul-22	475.4		96.5	474.0		
Aug-22	564.4		108.0	585.6		
Sep-22	662.3		258.4	683.9		
Oct-22	702.2		452.2	739.1		
Nov-22	838.6		769.6	857.7		
Dec-22	1,088.7	9,969.8	1,121.0	984.6	9,993.4	
Jan-23	1,161.4		799.5	1,262.3		
Feb-23	935.7		826.3	964.3		
Mar-23	886.0		821.1	852.1		
Apr-23	918.7					
May-23	599.4					
Jun-23	746.8					
Jul-23	479.2					
Aug-23	590.7					
Sep-23	689.9					
Oct-23	745.6					
Nov-23	865.2					
Dec-23	993.2	9,610.9			9,706.5	
Jan-24	1,273.4					
Feb-24	972.8					
Mar-24	859.6					
Apr-24	926.8					
May-24	604.7					
Jun-24	753.4					
Jul-24	482.4					
Aug-24	595.9					
Sep-24	696.0					
Oct-24	752.1					
Nov-24	872.8					
Dec-24	1,002.0	9,791.9			9,791.9	

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

Residential - Yukon - Ross River

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,112.2		852.0	1,114.6	
Feb-13	1,051.8		665.4	1,175.9	
Mar-13	835.5		851.1	785.5	
Apr-13	806.5		639.9	728.8	
May-13	626.8		294.0	617.9	
Jun-13	618.2		112.4	638.8	
Jul-13	460.1		88.2	463.8	
Aug-13	642.4		106.5	663.3	
Sep-13	331.5		264.3	348.2	
Oct-13	579.6		388.8	652.6	
Nov-13	872.3		856.5	837.6	
Dec-13	897.2	8,834.1	1,008.2	867.8	8,894.7
Jan-14	1,097.8		745.8	1,225.0	
Feb-14	994.6		992.4	920.9	
Mar-14	926.4		855.1	874.0	
Apr-14	683.3		499.8	690.4	
May-14	717.1		269.5	723.0	
Jun-14	508.4		200.5	475.0	
Jul-14	426.7		98.0	424.5	
Aug-14	586.3		144.0	584.4	
Sep-14	531.9		307.1	522.7	
Oct-14	740.6		515.6	736.9	
Nov-14	788.5		772.8	804.4	
Dec-14	934.7	8,936.3	854.4	998.3	8,980.1
Jan-15	1,159.3		927.0	1,176.9	
Feb-15	1,035.1		851.4	1,046.8	
Mar-15	893.2		671.3	952.0	
Apr-15	774.4		453.5	809.6	
May-15	561.6		192.9	613.9	
Jun-15	453.7		127.2	465.3	
Jul-15	493.0		115.7	480.0	
Aug-15	442.1		183.2	416.5	
Sep-15	518.4		332.7	493.7	
Oct-15	680.5		469.8	704.5	
Nov-15	727.1		759.2	751.2	
Dec-15	749.9	8,488.3	947.9	756.9	8,667.2
Jan-16	1,083.6		827.6	1,161.3	
Feb-16	781.4		688.0	891.9	
Mar-16	772.3		611.6	867.3	
Apr-16	735.6		386.4	811.3	
May-16	560.3		252.1	576.8	
Jun-16	458.9		119.0	475.4	
Jul-16	502.3		79.2	511.4	
Aug-16	430.0		111.5	447.8	
Sep-16	586.8		278.8	594.7	
Oct-16	616.4		604.3	559.0	
Nov-16	672.9		694.7	736.0	
Dec-16	1,015.9	8,216.3	1,056.2	957.3	8,590.3
Jan-17	1,030.6		975.9	1,018.6	
Feb-17	870.1		864.8	873.6	
Mar-17	836.7		947.0	728.7	
Apr-17	678.7		455.5	712.7	
May-17	625.8		294.8	616.4	
Jun-17	583.2		164.5	572.3	
Jul-17	486.8		127.6	466.6	
Aug-17	543.9		115.2	559.5	
Sep-17	421.9		269.7	435.4	
Oct-17	571.1		509.9	570.8	
Nov-17	818.4		979.6	709.2	
Dec-17	1,300.1	8,767.4	832.1	1,316.8	8,580.4
Jan-18	820.0		1,000.0	893.4	
Feb-18	1,196.5		1,017.3	1,107.7	
Mar-18	1,079.6		788.7	1,067.4	
Apr-18	823.0		552.3	798.4	
May-18	612.9		294.7	603.6	
Jun-18	603.6		170.0	589.3	
Jul-18	443.9		75.7	455.1	
Aug-18	463.7		130.1	470.3	
Sep-18	470.7		349.2	436.0	
Oct-18	574.9		475.8	595.2	
Nov-18	900.7		695.1	963.7	
Dec-18	842.7	8,932.1	840.5	914.7	8,894.6
Jan-19	1,095.2		998.1	1,069.7	
Feb-19	1,316.3		997.2	1,239.7	
Mar-19	942.0		610.4	1,037.6	
Apr-19	661.9		473.8	684.7	
May-19	628.8		229.1	659.2	
Jun-19	584.1		134.2	591.5	
Jul-19	454.6		52.4	479.9	
Aug-19	527.0		171.6	508.4	
Sep-19	495.8		239.3	527.7	
Oct-19	577.6		557.4	548.5	
Nov-19	936.6		687.2	1,004.3	
Dec-19	800.3	9,020.1	839.8	872.8	9,224.0
Jan-20	970.6		1,235.8	801.3	

Regression Output:

SUMMARY OUTPUT								
Regression Statistics								
Multiple R							0.820370966	
R Square							0.673008522	
Adjusted R Square							0.670237408	
Standard Error							140.0255467	
Observations							120	
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	4761904.594	4761904.594	242.8656735	2.02758E-30			
Residual	118	2313644.14	19607.15372					
Total	119	7075548.733						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	428.7077798	24.1356688	17.76241559	3.9013E-35	380.9125847	476.5029749	380.9125847	476.5029749
MHDD	0.605078164	0.038826515	15.58414815	2.02758E-30	0.528191094	0.681965235	0.528191094	0.681965235

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(9224 / 8580.4)^{(1/2)} - 1 = 3.7\%$

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

Residential - Yukon - Ross River

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,508.5		847.2	1,522.6		
Mar-20	984.7		849.6	935.6		
Apr-20	724.1		500.7	730.6		
May-20	690.4		271.5	695.1		
Jun-20	754.8		189.0	729.1		
Jul-20	579.5		122.3	562.6		
Aug-20	492.9		185.6	465.8		
Sep-20	590.3		298.9	586.1		
Oct-20	633.6		596.6	580.8		
Nov-20	876.4		899.0	816.0		
Dec-20	891.0	9,696.7	863.2	949.3	9,374.9	
Jan-21	1,143.7		887.5	1,185.2		
Feb-21	786.0		1,051.4	676.6		
Mar-21	1,206.6		821.5	1,174.6		
Apr-21	988.0		565.1	955.6		
May-21	552.3		337.8	516.9		
Jun-21	582.7		127.4	594.2		
Jul-21	550.1		87.3	554.3		
Aug-21	532.7		153.2	525.2		
Sep-21	573.6		320.9	556.0		
Oct-21	639.0		523.3	630.5		
Nov-21	706.5		877.4	659.1		
Dec-21	1,031.2	9,292.3	1,131.7	927.0	8,955.3	
Jan-22	1,568.5		1,010.7	1,535.5		
Feb-22	1,018.1		731.0	1,102.5		
Mar-22	881.0		678.3	935.5		
Apr-22	853.6		588.6	807.0		
May-22	715.1		356.8	688.2		
Jun-22	538.6		119.9	554.6		
Jul-22	500.6		96.5	499.3		
Aug-22	617.9		108.0	637.8		
Sep-22	441.4		258.4	461.6		
Oct-22	606.2		452.2	640.8		
Nov-22	763.1		769.6	781.0		
Dec-22	1,043.5	9,547.6	1,121.0	945.8	9,569.6	
Jan-23	1,195.1		799.5	1,289.9		
Feb-23	899.6		826.3	926.4		
Mar-23	951.1		821.1	919.2		
Apr-23	836.7					
May-23	692.8					
Jun-23	575.0					
Jul-23	517.7					
Aug-23	661.3					
Sep-23	478.6					
Oct-23	664.4					
Nov-23	809.7					
Dec-23	980.6	9,262.7			9,352.4	
Jan-24	1,337.4					
Feb-24	960.5					
Mar-24	953.1					
Apr-24	867.6					
May-24	718.3					
Jun-24	596.2					
Jul-24	536.7					
Aug-24	685.7					
Sep-24	496.3					
Oct-24	688.9					
Nov-24	839.6					
Dec-24	1,016.7	9,696.8			9,696.8	

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

Residential - Yukon - Stewart Crossing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,108.1			952.0	1,109.9
Feb-13	898.7			665.4	992.4
Mar-13	789.3			851.1	731.5
Apr-13	810.4			639.9	751.7
May-13	816.5			294.0	809.8
Jun-13	455.4			112.4	470.9
Jul-13	513.8			88.2	516.6
Aug-13	671.9			106.5	687.6
Sep-13	522.9			264.3	535.6
Oct-13	644.6			388.8	699.7
Nov-13	612.7			856.5	586.4
Dec-13	996.4	8,820.6	1,008.2	974.2	8,866.4
Jan-14	1,055.5			745.8	1,151.6
Feb-14	811.3			992.4	755.6
Mar-14	588.8			855.1	549.2
Apr-14	610.3			499.8	615.6
May-14	535.0			269.5	539.5
Jun-14	508.8			200.5	484.1
Jul-14	531.8			98.0	530.1
Aug-14	445.0			144.0	443.6
Sep-14	520.8			307.1	513.9
Oct-14	627.4			515.6	624.6
Nov-14	624.1			772.8	636.1
Dec-14	888.4	7,747.0	854.4	936.4	7,780.2
Jan-15	801.1			927.0	814.4
Feb-15	825.2			851.4	833.9
Mar-15	787.0			671.3	831.4
Apr-15	682.5			453.5	709.1
May-15	851.8			192.9	891.3
Jun-15	66.1			127.2	74.9
Jul-15	562.3			115.7	552.5
Aug-15	498.7			183.2	479.4
Sep-15	528.3			332.7	509.6
Oct-15	667.3			469.8	685.3
Nov-15	679.1			759.2	697.3
Dec-15	965.9	7,915.2	947.9	971.2	8,050.3
Jan-16	714.4			827.6	773.0
Feb-16	673.4			688.0	756.9
Mar-16	552.0			611.6	623.7
Apr-16	679.5			386.4	736.7
May-16	490.8			252.1	503.2
Jun-16	427.8			119.0	440.3
Jul-16	521.7			79.2	528.6
Aug-16	457.4			111.5	470.9
Sep-16	1,434.1			278.8	1,440.1
Oct-16	-211.2			604.3	-254.6
Nov-16	739.5			694.7	694.7
Dec-16	738.2	7,217.6	1,056.2	694.0	7,500.0
Jan-17	1,441.9			975.9	1,432.8
Feb-17	784.7			864.8	787.3
Mar-17	943.6			947.0	862.1
Apr-17	600.7			455.5	626.3
May-17	293.7			294.8	286.6
Jun-17	552.6			164.5	544.3
Jul-17	476.9			127.6	461.7
Aug-17	549.6			115.2	561.4
Sep-17	493.1			269.7	503.3
Oct-17	703.5			509.9	703.2
Nov-17	746.6			979.6	664.1
Dec-17	719.5	8,306.4	832.1	732.0	8,165.2
Jan-18	2,118.0			1,000.0	2,097.9
Feb-18	1,323.5			1,017.3	1,256.4
Mar-18	900.6			788.7	891.3
Apr-18	580.8			552.3	562.2
May-18	826.3			294.7	819.3
Jun-18	231.9			170.0	221.2
Jul-18	516.4			75.7	524.9
Aug-18	628.2			130.1	633.2
Sep-18	519.6			349.2	493.4
Oct-18	584.8			475.8	600.1
Nov-18	696.1			695.1	743.6
Dec-18	592.7	9,428.7	840.5	557.1	9,400.5
Jan-19	1,133.7			998.1	1,114.5
Feb-19	856.5			997.2	798.7
Mar-19	799.2			610.4	871.4
Apr-19	495.0			473.8	512.3
May-19	534.5			229.1	557.5
Jun-19	480.0			134.2	485.6
Jul-19	510.7			52.4	529.8
Aug-19	511.8			171.6	497.8
Sep-19	488.6			239.3	512.6
Oct-19	675.3			557.4	653.3
Nov-19	717.3	8,019.9	687.2	788.5	8,173.8
Dec-19	817.3			839.8	871.9
Jan-20	1,172.3			1,235.8	1,044.4

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.53282115					
R Square	0.283898378					
Adjusted R Square	0.27782972					
Standard Error	240.9033513					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	2714913.165	2714913.165	46.78108178	3.74371E-10	
Residual	118	6848062.108	58034.42465			
Total	119	9562975.274				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	406.3267311	41.52359078	9.78544301	6.47283E-17	324.0987166	488.5547456
MHDD	0.456876802	0.06679808	6.839669713	3.74371E-10	0.324598419	0.589155186

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(8173.8 / 8165.2)^{(1/2)} - 1 = 0.1\%$

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

Residential - Yukon - Stewart Crossing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	864.4		847.2	875.1		
Mar-20	898.4		849.6	861.4		
Apr-20	685.7		500.7	690.6		
May-20	913.5		271.5	917.1		
Jun-20	798.3		189.0	778.8		
Jul-20	587.3		122.3	574.5		
Aug-20	501.5		185.6	481.1		
Sep-20	504.8		298.9	501.6		
Oct-20	612.5		596.6	572.6		
Nov-20	554.7		899.0	509.1		
Dec-20	467.0	8,560.4	863.2	511.0	8,317.4	
Jan-21	671.2		887.5	702.5		
Feb-21	846.6		1,051.4	764.0		
Mar-21	528.5		821.5	504.3		
Apr-21	553.9		565.1	529.5		
May-21	194.3		337.8	167.6		
Jun-21	415.4		127.4	424.1		
Jul-21	344.8		87.3	348.0		
Aug-21	489.4		153.2	483.7		
Sep-21	344.5		320.9	331.2		
Oct-21	231.0		523.3	224.6		
Nov-21	494.3		877.4	458.5		
Dec-21	662.5	5,776.2	1,131.7	583.8	5,521.8	
Jan-22	1,124.2		1,010.7	1,099.2		
Feb-22	675.8		731.0	739.6		
Mar-22	588.2		678.3	629.4		
Apr-22	388.9		588.6	353.7		
May-22	369.5		356.8	334.1		
Jun-22	310.1		119.9	322.2		
Jul-22	385.1		96.5	384.1		
Aug-22	348.1		108.0	363.1		
Sep-22	362.8		258.4	378.1		
Oct-22	358.2		452.2	384.4		
Nov-22	398.1		769.6	411.6		
Dec-22	566.8	5,875.8	1,121.0	493.0	5,892.5	
Jan-23	745.7		799.5	817.2		
Feb-23	536.3		826.3	556.6		
Mar-23	611.7		821.1	587.7		
Apr-23	389.2					
May-23	369.7					
Jun-23	310.3					
Jul-23	385.3					
Aug-23	348.2					
Sep-23	363.0					
Oct-23	358.4					
Nov-23	398.3					
Dec-23	567.1	5,383.2			5,450.9	
Jan-24	746.1					
Feb-24	536.6					
Mar-24	612.0					
Apr-24	389.4					
May-24	369.9					
Jun-24	310.5					
Jul-24	385.5					
Aug-24	348.4					
Sep-24	363.1					
Oct-24	358.6					
Nov-24	398.5					
Dec-24	567.4	5,386.0			5,386.0	

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

Residential- Yukon - Swift River

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,464.5		1,129.1	1,463.0	
Feb-13	864.5		765.8	989.5	
Mar-13	852.0		950.7	812.4	
Apr-13	906.5		690.1	842.3	
May-13	1,411.5		304.5	1,404.7	
Jun-13	790.5		96.3	810.0	
Jul-13	809.0		105.1	797.0	
Aug-13	816.0		82.2	842.8	
Sep-13	669.5		239.1	701.2	
Oct-13	718.0		490.2	745.8	
Nov-13	1,216.0		1,021.3	1,181.3	
Dec-13	1,679.5	12,197.5	1,248.8	1,656.2	12,245.3
Jan-14	1,227.0		937.7	1,323.7	
Feb-14	1,872.5		1,204.4	1,771.3	
Mar-14	1,229.5		1,008.9	1,160.0	
Apr-14	1,107.5		570.5	1,104.7	
May-14	797.0		331.1	776.6	
Jun-14	740.5		186.8	713.5	
Jul-14	567.5		87.6	564.5	
Aug-14	841.0		144.8	835.7	
Sep-14	438.0		295.8	440.6	
Oct-14	611.5		539.7	613.9	
Nov-14	712.0		936.4	720.9	
Dec-14	963.0	11,107.0	1,176.7	976.7	11,002.2
Jan-15	1,125.5		1,022.8	1,178.5	
Feb-15	787.0		956.7	813.0	
Mar-15	724.5		776.3	779.6	
Apr-15	576.5		497.4	611.3	
May-15	635.5		210.8	676.8	
Jun-15	553.5		111.8	565.0	
Jul-15	545.0		92.4	539.5	
Aug-15	531.0		147.5	524.3	
Sep-15	657.0		336.1	638.9	
Oct-15	597.0		523.7	597.6	
Nov-15	748.0		887.8	781.8	
Dec-15	871.0	8,341.5	1,160.3	893.1	8,599.5
Jan-16	1,323.5		1,099.3	1,337.3	
Feb-16	1,090.5		930.8	1,129.8	
Mar-16	811.0		724.3	887.6	
Apr-16	718.0		413.0	796.1	
May-16	704.0		252.4	724.0	
Jun-16	593.0		100.8	610.2	
Jul-16	641.0		45.0	659.9	
Aug-16	684.5		117.1	693.4	
Sep-16	678.0		301.7	677.6	
Oct-16	726.5		623.1	686.1	
Nov-16	566.5		514.0	586.9	
Dec-16	45.3	8,491.3	1,300.2	95.0	8,693.8
Jan-17	345.1		1,081.0	368.3	
Feb-17	300.8		925.7	342.6	
Mar-17	1,042.8		1,015.8	969.7	
Apr-17	940.5		523.7	961.8	
May-17	823.6		295.8	821.3	
Jun-17	553.5		150.0	545.4	
Jul-17	484.8		101.9	474.4	
Aug-17	420.1		124.8	425.1	
Sep-17	569.0		254.7	592.7	
Oct-17	662.0		514.6	677.3	
Nov-17	1,160.5		1,120.2	1,075.0	
Dec-17	851.3	8,253.9	1,176.2	965.2	8,218.9
Jan-18	1,183.5		1,214.2	1,138.3	
Feb-18	1,107.1		1,127.6	1,045.4	
Mar-18	1,033.8		895.5	1,022.5	
Apr-18	956.3		622.5	926.8	
May-18	582.0		276.7	589.5	
Jun-18	507.1		136.3	506.1	
Jul-18	505.9		68.0	513.0	
Aug-18	511.8		123.7	517.3	
Sep-18	628.5		410.9	572.1	
Oct-18	763.4		551.0	760.0	
Nov-18	916.1		872.6	957.7	
Dec-18	832.1	9,627.5	1,175.5	946.4	9,495.0
Jan-19	1,074.4		1,105.0	1,085.2	
Feb-19	1,174.3		1,116.0	1,118.5	
Mar-19	986.8		755.4	1,047.4	
Apr-19	774.4		519.4	797.8	
May-19	702.8		229.6	734.4	
Jun-19	507.1		152.8	497.6	
Jul-19	413.1		58.6	425.0	
Aug-19	514.6		198.9	481.5	
Sep-19	473.5		281.6	483.4	
Oct-19	901.4		575.9	885.2	
Nov-19	1,159.5	9,841.4	871.9	1,201.5	9,996.2
Dec-19	1,159.6		1,049.5	1,238.6	
Jan-20	1,736.1		1,353.4	1,619.4	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.66168096					
R Square	0.437821693					
Adjusted R Square	0.43305747					
Standard Error	237.7193561					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	5193190.946	5193190.946	91.8978182	1.91633E-16	
Residual	118	6668238.089	56510.49228			
Total	119	11861429.03				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	498.7337825	38.83366031	12.84282189	3.72356E-24	421.8325627	575.6350024
MHDD	0.513381009	0.053553418	9.596334972	1.91633E-16	0.40733066	0.619431357

10 Year	
Month	Normal HDD
JAN	1126.1
FEB	1007.3
MAR	873.6
APR	565.1
MAY	291.3
JUN	134.2
JUL	81.8
AUG	134.5
SEP	300.9
OCT	544.4
NOV	953.7
DEC	1203.4

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(9996.2 / 8218.9)^{(1/2)} - 1 =$ **10.3%**

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

Residential- Yukon - Swift River

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,039.0		957.7	1,064.5		
Mar-20	894.4		889.6	886.2		
Apr-20	1,259.0		569.8	1,256.6		
May-20	617.9		284.0	621.6		
Jun-20	514.6		176.5	492.9		
Jul-20	576.6		107.5	563.4		
Aug-20	380.1		177.4	358.1		
Sep-20	573.9		317.7	565.3		
Oct-20	798.9		623.5	758.3		
Nov-20	969.6		1,030.7	930.1		
Dec-20	1,080.3	10,440.4	1,040.3	1,164.0	10,280.3	
Jan-21	1,334.6		1,117.9	1,338.8		
Feb-21	1,247.5		1,159.7	1,169.3		
Mar-21	1,055.8		886.8	1,049.0		
Apr-21	770.9		603.7	751.1		
May-21	615.5		358.1	581.2		
Jun-21	526.1		114.7	536.1		
Jul-21	393.6		87.5	390.7		
Aug-21	450.4		133.5	450.9		
Sep-21	533.9		320.2	524.0		
Oct-21	600.9		553.5	596.2		
Nov-21	966.0		931.6	977.4		
Dec-21	1,089.9	9,585.0	1,454.2	961.1	9,325.7	
Jan-22	985.0		1,200.8	946.7		
Feb-22	1,183.3		928.8	1,223.6		
Mar-22	973.3		842.6	989.2		
Apr-22	910.1		641.0	871.2		
May-22	484.8		370.3	444.2		
Jun-22	424.0		116.2	433.3		
Jul-22	420.9		64.0	430.0		
Aug-22	400.3		94.8	420.6		
Sep-22	520.8		251.5	546.1		
Oct-22	680.9		448.8	729.9		
Nov-22	1,082.4		950.2	1,084.2		
Dec-22	944.0	9,009.5	1,252.1	919.0	9,037.9	
Jan-23	1,276.0		931.1	1,376.1		
Feb-23	974.0		945.4	1,005.8		
Mar-23	908.5		893.9	898.1		
Apr-23	1,003.7					
May-23	534.6					
Jun-23	467.6					
Jul-23	464.2					
Aug-23	441.4					
Sep-23	574.3					
Oct-23	750.9					
Nov-23	1,193.7					
Dec-23	1,041.1	9,630.0			9,751.5	
Jan-24	1,407.2					
Feb-24	1,074.2					
Mar-24	1,001.9					
Apr-24	1,106.9					
May-24	589.6					
Jun-24	515.7					
Jul-24	511.9					
Aug-24	486.8					
Sep-24	633.4					
Oct-24	828.1					
Nov-24	1,316.4					
Dec-24	1,148.1	10,620.3			10,620.3	

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

Residential - Yukon - Tagish

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	718.2		852.0	717.9	
Feb-13	487.4		665.4	575.2	
Mar-13	502.0		851.1	466.7	
Apr-13	392.1		639.9	337.2	
May-13	350.2		294.0	344.0	
Jun-13	335.0		112.4	349.5	
Jul-13	278.4		88.2	281.0	
Aug-13	357.9		106.5	372.6	
Sep-13	259.0		264.3	270.8	
Oct-13	344.8		388.8	396.4	
Nov-13	497.0		856.5	472.4	
Dec-13	592.5	5,112.5	1,008.2	571.7	5,155.3
Jan-14	606.7		745.8	696.6	
Feb-14	594.2		992.4	542.1	
Mar-14	548.7		855.1	511.6	
Apr-14	375.4		499.8	390.4	
May-14	310.0		269.5	314.2	
Jun-14	307.9		200.5	284.7	
Jul-14	295.2		98.0	293.6	
Aug-14	314.4		144.0	313.1	
Sep-14	310.3		307.1	303.8	
Oct-14	340.5		515.6	337.8	
Nov-14	421.8		772.8	433.0	
Dec-14	560.6	4,985.6	854.4	605.6	5,016.6
Jan-15	579.2		927.0	591.6	
Feb-15	536.8		851.4	545.0	
Mar-15	381.3		671.3	422.9	
Apr-15	384.5		453.5	409.3	
May-15	302.7		192.9	339.7	
Jun-15	278.4		127.2	286.6	
Jul-15	322.4		115.7	313.2	
Aug-15	287.6		183.2	269.5	
Sep-15	328.7		332.7	311.3	
Oct-15	403.2		469.8	420.1	
Nov-15	460.1		759.2	477.2	
Dec-15	524.3	4,789.3	947.9	529.3	4,915.8
Jan-16	694.1		827.6	749.0	
Feb-16	463.7		688.0	541.8	
Mar-16	415.8		611.6	482.9	
Apr-16	428.3		386.4	481.9	
May-16	321.7		252.1	333.3	
Jun-16	284.1		119.0	295.8	
Jul-16	381.1		79.2	387.6	
Aug-16	239.0		111.5	251.6	
Sep-16	343.8		278.8	349.5	
Oct-16	395.8		604.3	355.2	
Nov-16	448.9		694.7	494.5	
Dec-16	626.4	5,043.7	1,056.2	585.0	5,308.1
Jan-17	771.1		975.9	762.6	
Feb-17	619.9		864.8	622.4	
Mar-17	572.1		947.0	495.7	
Apr-17	451.5		455.5	475.5	
May-17	366.3		294.8	359.7	
Jun-17	332.5		164.5	324.8	
Jul-17	313.8		127.6	299.6	
Aug-17	286.1		115.2	297.1	
Sep-17	352.8		269.7	362.3	
Oct-17	353.6		509.9	353.4	
Nov-17	571.2		979.6	494.0	
Dec-17	582.9	5,573.9	932.1	594.6	5,441.7
Jan-18	863.4		1,000.0	844.6	
Feb-18	747.2		1,017.3	684.5	
Mar-18	564.6		788.7	555.9	
Apr-18	518.8		552.3	501.4	
May-18	344.7		294.7	338.1	
Jun-18	342.7		170.0	332.6	
Jul-18	287.2		75.7	295.1	
Aug-18	281.6		130.1	286.2	
Sep-18	373.6		349.2	349.1	
Oct-18	381.5		475.8	395.9	
Nov-18	467.7		695.1	512.2	
Dec-18	491.1	5,664.1	840.5	542.0	5,637.6
Jan-19	757.9		998.1	739.9	
Feb-19	710.4		997.2	656.3	
Mar-19	544.2		610.4	611.8	
Apr-19	461.7		473.8	477.8	
May-19	328.8		229.1	350.3	
Jun-19	313.3		134.2	318.5	
Jul-19	277.7		52.4	295.6	
Aug-19	343.3		171.6	330.2	
Sep-19	300.1		239.3	322.6	
Oct-19	407.5		557.4	387.0	
Nov-19	533.4		687.2	581.2	
Dec-19	585.4	5,563.7	839.8	636.6	5,707.8
Jan-20	805.2		1,235.8	685.5	

Regression Output:

SUMMARY OUTPUT					
Regression Statistics					
Multiple R	0.889134852				
R Square	0.790560785				
Adjusted R Square	0.788785877				
Standard Error	73.09010035				
Observations	120				
ANOVA					
	df	SS	MS	F	Significance F
Regression	1	2379448.947	2379448.947	445.4092938	7.2041E-42
Residual	118	630375.2068	5342.162769		
Total	119	3009824.153			
Coefficients					
	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	235.2676244	12.59826151	18.67461032	4.92836E-37	210.3196367
MHDD	0.427719776	0.020266544	21.10472207	7.2041E-42	0.387586502
				0.467853051	0.387586502

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) ^{(1/(2019 - 2017)) - 1} =$
 $(5707.8 / 5441.7) ^{(1/2) - 1} = 2.4\%$

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

Residential - Yukon - Tagish

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	656.9		847.2	667.0		
Mar-20	552.0		849.6	517.2		
Apr-20	611.8		500.7	616.5		
May-20	390.2		271.5	393.6		
Jun-20	318.5		189.0	300.3		
Jul-20	372.0		122.3	360.0		
Aug-20	345.3		185.6	326.2		
Sep-20	345.1		298.9	342.1		
Oct-20	451.2		596.6	413.9		
Nov-20	659.5		899.0	616.8		
Dec-20	708.2	6,215.9	863.2	749.4	5,988.4	
Jan-21	733.4		887.5	762.7		
Feb-21	830.4		1,051.4	753.1		
Mar-21	631.3		821.5	608.6		
Apr-21	569.8		565.1	546.9		
May-21	404.3		337.8	379.2		
Jun-21	329.7		127.4	337.8		
Jul-21	292.9		87.3	295.9		
Aug-21	341.7		153.2	336.4		
Sep-21	362.8		320.9	350.4		
Oct-21	422.5		523.3	416.5		
Nov-21	614.9		877.4	581.5		
Dec-21	693.1	6,226.6	1,131.7	619.4	5,988.4	
Jan-22	1,022.8		1,010.7	999.4		
Feb-22	683.7		731.0	743.4		
Mar-22	574.0		678.3	612.6		
Apr-22	522.3		588.6	489.3		
May-22	371.7		356.8	338.6		
Jun-22	296.2		119.9	307.5		
Jul-22	301.6		96.5	300.7		
Aug-22	320.5		108.0	334.5		
Sep-22	343.3		258.4	357.7		
Oct-22	420.7		452.2	445.2		
Nov-22	544.5		769.6	557.2		
Dec-22	719.4	6,120.7	1,121.0	650.4	6,136.3	
Jan-23	831.5		799.5	898.4		
Feb-23	625.2		826.3	644.1		
Mar-23	649.4		821.1	626.9		
Apr-23	501.1					
May-23	346.8					
Jun-23	314.9					
Jul-23	307.9					
Aug-23	342.6					
Sep-23	366.3					
Oct-23	455.9					
Nov-23	570.6					
Dec-23	666.1	5,978.3			6,041.7	
Jan-24	920.1					
Feb-24	659.7					
Mar-24	642.0					
Apr-24	513.2					
May-24	355.2					
Jun-24	322.5					
Jul-24	315.4					
Aug-24	350.9					
Sep-24	375.2					
Oct-24	466.9					
Nov-24	584.4					
Dec-24	682.2	6,187.7			6,187.7	

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

Residential - Yukon - Teslin

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	517.9		852.0	819.6	
Feb-13	794.7		665.4	882.5	
Mar-13	617.5		851.1	582.1	
Apr-13	640.8		639.9	585.9	
May-13	477.0		294.0	470.7	
Jun-13	539.6		112.4	554.1	
Jul-13	422.4		88.2	425.0	
Aug-13	471.0		106.5	485.7	
Sep-13	435.3		264.3	447.2	
Oct-13	492.6		388.8	544.2	
Nov-13	665.9		856.5	641.4	
Dec-13	732.7	7,107.6	1,008.2	711.9	7,150.4
Jan-14	800.5		745.8	890.5	
Feb-14	664.0		992.4	611.9	
Mar-14	638.7		855.1	598.6	
Apr-14	539.4		499.2	545.5	
May-14	558.1		269.5	562.3	
Jun-14	409.2		200.5	386.0	
Jul-14	393.7		98.0	392.1	
Aug-14	477.3		144.0	476.0	
Sep-14	461.4		307.1	454.9	
Oct-14	561.2		515.6	558.6	
Nov-14	586.5		772.8	597.7	
Dec-14	709.6	6,796.6	854.4	754.6	6,827.6
Jan-15	896.6		927.0	909.1	
Feb-15	698.5		851.4	706.7	
Mar-15	579.4		671.3	621.0	
Apr-15	605.8		453.5	630.7	
May-15	459.9		192.9	496.9	
Jun-15	437.8		127.2	446.1	
Jul-15	489.7		115.7	480.5	
Aug-15	414.6		183.2	396.5	
Sep-15	490.6		332.7	473.2	
Oct-15	620.9		469.8	637.8	
Nov-15	610.9		759.2	628.0	
Dec-15	685.1	6,989.8	947.9	690.0	7,116.4
Jan-16	915.1		827.6	970.1	
Feb-16	630.8		688.0	709.0	
Mar-16	593.1		611.6	660.3	
Apr-16	662.3		386.4	715.8	
May-16	493.3		252.1	504.9	
Jun-16	428.8		119.0	440.5	
Jul-16	520.0		79.2	526.5	
Aug-16	454.6		111.5	467.2	
Sep-16	546.5		278.8	552.1	
Oct-16	563.5		604.3	522.9	
Nov-16	587.4		694.7	632.1	
Dec-16	779.5	7,174.9	1,056.2	738.1	7,439.4
Jan-17	991.4		975.9	982.9	
Feb-17	759.2		864.8	761.6	
Mar-17	814.7		947.0	738.3	
Apr-17	606.6		455.5	630.6	
May-17	498.7		294.8	492.1	
Jun-17	519.8		164.5	512.1	
Jul-17	455.2		127.6	441.0	
Aug-17	417.0		115.2	428.0	
Sep-17	565.7		269.7	575.2	
Oct-17	565.0		509.9	564.8	
Nov-17	780.9		979.6	703.7	
Dec-17	724.4	7,698.8	832.1	736.1	7,566.5
Jan-18	954.9		1,000.0	936.0	
Feb-18	856.6		1,017.3	793.8	
Mar-18	853.7		788.7	845.0	
Apr-18	691.4		552.3	673.9	
May-18	525.7		294.7	519.1	
Jun-18	531.0		170.0	520.9	
Jul-18	462.5		75.7	470.5	
Aug-18	501.1		130.1	505.8	
Sep-18	484.5		349.2	460.0	
Oct-18	541.8		475.8	556.2	
Nov-18	771.5		695.1	816.0	
Dec-18	667.9	7,842.7	840.5	718.8	7,816.2
Jan-19	916.7		998.1	898.7	
Feb-19	994.8		997.2	940.6	
Mar-19	739.2		610.4	806.8	
Apr-19	593.2		473.8	609.3	
May-19	573.5		229.1	594.9	
Jun-19	547.1		134.2	552.3	
Jul-19	420.1		52.4	438.0	
Aug-19	587.4		171.6	574.3	
Sep-19	470.1		239.3	492.6	
Oct-19	570.6		557.4	550.0	
Nov-19	758.5	7,868.0	687.2	806.4	8,012.3
Dec-19	697.1		839.8	748.3	
Jan-20	1,172.4		1,235.8	1,052.7	

Regression Output:

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.853173043							
R Square	0.727904242							
Adjusted R Square	0.725598345							
Standard Error	86.86960142							
Observations	120							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	2382155.698	2382155.698	315.6708545	3.81315E-35			
Residual	118	890466.6629	7546.327652					
Total	119	3272622.361						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	405.925582	14.97338149	27.10981366	1.63539E-52	376.2742101	435.5769538	376.2742101	435.5769538
MHDD	0.427962984	0.024087347	17.76712848	3.81315E-35	0.38026348	0.475662489	0.38026348	0.475662489

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(8012.3 / 7566.5)^{(1/2)} - 1 = 2.9\%$

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

Residential - Yukon - Teslin

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	771.4		847.2	781.4		
Mar-20	697.1		849.6	662.4		
Apr-20	769.3		500.7	773.9		
May-20	527.8		271.5	531.2		
Jun-20	468.4		189.0	450.2		
Jul-20	543.5		122.3	531.5		
Aug-20	448.1		185.6	429.0		
Sep-20	514.4		298.9	511.4		
Oct-20	660.5		596.6	623.2		
Nov-20	772.4		899.0	729.6		
Dec-20	725.7	8,071.2	863.2	766.9	7,843.5	
Jan-21	960.7		887.5	990.0		
Feb-21	967.5		1,051.4	890.1		
Mar-21	750.4		821.5	727.7		
Apr-21	788.7		565.1	765.8		
May-21	548.3		337.8	523.3		
Jun-21	539.3		127.4	547.4		
Jul-21	491.8		87.3	494.8		
Aug-21	463.5		153.2	458.2		
Sep-21	549.2		320.9	536.8		
Oct-21	620.5		523.3	614.6		
Nov-21	677.8		877.4	644.2		
Dec-21	820.6	8,178.3	1,131.7	746.9	7,939.9	
Jan-22	1,238.7		1,010.7	1,215.3		
Feb-22	778.6		731.0	838.4		
Mar-22	721.2		678.3	759.8		
Apr-22	742.2		588.6	709.2		
May-22	549.6		356.8	516.5		
Jun-22	458.7		119.9	470.0		
Jul-22	529.5		96.5	528.6		
Aug-22	468.5		108.0	482.6		
Sep-22	511.9		258.4	526.3		
Oct-22	544.7		452.2	569.2		
Nov-22	669.3		769.6	681.9		
Dec-22	849.5	8,062.5	1,121.0	780.4	8,078.1	
Jan-23	1,047.7		799.5	1,114.7		
Feb-23	744.0		826.3	762.9		
Mar-23	802.2		821.1	779.7		
Apr-23	729.8					
May-23	531.5					
Jun-23	483.7					
Jul-23	543.9					
Aug-23	496.6					
Sep-23	541.6					
Oct-23	585.7					
Nov-23	701.7					
Dec-23	803.0	8,011.3			8,074.7	
Jan-24	1,147.0					
Feb-24	785.1					
Mar-24	802.3					
Apr-24	751.0					
May-24	546.9					
Jun-24	497.7					
Jul-24	559.7					
Aug-24	511.0					
Sep-24	557.3					
Oct-24	602.7					
Nov-24	722.1					
Dec-24	826.3	8,309.2			8,309.2	

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

Residential - Yukon - Upper Liard

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,277.3		1,129.1	1,276.2	
Feb-13	855.9		765.8	944.3	
Mar-13	777.7		950.7	749.5	
Apr-13	763.2		690.1	717.4	
May-13	676.9		304.5	672.0	
Jun-13	566.5		96.3	580.3	
Jul-13	517.6		105.1	509.0	
Aug-13	596.3		82.2	615.5	
Sep-13	559.6		239.1	582.2	
Oct-13	651.6		490.2	671.5	
Nov-13	618.6		1,021.3	593.9	
Dec-13	940.9	8,802.0	1,248.8	924.2	8,836.1
Jan-14	1,095.2		937.7	1,164.2	
Feb-14	766.4		1,204.4	694.2	
Mar-14	826.4		1,008.9	776.9	
Apr-14	823.1		570.5	821.1	
May-14	596.8		331.1	582.2	
Jun-14	526.8		186.8	507.5	
Jul-14	530.0		87.6	527.9	
Aug-14	521.1		144.8	517.3	
Sep-14	604.0		295.8	605.9	
Oct-14	591.6		539.7	593.3	
Nov-14	679.3		936.4	685.6	
Dec-14	925.9	8,486.6	1,176.7	935.6	8,411.8
Jan-15	1,018.4		1,022.8	1,066.2	
Feb-15	880.8		956.7	899.4	
Mar-15	745.4		766.3	784.7	
Apr-15	835.3		497.4	860.1	
May-15	663.8		210.8	693.3	
Jun-15	475.5		111.8	483.7	
Jul-15	559.2		92.4	555.3	
Aug-15	528.0		147.5	523.3	
Sep-15	661.3		336.1	648.5	
Oct-15	672.2		523.7	679.8	
Nov-15	772.6		887.8	796.7	
Dec-15	732.6	8,545.3	1,160.3	748.4	8,729.4
Jan-16	953.5		1,089.3	963.3	
Feb-16	714.1		930.8	742.1	
Mar-16	668.4		724.3	723.1	
Apr-16	599.1		413.0	654.8	
May-16	595.5		252.4	609.7	
Jun-16	484.1		100.8	496.3	
Jul-16	492.0		45.0	505.5	
Aug-16	544.3		117.1	550.6	
Sep-16	578.8		301.7	578.6	
Oct-16	684.1		623.1	655.3	
Nov-16	668.5		914.0	683.0	
Dec-16	954.4	7,936.8	1,300.2	919.0	8,081.3
Jan-17	1,052.1		1,081.0	1,068.6	
Feb-17	765.7		925.7	795.6	
Mar-17	926.7		1,015.8	874.6	
Apr-17	576.0		523.7	591.2	
May-17	616.1		295.8	614.4	
Jun-17	547.6		150.0	541.8	
Jul-17	594.0		101.9	586.6	
Aug-17	471.2		124.8	474.8	
Sep-17	564.3		254.7	581.2	
Oct-17	582.5		514.6	593.4	
Nov-17	854.4		1,120.2	793.4	
Dec-17	881.1	8,411.6	1,176.2	871.1	8,386.7
Jan-18	1,033.5		1,214.2	1,001.3	
Feb-18	874.3		1,127.6	830.2	
Mar-18	1,008.5		895.5	1,000.5	
Apr-18	970.6		622.5	949.5	
May-18	547.9		276.7	553.3	
Jun-18	463.4		136.3	462.7	
Jul-18	545.0		68.0	550.0	
Aug-18	515.7		123.7	519.7	
Sep-18	577.9		410.9	537.7	
Oct-18	638.1		551.0	635.6	
Nov-18	709.7		872.6	739.4	
Dec-18	756.3	8,640.8	1,175.5	766.5	8,546.3
Jan-19	879.8		1,105.0	887.5	
Feb-19	984.7		1,116.0	944.9	
Mar-19	868.8		755.4	912.1	
Apr-19	677.3		519.4	694.1	
May-19	683.0		229.6	705.6	
Jun-19	492.2		152.8	485.4	
Jul-19	478.1		58.6	486.6	
Aug-19	570.7		198.9	547.1	
Sep-19	538.8		281.6	545.8	
Oct-19	645.7		575.9	634.1	
Nov-19	706.5	8,263.8	871.9	736.5	8,374.3
Dec-19	738.1		1,049.5	794.5	
Jan-20	1,269.4		1,353.4	1,186.2	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.819052999					
R Square	0.670847816					
Adjusted R Square	0.668058391					
Standard Error	104.8242453					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	2642608.119	2642608.119	240.4967857	2.99514E-30	
Residual	118	1296598.443	10988.1224			
Total	119	3939206.562				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	491.3960533	17.12401211	28.69625706	4.78582E-55	457.4848474	525.3052593
MHDD	0.366217451	0.023614807	15.50795879	2.99514E-30	0.319453705	0.412981198

10 Year	
Month	Normal HDD
JAN	1126.1
FEB	1007.3
MAR	873.6
APR	565.1
MAY	291.3
JUN	134.2
JUL	81.8
AUG	134.5
SEP	300.9
OCT	544.4
NOV	953.7
DEC	1203.4

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) ^{(1/(2019 - 2017)) - 1} =$
 $(8374.3 / 8386.7) ^{(1/2)} - 1 = -0.1\%$

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

Residential - Yukon - Upper Liard

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	841.1		957.7	859.2		
Mar-20	715.3		889.6	709.5		
Apr-20	858.0		569.8	856.3		
May-20	626.5		284.0	629.2		
Jun-20	553.6		176.5	538.2		
Jul-20	545.0		107.5	535.6		
Aug-20	552.4		177.4	536.7		
Sep-20	497.5		317.7	491.3		
Oct-20	549.4		623.5	520.5		
Nov-20	723.9		1,030.7	695.7		
Dec-20	734.8	8,467.0	1,040.3	794.6	8,352.8	
Jan-21	978.4		1,117.9	981.4		
Feb-21	841.2		1,159.7	785.4		
Mar-21	785.5		886.8	780.7		
Apr-21	812.8		603.7	798.6		
May-21	629.5		358.1	605.1		
Jun-21	668.7		114.7	675.9		
Jul-21	530.3		87.5	528.2		
Aug-21	534.9		133.5	535.2		
Sep-21	606.7		320.2	599.6		
Oct-21	603.2		553.5	599.9		
Nov-21	702.2		931.6	710.3		
Dec-21	929.1	8,622.5	1,454.2	837.3	8,437.6	
Jan-22	1,057.8		1,200.8	1,030.5		
Feb-22	1,159.2		928.8	1,188.0		
Mar-22	831.4		842.6	842.8		
Apr-22	936.1		641.0	908.3		
May-22	668.0		370.3	639.1		
Jun-22	427.5		116.2	434.1		
Jul-22	569.4		64.0	575.9		
Aug-22	496.5		94.8	511.0		
Sep-22	580.7		251.5	598.8		
Oct-22	699.5		448.8	734.5		
Nov-22	821.8		950.2	823.1		
Dec-22	970.1	9,217.9	1,252.1	952.3	9,238.2	
Jan-23	1,162.3		931.1	1,233.7		
Feb-23	884.8		945.4	907.5		
Mar-23	1,115.5		893.9	1,108.1		
Apr-23	907.7					
May-23	638.6					
Jun-23	433.8					
Jul-23	575.4					
Aug-23	510.6					
Sep-23	598.3					
Oct-23	733.9					
Nov-23	822.5					
Dec-23	951.6	9,334.9			9,421.6	
Jan-24	1,232.8					
Feb-24	906.8					
Mar-24	1,107.2					
Apr-24	907.0					
May-24	638.1					
Jun-24	433.4					
Jul-24	575.0					
Aug-24	510.3					
Sep-24	597.9					
Oct-24	733.4					
Nov-24	821.8					
Dec-24	950.9	9,414.6			9,414.6	

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

Residential - Yukon - Watson Lake

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,132.4		1,129.1	1,131.1	
Feb-13	913.2		765.8	1,013.0	
Mar-13	875.6		950.7	843.8	
Apr-13	907.4		690.1	755.7	
May-13	736.7		304.5	731.3	
Jun-13	665.0		96.3	680.6	
Jul-13	594.5		105.1	584.9	
Aug-13	587.0		82.2	608.6	
Sep-13	538.9		239.1	564.4	
Oct-13	649.6		490.2	672.0	
Nov-13	763.2		1,021.3	735.2	
Dec-13	1,018.9	9,282.4	1,248.8	1,000.1	9,320.8
Jan-14	1,046.8		937.7	1,124.6	
Feb-14	898.5		1,204.4	817.0	
Mar-14	947.2		1,008.9	891.3	
Apr-14	774.1		570.5	771.9	
May-14	703.0		331.1	696.6	
Jun-14	597.6		186.8	575.9	
Jul-14	591.1		87.6	588.7	
Aug-14	529.2		144.8	524.9	
Sep-14	571.9		295.8	574.0	
Oct-14	683.5		539.7	685.4	
Nov-14	737.2		936.4	744.3	
Dec-14	1,019.1	9,099.1	1,176.7	1,030.1	9,014.7
Jan-15	1,084.7		1,022.8	1,127.4	
Feb-15	892.4		956.7	913.4	
Mar-15	819.6		766.3	864.0	
Apr-15	728.9		497.4	756.9	
May-15	645.2		210.8	678.5	
Jun-15	536.7		111.8	546.0	
Jul-15	552.7		92.4	548.3	
Aug-15	521.9		147.5	516.5	
Sep-15	626.0		336.1	611.5	
Oct-15	680.6		523.7	689.2	
Nov-15	803.0		887.6	830.2	
Dec-15	951.9	8,843.7	1,160.3	969.7	9,051.4
Jan-16	1,081.9		1,089.3	1,093.0	
Feb-16	884.0		930.8	915.6	
Mar-16	839.9		724.3	901.6	
Apr-16	722.8		413.0	785.6	
May-16	625.5		252.4	641.6	
Jun-16	601.5		100.8	615.3	
Jul-16	541.0		45.0	556.2	
Aug-16	529.0		117.1	536.2	
Sep-16	638.8		301.7	638.5	
Oct-16	680.0		623.1	647.5	
Nov-16	792.8		914.0	809.2	
Dec-16	1,046.7	8,983.9	1,300.2	1,006.7	9,147.0
Jan-17	1,105.0		1,081.0	1,123.6	
Feb-17	930.9		925.7	964.7	
Mar-17	953.8		1,015.8	895.0	
Apr-17	787.7		523.7	804.8	
May-17	671.3		295.8	669.4	
Jun-17	637.1		150.0	630.6	
Jul-17	567.6		101.9	559.3	
Aug-17	560.8		124.8	564.8	
Sep-17	586.5		254.7	605.6	
Oct-17	648.4		514.6	660.7	
Nov-17	838.3		1,120.2	769.4	
Dec-17	969.8	9,257.1	1,176.2	981.0	9,228.9
Jan-18	1,129.2		1,214.2	1,092.8	
Feb-18	1,021.4		1,127.6	971.6	
Mar-18	899.0		895.5	890.0	
Apr-18	883.1		622.5	859.4	
May-18	724.8		276.7	730.9	
Jun-18	603.9		136.3	603.1	
Jul-18	499.9		68.0	505.6	
Aug-18	547.8		123.7	552.3	
Sep-18	683.9		410.9	638.4	
Oct-18	640.9		551.0	638.2	
Nov-18	806.3		872.6	839.8	
Dec-18	888.4	9,328.7	1,175.5	899.9	9,222.0
Jan-19	1,001.6		1,105.0	1,010.4	
Feb-19	1,029.7		1,116.0	984.8	
Mar-19	817.0		755.4	865.8	
Apr-19	794.0		519.4	812.9	
May-19	664.1		229.6	689.7	
Jun-19	593.2		152.8	585.5	
Jul-19	553.4		58.6	563.0	
Aug-19	549.3		198.9	522.7	
Sep-19	551.8		281.6	559.8	
Oct-19	671.7		575.9	658.7	
Nov-19	791.6	8,851.5	871.9	825.4	8,976.1
Dec-19	833.9		1,049.5	897.5	
Jan-20	1,272.1		1,353.4	1,178.2	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.901725487					
R Square	0.813108853					
Adjusted R Square	0.81152503					
Standard Error	80.9606427					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	3365037.148	3365037.148	513.3836735	8.56863E-45	
Residual	118	773445.8287	6554.625667			
Total	119	4138482.976				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	518.9929565	13.22567143	39.24133147	1.47302E-69	492.8025263	545.1833866
MHDD	0.413254494	0.018238814	22.65796932	8.56863E-45	0.377136676	0.449372311

10 Year	
Month	Normal HDD
JAN	1126.1
FEB	1007.3
MAR	873.6
APR	565.1
MAY	291.3
JUN	134.2
JUL	81.8
AUG	134.5
SEP	300.9
OCT	544.4
NOV	953.7
DEC	1203.4

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) ^{(1/(2019 - 2017)) - 1} =$
 $(8976.1 / 9228.9) ^{(1/2)} - 1 = -1.4\%$

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

Residential - Yukon - Watson Lake

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	891.6		957.7	912.1		
Mar-20	788.0		889.6	781.4		
Apr-20	886.3		569.8	884.3		
May-20	749.2		284.0	752.3		
Jun-20	606.7		176.5	589.2		
Jul-20	619.2		107.5	608.6		
Aug-20	630.0		177.4	612.2		
Sep-20	553.3		317.7	546.3		
Oct-20	701.5		623.5	668.9		
Nov-20	841.2		1,030.7	809.4		
Dec-20	926.4	9,465.6	1,040.3	993.8	9,336.7	
Jan-21	1,098.3		1,117.9	1,101.7		
Feb-21	1,041.4		1,159.7	978.4		
Mar-21	953.5		886.8	948.0		
Apr-21	951.8		603.7	935.9		
May-21	683.3		358.1	655.7		
Jun-21	594.3		114.7	602.4		
Jul-21	585.7		87.5	583.3		
Aug-21	548.9		133.5	549.3		
Sep-21	572.3		320.2	564.3		
Oct-21	653.3		553.5	649.6		
Nov-21	786.8		931.6	795.9		
Dec-21	1,016.8	9,486.4	1,454.2	913.1	9,277.7	
Jan-22	1,340.3		1,200.8	1,309.4		
Feb-22	976.5		928.8	1,009.0		
Mar-22	854.9		842.6	867.8		
Apr-22	907.9		641.0	876.5		
May-22	657.1		370.3	624.5		
Jun-22	587.9		116.2	595.4		
Jul-22	574.6		64.0	581.9		
Aug-22	494.6		94.8	511.0		
Sep-22	629.5		251.5	649.9		
Oct-22	673.0		448.8	712.5		
Nov-22	795.3		950.2	796.7		
Dec-22	1,010.7	9,502.3	1,252.1	990.6	9,525.2	
Jan-23	1,116.7		931.1	1,197.3		
Feb-23	861.7		945.4	887.3		
Mar-23	882.6		893.9	874.2		
Apr-23	864.4					
May-23	615.8					
Jun-23	587.2					
Jul-23	573.9					
Aug-23	504.0					
Sep-23	640.9					
Oct-23	702.7					
Nov-23	785.7					
Dec-23	976.9	9,112.7			9,210.5	
Jan-24	1,180.8					
Feb-24	875.1					
Mar-24	862.2					
Apr-24	852.5					
May-24	607.4					
Jun-24	579.1					
Jul-24	566.0					
Aug-24	497.0					
Sep-24	632.1					
Oct-24	693.0					
Nov-24	774.9					
Dec-24	963.5	9,083.5			9,083.5	

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

Residential - Yukon - WHITEHORSE + TAKHINI

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,541.7			952.0	1,544.7
Feb-13	1,154.1			665.4	1,205.5
Mar-13	1,077.1			851.1	1,016.1
Apr-13	1,094.6			639.9	1,000.0
May-13	844.7			294.0	833.9
Jun-13	745.3			112.4	770.4
Jul-13	669.0			88.2	673.5
Aug-13	644.5			106.5	669.8
Sep-13	665.6			264.3	686.0
Oct-13	764.9			388.8	853.8
Nov-13	921.9			856.5	879.6
Dec-13	1,163.0	11,286.4	1,008.2	1,127.1	11,360.3
Jan-14	1,469.5			745.8	1,624.5
Feb-14	1,069.2			992.4	979.3
Mar-14	1,219.2			855.1	1,155.3
Apr-14	951.4			499.8	946.9
May-14	839.7			269.5	860.1
Jun-14	719.9			200.5	680.0
Jul-14	688.9			98.0	686.1
Aug-14	575.9			144.0	573.6
Sep-14	740.4			307.1	729.2
Oct-14	769.5			515.6	765.0
Nov-14	903.1			772.8	922.5
Dec-14	1,071.9	11,018.5	854.4	1,149.4	11,072.0
Jan-15	1,416.9			927.0	1,438.3
Feb-15	1,237.0			851.4	1,251.1
Mar-15	1,043.4			671.3	1,115.1
Apr-15	952.6			453.5	995.5
May-15	780.9			192.9	844.6
Jun-15	647.9			127.2	662.0
Jul-15	629.0			115.7	613.2
Aug-15	606.6			183.2	575.4
Sep-15	743.5			332.7	713.4
Oct-15	786.2			469.8	815.4
Nov-15	930.3			759.2	959.7
Dec-15	1,105.8	10,880.0	947.9	1,114.4	11,098.1
Jan-16	1,383.1			827.6	1,477.8
Feb-16	1,061.6			688.0	1,196.3
Mar-16	1,026.0			611.6	1,141.7
Apr-16	941.1			386.4	1,033.4
May-16	728.7			252.1	748.7
Jun-16	702.2			119.0	722.4
Jul-16	654.0			79.2	665.1
Aug-16	592.4			111.5	614.1
Sep-16	703.0			278.8	712.7
Oct-16	818.7			604.3	748.7
Nov-16	954.9			694.7	1,031.9
Dec-16	1,152.5	10,718.1	1,056.2	1,081.2	11,174.0
Jan-17	1,493.6			975.9	1,478.9
Feb-17	1,247.7			864.8	1,252.0
Mar-17	1,336.8			947.0	1,205.1
Apr-17	1,037.9			455.5	1,079.2
May-17	836.9			294.8	825.4
Jun-17	769.2			164.5	755.9
Jul-17	665.1			127.6	640.6
Aug-17	608.1			115.2	627.0
Sep-17	662.3			269.7	678.7
Oct-17	754.8			509.9	754.4
Nov-17	993.8			979.6	860.7
Dec-17	1,244.8	11,651.0	932.1	1,265.1	11,423.0
Jan-18	1,472.0			1,000.0	1,439.6
Feb-18	1,389.7			1,017.3	1,281.5
Mar-18	1,272.0			788.7	1,257.0
Apr-18	1,187.6			552.3	1,157.5
May-18	800.1			294.7	788.8
Jun-18	735.0			170.0	717.6
Jul-18	652.7			75.7	666.4
Aug-18	590.9			130.1	598.9
Sep-18	731.1			349.2	688.8
Oct-18	783.7			475.8	808.5
Nov-18	959.4			695.1	1,036.1
Dec-18	1,051.3	11,625.5	840.5	1,139.1	11,579.8
Jan-19	1,420.7			998.1	1,389.7
Feb-19	1,320.2			997.2	1,226.8
Mar-19	1,246.3			610.4	1,362.8
Apr-19	917.9			473.8	945.8
May-19	851.9			229.1	888.9
Jun-19	690.4			134.2	699.4
Jul-19	621.6			52.4	652.5
Aug-19	632.6			171.6	609.9
Sep-19	663.3			239.3	702.1
Oct-19	721.4			557.4	686.0
Nov-19	1,046.8			687.2	1,129.4
Dec-19	1,081.0	11,214.2	839.8	1,169.3	11,462.7
Jan-20	1,443.6			1,235.8	1,237.2

Regression Output:

SUMMARY OUTPUT					
Regression Statistics					
Multiple R	0.870583844				
R Square	0.757916229				
Adjusted R Square	0.755864672				
Standard Error	138.3900097				
Observations	120				

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	7075335.166	7075335.166	369.434575	3.78525E-38
Residual	118	2259911.785	19151.79479		
Total	119	9335246.951			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	562.0394832	23.85375754	23.56188463	1.94147E-46	514.8025491	609.2764173	514.8025491	609.2764173
MHDD	0.737555396	0.038373011	19.22068092	3.78525E-38	0.661566387	0.813544404	0.661566387	0.813544404

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(11462.7 / 11423) \wedge (1/2) - 1 =$ **0.2%**

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

Residential - Yukon - WHITEHORSE + TAKHINI

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,467.8		847.2	1,485.1		
Mar-20	1,163.5		849.6	1,103.6		
Apr-20	1,233.8		500.7	1,241.8		
May-20	858.3		271.5	864.1		
Jun-20	713.0		189.0	681.6		
Jul-20	728.3		122.3	707.6		
Aug-20	643.4		185.6	610.5		
Sep-20	696.3		298.9	691.2		
Oct-20	798.2		596.6	733.9		
Nov-20	1,105.2		899.0	1,031.5		
Dec-20	1,206.3	12,057.8	863.2	1,277.4	11,665.5	
Jan-21	1,491.2		887.5	1,541.7		
Feb-21	1,334.6		1,051.4	1,201.2		
Mar-21	1,341.1		821.5	1,301.9		
Apr-21	1,281.3		565.1	1,241.9		
May-21	817.7		337.8	774.6		
Jun-21	726.8		127.4	740.8		
Jul-21	629.0		87.3	634.2		
Aug-21	588.5		153.2	579.4		
Sep-21	684.8		320.9	663.4		
Oct-21	803.8		523.3	793.5		
Nov-21	1,018.0		877.4	960.3		
Dec-21	1,283.8	12,000.6	1,131.7	1,156.8	11,589.8	
Jan-22	1,755.9		1,010.7	1,715.6		
Feb-22	1,310.6		731.0	1,413.6		
Mar-22	1,117.5		678.3	1,184.0		
Apr-22	1,067.7		588.6	1,010.9		
May-22	908.0		356.8	850.9		
Jun-22	701.2		119.9	720.8		
Jul-22	639.9		96.5	638.2		
Aug-22	601.9		108.0	626.1		
Sep-22	665.0		258.4	689.8		
Oct-22	755.9		452.2	798.1		
Nov-22	946.3		769.6	968.0		
Dec-22	1,191.4	11,661.4	1,121.0	1,072.3	11,688.4	
Jan-23	1,647.7		799.5	1,763.2		
Feb-23	1,166.6		826.3	1,199.3		
Mar-23	1,222.8		821.1	1,184.0		
Apr-23	1,012.7					
May-23	852.4					
Jun-23	722.0					
Jul-23	639.4					
Aug-23	627.2					
Sep-23	691.0					
Oct-23	799.5					
Nov-23	969.7					
Dec-23	1,074.1	11,425.0			11,534.3	
Jan-24	1,766.2					
Feb-24	1,201.3					
Mar-24	1,186.0					
Apr-24	1,014.4					
May-24	853.8					
Jun-24	723.3					
Jul-24	640.5					
Aug-24	628.3					
Sep-24	692.2					
Oct-24	800.9					
Nov-24	971.4					
Dec-24	1,076.0	11,554.4			11,554.4	

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

Commercial - Yukon - Beaver Creek

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:																																																			
Jan-13	2,415.2		852.0	2,418.0		SUMMARY OUTPUT <hr/> Regression Statistics Multiple R 0.531317351 R Square 0.282298127 Adjusted R Square 0.276215908 Standard Error 372.6924242 Observations 120 <hr/> ANOVA <table border="1"> <thead> <tr> <th></th> <th>df</th> <th>SS</th> <th>MS</th> <th>F</th> <th>Significance F</th> </tr> </thead> <tbody> <tr> <td>Regression</td> <td>1</td> <td>6446842.413</td> <td>6446842.413</td> <td>46.41367156</td> <td>4.28213E-10</td> </tr> <tr> <td>Residual</td> <td>118</td> <td>16390157.88</td> <td>138899.6431</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>119</td> <td>22837000.29</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <hr/> <table border="1"> <thead> <tr> <th></th> <th>Coefficients</th> <th>Standard Error</th> <th>t Stat</th> <th>P-value</th> <th>Lower 95%</th> <th>Upper 95%</th> <th>Lower 95.0%</th> <th>Upper 95.0%</th> </tr> </thead> <tbody> <tr> <td>Intercept</td> <td>1515.124256</td> <td>64.23957005</td> <td>23.58552921</td> <td>1.76059E-46</td> <td>1387.912418</td> <td>1642.336094</td> <td>1387.912418</td> <td>1642.336094</td> </tr> <tr> <td>MHDD</td> <td>0.704035669</td> <td>0.103340772</td> <td>6.812758</td> <td>4.28213E-10</td> <td>0.499392807</td> <td>0.908678532</td> <td>0.499392807</td> <td>0.908678532</td> </tr> </tbody> </table>		df	SS	MS	F	Significance F	Regression	1	6446842.413	6446842.413	46.41367156	4.28213E-10	Residual	118	16390157.88	138899.6431			Total	119	22837000.29					Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	Intercept	1515.124256	64.23957005	23.58552921	1.76059E-46	1387.912418	1642.336094	1387.912418	1642.336094	MHDD	0.704035669	0.103340772	6.812758	4.28213E-10	0.499392807	0.908678532	0.499392807	0.908678532
	df	SS	MS	F	Significance F																																																				
Regression	1	6446842.413	6446842.413	46.41367156	4.28213E-10																																																				
Residual	118	16390157.88	138899.6431																																																						
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	Coefficients	Standard Error	t Stat	P-value	Lower 95%		Upper 95%	Lower 95.0%	Upper 95.0%																																																
Intercept	1515.124256	64.23957005	23.58552921	1.76059E-46	1387.912418		1642.336094	1387.912418	1642.336094																																																
MHDD	0.704035669	0.103340772	6.812758	4.28213E-10	0.499392807		0.908678532	0.499392807	0.908678532																																																
Feb-13	2,187.7		865.4	2,332.2																																																					
Mar-13	1,908.5		851.1	1,850.3																																																					
Apr-13	1,493.9		639.9	1,403.5																																																					
May-13	1,913.3		294.0	1,902.9																																																					
Jun-13	1,802.1		112.4	1,826.1																																																					
Jul-13	2,976.0		88.2	2,980.3																																																					
Aug-13	2,522.1		106.5	2,546.3																																																					
Sep-13	2,157.4		264.3	2,176.8																																																					
Oct-13	1,901.6		388.8	1,986.5																																																					
Nov-13	1,704.2		856.5	1,663.8																																																					
Dec-13	1,733.1	24,715.0	1,008.2	1,698.8	24,785.5																																																				
Jan-14	2,960.5		745.8	3,108.5																																																					
Feb-14	2,208.3		992.4	2,122.6																																																					
Mar-14	1,882.3		855.1	1,821.3																																																					
Apr-14	1,807.2		499.8	1,815.5																																																					
May-14	1,554.4		269.5	1,561.3																																																					
Jun-14	1,836.9		200.5	1,798.8																																																					
Jul-14	1,738.1		98.0	1,735.5																																																					
Aug-14	1,717.1		144.0	1,714.9																																																					
Sep-14	2,433.1		307.1	2,422.4																																																					
Oct-14	2,188.7		515.6	2,184.3																																																					
Nov-14	2,203.9		772.8	2,222.5																																																					
Dec-14	2,084.7	24,615.1	854.4	2,158.6	24,666.2																																																				
Jan-15	2,624.4		927.0	2,644.9																																																					
Feb-15	1,744.7		851.4	1,758.2																																																					
Mar-15	2,396.2		671.3	2,464.6																																																					
Apr-15	1,797.2		453.5	1,838.0																																																					
May-15	1,783.6		192.9	1,844.4																																																					
Jun-15	1,564.2		127.2	1,577.8																																																					
Jul-15	1,991.0		115.7	1,975.9																																																					
Aug-15	1,764.2		183.2	1,734.4																																																					
Sep-15	2,158.4		332.7	2,129.7																																																					
Oct-15	1,672.8		469.8	1,700.7																																																					
Nov-15	1,872.7		759.2	2,040.8																																																					
Dec-15	1,985.5	23,494.7	947.9	1,993.6	23,702.9																																																				
Jan-16	2,713.2		827.6	2,803.7																																																					
Feb-16	1,684.4		688.0	1,813.0																																																					
Mar-16	2,077.3		611.6	2,187.7																																																					
Apr-16	1,690.0		386.4	1,778.1																																																					
May-16	1,411.0		252.1	1,430.1																																																					
Jun-16	1,984.6		119.0	2,003.9																																																					
Jul-16	1,305.0		79.2	1,315.6																																																					
Aug-16	1,577.3		111.5	1,597.9																																																					
Sep-16	1,911.5		278.8	1,920.8																																																					
Oct-16	1,543.6		604.3	1,476.7																																																					
Nov-16	1,728.9		694.7	1,800.4																																																					
Dec-16	1,859.8	21,483.6	1,056.2	1,790.7	21,918.8																																																				
Jan-17	2,423.5		975.9	2,409.6																																																					
Feb-17	2,034.0		864.8	2,038.1																																																					
Mar-17	1,979.0		947.0	1,853.3																																																					
Apr-17	1,776.2		455.5	1,815.7																																																					
May-17	1,338.6		294.8	1,327.7																																																					
Jun-17	1,880.5		164.5	1,867.8																																																					
Jul-17	1,757.8		127.6	1,734.3																																																					
Aug-17	1,579.9		115.2	1,598.0																																																					
Sep-17	1,981.0		269.7	1,996.6																																																					
Oct-17	1,672.7		509.9	1,672.4																																																					
Nov-17	2,020.3		979.6	1,893.2																																																					
Dec-17	2,158.1	22,601.7	932.1	2,177.4	22,384.1																																																				
Jan-18	2,092.5		1,000.0	2,061.6																																																					
Feb-18	2,529.3		1,017.3	2,426.0																																																					
Mar-18	2,031.4		788.7	2,017.1																																																					
Apr-18	1,939.2		552.3	1,910.5																																																					
May-18	1,373.4		294.7	1,362.6																																																					
Jun-18	1,749.3		170.0	1,732.7																																																					
Jul-18	1,663.1		75.7	1,676.2																																																					
Aug-18	1,580.5		130.1	1,588.1																																																					
Sep-18	1,963.3		349.2	1,923.0																																																					
Oct-18	1,698.3		475.8	1,721.9																																																					
Nov-18	1,915.5		695.1	1,988.7																																																					
Dec-18	2,163.3	22,699.1	840.5	2,247.1	22,655.5																																																				
Jan-19	2,149.5		998.1	2,119.8																																																					
Feb-19	2,359.3		997.2	2,270.1																																																					
Mar-19	1,823.0		610.4	1,934.2																																																					
Apr-19	1,519.1		473.8	1,545.6																																																					
May-19	1,540.4		229.1	1,575.8																																																					
Jun-19	1,513.1		134.2	1,521.7																																																					
Jul-19	1,574.8		52.4	1,604.3																																																					
Aug-19	1,091.1		171.6	1,069.5																																																					
Sep-19	1,143.3		239.3	1,180.4																																																					
Oct-19	1,894.8		557.4	1,861.0																																																					
Nov-19	2,188.2		687.2	2,267.0																																																					
Dec-19	1,650.6	20,447.1	839.8	1,734.8	20,684.3																																																				
Jan-20	2,351.4		1,235.8	2,154.5																																																					

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 (2019 Normalized UPC / 2017 Normalized UPC) ^ (1/(2019 - 2017)) - 1 =
 (20684.3 / 22384.1) ^ (1/2) - 1 = **-3.9%**

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

Commercial - Yukon - Beaver Creek

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	3,365.2		847.2	3,381.7		
Mar-20	1,827.9		849.6	1,770.8		
Apr-20	1,612.6		500.7	1,820.2		
May-20	1,591.4		271.5	1,596.9		
Jun-20	1,190.1		189.0	1,160.1		
Jul-20	1,006.6		122.3	986.9		
Aug-20	1,192.6		185.6	1,161.1		
Sep-20	1,533.2		298.9	1,528.3		
Oct-20	907.7		596.6	846.3		
Nov-20	1,877.2		899.0	1,806.9		
Dec-20	2,277.6	20,933.4	863.2	2,345.4	20,558.9	
Jan-21	3,093.6		887.5	3,141.8		
Feb-21	2,314.2		1,051.4	2,186.9		
Mar-21	2,511.2		821.5	2,473.9		
Apr-21	2,454.0		565.1	2,416.3		
May-21	1,228.4		337.8	1,185.2		
Jun-21	1,410.6		127.4	1,424.0		
Jul-21	1,309.2		87.3	1,314.1		
Aug-21	1,267.7		153.2	1,259.0		
Sep-21	1,656.6		320.9	1,636.2		
Oct-21	1,827.2		523.3	1,817.4		
Nov-21	2,200.1		877.4	2,145.0		
Dec-21	2,163.6	23,434.5	1,131.7	2,042.4	23,042.3	
Jan-22	2,962.6		1,010.7	2,924.1		
Feb-22	2,145.7		731.0	2,244.0		
Mar-22	1,832.3		678.3	1,895.8		
Apr-22	2,381.2		588.6	2,327.0		
May-22	1,406.8		356.8	1,352.3		
Jun-22	1,487.5		119.9	1,506.2		
Jul-22	1,481.6		96.5	1,460.1		
Aug-22	1,435.1		108.0	1,458.3		
Sep-22	1,601.3		258.4	1,624.9		
Oct-22	1,589.4		452.2	1,629.6		
Nov-22	1,811.9		769.6	1,832.7		
Dec-22	1,822.9	21,938.4	1,121.0	1,709.2	21,964.1	
Jan-23	3,503.7		799.5	3,613.9		
Feb-23	2,528.4		826.3	2,559.6		
Mar-23	2,044.8		821.1	2,007.7		
Apr-23	2,289.0					
May-23	1,352.3					
Jun-23	1,429.9					
Jul-23	1,405.0					
Aug-23	1,379.5					
Sep-23	1,539.3					
Oct-23	1,527.9					
Nov-23	1,741.7					
Dec-23	1,752.4	22,494.0			22,598.4	
Jan-24	3,368.1					
Feb-24	2,430.5					
Mar-24	1,965.6					
Apr-24	2,200.4					
May-24	1,300.0					
Jun-24	1,374.6					
Jul-24	1,350.6					
Aug-24	1,326.1					
Sep-24	1,479.7					
Oct-24	1,468.7					
Nov-24	1,674.3					
Dec-24	1,684.5	21,623.1			21,623.1	

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

Commercial - Yukon - Carcross

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	2,054.7		852.0	2,056.7	
Feb-13	1,953.8		665.4	2,057.0	
Mar-13	1,525.9		851.1	1,484.4	
Apr-13	1,641.3		639.9	1,576.7	
May-13	1,772.1		294.0	1,764.7	
Jun-13	1,795.6		112.4	1,812.7	
Jul-13	1,413.0		88.2	1,416.0	
Aug-13	1,476.0		106.5	1,493.3	
Sep-13	1,305.8		264.3	1,319.7	
Oct-13	1,246.6		388.8	1,307.3	
Nov-13	1,345.3		856.5	1,316.4	
Dec-13	1,413.8	18,943.7	1,008.2	1,389.3	18,994.2
Jan-14	1,975.2		745.8	2,081.0	
Feb-14	1,602.1		992.4	1,540.8	
Mar-14	1,851.8		855.1	1,808.2	
Apr-14	1,574.1		499.8	1,580.1	
May-14	1,465.0		269.5	1,470.0	
Jun-14	1,458.5		200.5	1,431.3	
Jul-14	1,504.1		98.0	1,502.2	
Aug-14	1,527.1		144.0	1,525.6	
Sep-14	1,276.3		307.1	1,268.6	
Oct-14	1,613.5		515.6	1,610.4	
Nov-14	1,319.6		772.8	1,332.9	
Dec-14	1,378.9	18,546.3	854.4	1,431.8	18,582.8
Jan-15	1,882.9		927.0	1,897.5	
Feb-15	1,682.9		851.4	1,692.6	
Mar-15	1,732.9		671.3	1,781.8	
Apr-15	1,345.6		453.5	1,374.9	
May-15	1,529.1		192.9	1,572.6	
Jun-15	1,314.3		127.2	1,324.0	
Jul-15	1,342.5		115.7	1,331.7	
Aug-15	1,523.5		183.2	1,502.3	
Sep-15	1,391.4		332.7	1,370.8	
Oct-15	1,586.0		469.8	1,585.9	
Nov-15	1,311.4		759.2	1,331.4	
Dec-15	1,646.8	18,269.3	947.9	1,652.6	18,418.1
Jan-16	2,021.0		827.6	2,085.7	
Feb-16	1,760.9		688.0	1,852.8	
Mar-16	2,014.5		611.6	2,093.4	
Apr-16	1,616.5		386.4	1,679.5	
May-16	1,363.7		252.1	1,377.4	
Jun-16	1,643.3		119.0	1,657.1	
Jul-16	1,456.6		79.2	1,463.2	
Aug-16	1,448.2		111.5	1,463.0	
Sep-16	1,545.9		278.8	1,552.5	
Oct-16	1,705.9		604.3	1,658.2	
Nov-16	1,744.6		694.7	1,797.1	
Dec-16	2,232.7	20,552.8	1,056.2	2,184.0	20,863.7
Jan-17	2,194.4		975.9	2,184.5	
Feb-17	2,813.5		864.8	2,816.5	
Mar-17	3,134.3		947.0	3,044.5	
Apr-17	2,130.0		455.5	2,158.2	
May-17	1,880.0		294.8	1,872.2	
Jun-17	2,013.3		164.5	2,004.2	
Jul-17	1,831.0		127.6	1,814.3	
Aug-17	1,707.8		115.2	1,720.7	
Sep-17	2,580.4		269.7	2,591.5	
Oct-17	1,886.7		509.9	1,886.5	
Nov-17	1,793.2		979.6	1,702.4	
Dec-17	2,315.1	26,279.9	932.1	2,328.9	26,124.4
Jan-18	2,552.9		1,000.0	2,530.7	
Feb-18	2,498.4		1,017.3	2,424.6	
Mar-18	2,401.8		788.7	2,391.6	
Apr-18	2,368.4		552.3	2,347.9	
May-18	2,006.7		294.7	1,999.0	
Jun-18	2,054.3		170.0	2,042.5	
Jul-18	1,908.7		75.7	1,918.1	
Aug-18	1,809.9		130.1	1,815.4	
Sep-18	2,072.4		349.2	2,043.6	
Oct-18	1,902.2		475.8	1,919.1	
Nov-18	1,891.6		695.1	1,944.0	
Dec-18	0.0	23,467.4	840.5	59.9	23,436.3
Jan-19	2,309.0		998.1	2,287.9	
Feb-19	2,708.6		997.2	2,644.9	
Mar-19	2,529.2		610.4	2,608.7	
Apr-19	1,917.3		473.8	1,936.3	
May-19	1,801.3		229.1	1,826.6	
Jun-19	1,841.8		134.2	1,847.9	
Jul-19	1,749.2		52.4	1,770.2	
Aug-19	1,830.7		171.6	1,815.2	
Sep-19	2,032.8		239.3	2,059.3	
Oct-19	1,636.3		557.4	1,612.1	
Nov-19	1,733.5		687.2	1,789.8	
Dec-19	2,085.1	24,174.7	839.8	2,145.4	24,344.3
Jan-20	2,158.6		1,235.8	2,017.9	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.388069145					
R Square	0.150597661					
Adjusted R Square	0.143399336					
Standard Error	396.6997526					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	3292385.204	3292385.204	20.92120919	1.18959E-05	
Residual	118	18569741.86	157370.6937			
Total	119	21862127.07				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1574.501802	68.37762158	23.02656578	1.80808E-45	1439.095495	1709.908108
MHDD	0.503125647	0.109997563	4.573970834	1.18959E-05	0.285300525	0.72095077

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 (2019 Normalized UPC / 2017 Normalized UPC) ^ (1/(2019 - 2017)) - 1 =
 (24344.3 / 26124.4) ^ (1/2) - 1 = **-3.5%**

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

Commercial - Yukon - Carcross

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	2,798.7		847.2	2,810.5		
Mar-20	2,322.5		849.6	2,281.6		
Apr-20	2,178.2		500.7	2,183.7		
May-20	2,335.0		271.5	2,339.0		
Jun-20	1,230.2		189.0	1,208.8		
Jul-20	1,437.4		122.3	1,423.3		
Aug-20	1,585.1		185.6	1,562.6		
Sep-20	1,388.0		298.9	1,384.5		
Oct-20	1,572.7		596.6	1,528.8		
Nov-20	1,956.1		899.0	1,905.8		
Dec-20	2,184.8	23,147.3	863.2	2,233.2	22,879.7	
Jan-21	2,312.4		887.5	2,346.8		
Feb-21	2,560.7		1,051.4	2,469.7		
Mar-21	2,223.0		821.5	2,196.3		
Apr-21	2,532.6		565.1	2,505.7		
May-21	2,219.3		337.8	2,189.8		
Jun-21	1,630.5		127.4	1,640.0		
Jul-21	1,632.5		87.3	1,636.0		
Aug-21	1,488.5		153.2	1,482.3		
Sep-21	1,542.7		320.9	1,528.1		
Oct-21	1,660.1		523.3	1,653.1		
Nov-21	1,665.6		877.4	1,626.2		
Dec-21	2,095.1	23,562.9	1,131.7	2,008.5	23,282.6	
Jan-22	2,222.4		1,010.7	2,194.9		
Feb-22	2,469.4		731.0	2,539.6		
Mar-22	2,098.8		678.3	2,144.2		
Apr-22	2,183.9		588.6	2,145.1		
May-22	1,832.1		356.8	1,793.1		
Jun-22	1,472.2		119.9	1,485.5		
Jul-22	2,273.4		96.5	2,272.2		
Aug-22	1,647.1		108.0	1,663.7		
Sep-22	1,891.2		258.4	1,908.1		
Oct-22	1,973.1		452.2	2,001.9		
Nov-22	1,548.0		769.6	1,562.8		
Dec-22	2,219.4	23,831.1	1,121.0	2,138.1	23,849.4	
Jan-23	2,711.1		799.5	2,789.9		
Feb-23	2,474.8		826.3	2,497.1		
Mar-23	2,175.5		821.1	2,149.0		
Apr-23	2,108.2					
May-23	1,768.6					
Jun-23	1,421.1					
Jul-23	2,194.5					
Aug-23	1,590.0					
Sep-23	1,825.7					
Oct-23	1,904.7					
Nov-23	1,494.3					
Dec-23	2,142.5	23,811.1			23,885.7	
Jan-24	2,617.1					
Feb-24	2,389.0					
Mar-24	2,100.1					
Apr-24	2,035.1					
May-24	1,707.3					
Jun-24	1,371.8					
Jul-24	2,118.5					
Aug-24	1,534.9					
Sep-24	1,762.4					
Oct-24	1,838.7					
Nov-24	1,442.5					
Dec-24	2,068.2	22,985.5			22,985.5	

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

Commercial - Yukon - Carmacks

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	3,038.4			352.0	3,102.1
Feb-13	2,705.0			665.4	2,890.2
Mar-13	2,895.5			851.1	2,820.9
Apr-13	3,143.9			639.9	3,028.1
May-13	2,753.4			294.0	2,740.2
Jun-13	1,823.0			112.4	1,853.7
Jul-13	2,222.3			88.2	2,227.8
Aug-13	2,270.0			106.5	2,301.0
Sep-13	2,044.0			264.3	2,068.9
Oct-13	2,627.4			388.8	2,736.2
Nov-13	2,770.4			856.5	2,718.6
Dec-13	2,576.3	30,929.7	1,008.2	2,532.3	31,020.1
Jan-14	3,848.6			745.8	4,038.3
Feb-14	2,847.7			992.4	2,737.8
Mar-14	2,695.9			855.1	2,617.8
Apr-14	2,504.1			499.8	2,514.7
May-14	2,603.8			269.5	2,612.6
Jun-14	1,347.7			200.5	2,298.9
Jul-14	2,033.0			98.0	2,029.6
Aug-14	2,373.3			144.0	2,370.5
Sep-14	2,313.6			307.1	2,299.9
Oct-14	2,732.0			515.6	2,726.3
Nov-14	2,403.1			772.8	2,426.8
Dec-14	3,276.0	31,978.7	854.4	3,370.8	32,044.1
Jan-15	3,133.6			927.0	3,159.8
Feb-15	2,469.0			851.4	2,486.3
Mar-15	2,822.0			671.3	2,909.7
Apr-15	2,866.7			453.5	2,919.1
May-15	2,250.2			192.9	2,328.2
Jun-15	2,314.8			127.2	2,332.1
Jul-15	2,840.1			115.7	2,820.8
Aug-15	2,106.0			183.2	2,067.8
Sep-15	2,720.1			332.7	2,683.3
Oct-15	2,812.1			469.8	2,847.8
Nov-15	2,939.7			759.2	2,975.7
Dec-15	3,156.8	32,431.1	947.9	3,167.3	32,698.0
Jan-16	3,254.3			827.6	3,370.2
Feb-16	3,049.8			688.0	3,214.6
Mar-16	3,026.9			611.6	3,168.5
Apr-16	3,025.5			386.4	3,138.5
May-16	2,200.9			252.1	2,225.5
Jun-16	2,360.8			119.0	2,385.5
Jul-16	2,558.2			79.2	2,571.8
Aug-16	2,434.8			111.5	2,461.4
Sep-16	2,783.0			278.8	2,794.8
Oct-16	2,449.2			604.3	2,363.5
Nov-16	2,921.6			694.7	3,015.8
Dec-16	2,857.7	32,920.9	1,056.2	2,768.5	33,478.6
Jan-17	4,036.2			975.9	4,018.3
Feb-17	2,718.1			864.8	2,723.3
Mar-17	3,511.8			947.0	3,350.6
Apr-17	2,503.8			455.5	2,554.4
May-17	2,431.5			294.8	2,417.5
Jun-17	2,692.7			164.5	2,676.3
Jul-17	2,297.1			127.6	2,267.0
Aug-17	2,865.3			115.2	2,888.5
Sep-17	2,420.0			269.7	2,440.1
Oct-17	2,499.5			509.9	2,499.0
Nov-17	2,748.7			979.6	2,585.8
Dec-17	2,740.2	33,464.7	832.1	2,765.0	33,185.8
Jan-18	3,670.8			1,000.0	3,631.1
Feb-18	2,996.9			1,017.3	2,864.6
Mar-18	2,969.7			788.7	2,951.4
Apr-18	2,657.8			552.3	2,621.0
May-18	2,806.4			294.7	2,792.6
Jun-18	2,299.8			170.0	2,278.5
Jul-18	2,150.4			75.7	2,167.1
Aug-18	2,998.8			130.1	3,008.5
Sep-18	1,788.1			349.2	1,736.4
Oct-18	2,278.6			475.8	2,308.9
Nov-18	2,940.7			695.1	3,034.6
Dec-18	2,342.3	31,900.2	840.5	2,449.7	31,844.4
Jan-19	3,842.7			998.1	3,804.7
Feb-19	2,735.4			997.2	2,621.2
Mar-19	2,809.3			610.4	2,951.9
Apr-19	2,348.5			473.8	2,382.6
May-19	2,784.6			229.1	2,830.0
Jun-19	2,117.1			134.2	2,128.2
Jul-19	2,078.3			52.4	2,116.1
Aug-19	2,724.4			171.6	2,696.7
Sep-19	2,322.9			239.3	2,370.4
Oct-19	2,932.6			557.4	2,889.3
Nov-19	2,582.8			687.2	2,683.8
Dec-19	2,478.5	31,757.2	839.8	2,586.5	32,061.3
Jan-20	3,913.8			1,235.8	3,661.3

Regression Output:

SUMMARY OUTPUT								
Regression Statistics								
Multiple R							0.637192564	
R Square							0.406014363	
Adjusted R Square							0.400980587	
Standard Error							362.3943555	
Observations							120	
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	10592788.74	10592788.74	80.65800235	5.11027E-15			
Residual	118	15496900.93	131329.6689					
Total	119	26089689.67						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	2140.159817	62.46453126	34.26200074	3.66735E-63	2016.463039	2263.856594	2016.463039	2263.856594
MHDD	0.902456529	0.100485306	8.980980033	5.11027E-15	0.703468265	1.101444792	0.703468265	1.101444792

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(32061.3 / 33185.8)^{(1/2) - 1} = -1.7\%$

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

Commercial - Yukon - Carmacks

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	2,900.2		847.2	2,921.3		
Mar-20	2,820.1		849.6	2,746.8		
Apr-20	2,941.8		500.7	2,951.6		
May-20	1,940.6		271.5	1,947.6		
Jun-20	1,889.7		189.0	1,651.2		
Jul-20	2,240.7		122.3	2,215.4		
Aug-20	1,788.5		185.6	1,748.2		
Sep-20	2,076.3		298.9	2,070.1		
Oct-20	2,636.7		596.6	2,558.0		
Nov-20	2,380.2		899.0	2,290.0		
Dec-20	2,715.4	30,044.0	863.2	2,802.3	29,563.9	
Jan-21	3,455.8		887.5	3,517.6		
Feb-21	3,049.9		1,051.4	2,886.8		
Mar-21	2,357.4		821.5	2,309.5		
Apr-21	2,753.5		565.1	2,705.2		
May-21	1,873.8		337.8	1,821.0		
Jun-21	1,911.7		127.4	1,928.9		
Jul-21	1,910.4		87.3	1,916.7		
Aug-21	1,978.5		153.2	1,967.4		
Sep-21	2,298.1		320.9	2,272.0		
Oct-21	2,323.9		523.3	2,311.4		
Nov-21	2,465.0		877.4	2,394.3		
Dec-21	2,349.5	28,727.7	1,131.7	2,194.1	28,225.0	
Jan-22	3,463.0		1,010.7	3,413.7		
Feb-22	3,056.3		731.0	3,182.3		
Mar-22	2,749.5		678.3	2,830.8		
Apr-22	2,700.5		588.6	2,631.0		
May-22	1,965.8		356.8	1,895.9		
Jun-22	2,225.1		119.9	2,249.0		
Jul-22	1,924.2		96.5	1,922.2		
Aug-22	1,793.2		108.0	1,822.9		
Sep-22	2,516.1		258.4	2,546.3		
Oct-22	2,463.3		452.2	2,514.8		
Nov-22	2,447.8		769.6	2,474.4		
Dec-22	2,463.2	29,767.8	1,121.0	2,317.5	29,800.8	
Jan-23	4,324.8		799.5	4,466.1		
Feb-23	3,081.6		826.3	3,121.6		
Mar-23	3,225.0		821.1	3,177.5		
Apr-23	2,654.3					
May-23	1,932.2					
Jun-23	2,187.0					
Jul-23	1,891.3					
Aug-23	1,762.6					
Sep-23	2,473.1					
Oct-23	2,421.2					
Nov-23	2,406.0					
Dec-23	2,421.1	30,780.2			30,913.9	
Jan-24	4,250.9					
Feb-24	3,028.9					
Mar-24	3,169.9					
Apr-24	2,609.0					
May-24	1,899.2					
Jun-24	2,149.7					
Jul-24	1,859.0					
Aug-24	1,732.5					
Sep-24	2,430.8					
Oct-24	2,379.8					
Nov-24	2,364.9					
Dec-24	2,379.8	30,254.2			30,254.2	

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

Commercial - Yukon - Destruction Bay

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	2,272.4		852.0	2,275.6	
Feb-13	1,946.7		665.4	2,107.4	
Mar-13	1,558.8		851.1	1,494.1	
Apr-13	1,759.7		639.9	1,659.2	
May-13	1,301.9		294.0	1,290.4	
Jun-13	1,462.2		112.4	1,488.8	
Jul-13	1,406.6		88.2	1,411.3	
Aug-13	1,333.9		106.5	1,360.9	
Sep-13	1,427.5		264.3	1,449.2	
Oct-13	1,102.3		388.8	1,196.7	
Nov-13	1,470.4		856.5	1,425.4	
Dec-13	1,690.9	18,733.4	1,008.2	1,652.8	18,811.8
Jan-14	1,895.9		745.8	2,060.5	
Feb-14	1,608.1		992.4	1,512.7	
Mar-14	1,649.2		855.1	1,581.4	
Apr-14	1,443.2		499.8	1,452.4	
May-14	1,425.4		269.5	1,433.1	
Jun-14	1,196.2		200.5	1,153.9	
Jul-14	1,309.0		98.0	1,306.1	
Aug-14	1,378.9		144.0	1,376.4	
Sep-14	1,477.3		307.1	1,465.5	
Oct-14	1,181.2		515.6	1,176.3	
Nov-14	1,513.4		772.8	1,534.0	
Dec-14	1,665.0	17,742.7	854.4	1,747.3	17,799.5
Jan-15	2,007.4		927.0	2,030.1	
Feb-15	1,900.1		851.4	1,915.2	
Mar-15	1,472.7		671.3	1,548.8	
Apr-15	1,717.7		453.5	1,763.2	
May-15	1,287.4		192.9	1,355.1	
Jun-15	1,212.2		127.2	1,227.3	
Jul-15	1,423.0		115.7	1,406.3	
Aug-15	1,097.4		183.2	1,064.2	
Sep-15	1,659.5		332.7	1,627.6	
Oct-15	1,053.9		469.8	1,084.9	
Nov-15	1,594.0		759.2	1,625.2	
Dec-15	1,865.9	18,291.3	947.9	1,875.0	18,522.9
Jan-16	1,878.0		827.6	1,978.6	
Feb-16	1,604.5		688.0	1,747.5	
Mar-16	1,636.7		611.6	1,759.6	
Apr-16	1,697.6		386.4	1,795.7	
May-16	901.3		252.1	922.6	
Jun-16	1,204.9		119.0	1,226.3	
Jul-16	1,410.6		79.2	1,422.4	
Aug-16	1,281.1		111.5	1,304.1	
Sep-16	1,070.5		278.8	1,080.8	
Oct-16	1,391.9		604.3	1,317.6	
Nov-16	1,299.8		694.7	1,381.6	
Dec-16	2,035.2	17,412.2	1,056.2	1,959.4	17,896.3
Jan-17	1,927.6		975.9	1,912.1	
Feb-17	1,840.2		864.8	1,844.8	
Mar-17	1,631.2		947.0	1,491.4	
Apr-17	1,584.6		455.5	1,628.5	
May-17	1,174.8		294.8	1,162.7	
Jun-17	1,197.5		164.5	1,183.4	
Jul-17	1,127.0		127.6	1,101.0	
Aug-17	1,325.1		115.2	1,345.2	
Sep-17	1,120.4		269.7	1,137.8	
Oct-17	1,299.1		509.9	1,298.7	
Nov-17	1,408.5		604.3	1,268.2	
Dec-17	1,735.6	17,372.8	932.1	1,757.1	17,130.7
Jan-18	1,996.3		1,000.0	1,961.9	
Feb-18	1,862.6		1,017.3	1,747.7	
Mar-18	1,715.8		788.7	1,700.0	
Apr-18	1,785.5		552.3	1,753.6	
May-18	1,426.9		294.7	1,414.8	
Jun-18	1,418.0		170.0	1,399.5	
Jul-18	1,257.8		75.7	1,272.4	
Aug-18	1,334.8		130.1	1,343.2	
Sep-18	1,604.0		349.2	1,559.2	
Oct-18	1,178.1		475.8	1,204.4	
Nov-18	1,363.8		695.1	1,445.3	
Dec-18	1,845.9	18,789.7	840.5	1,839.1	18,741.2
Jan-19	1,983.1		998.1	1,950.2	
Feb-19	2,158.2		997.2	2,059.0	
Mar-19	1,665.6		610.4	1,789.4	
Apr-19	1,817.9		473.8	1,847.4	
May-19	1,420.2		229.1	1,459.6	
Jun-19	1,161.8		134.2	1,171.3	
Jul-19	1,504.9		52.4	1,537.7	
Aug-19	1,620.2		171.6	1,596.1	
Sep-19	1,207.1		239.3	1,248.4	
Oct-19	1,543.2		557.4	1,505.6	
Nov-19	2,175.8	20,096.9	687.2	2,263.4	20,360.9
Dec-19	1,838.9		839.8	1,932.7	
Jan-20	2,004.7		1,235.8	1,785.6	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.67012394					
R Square	0.449066094					
Adjusted R Square	0.444397163					
Standard Error	288.0114731					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	7978336.506	7978336.506	96.18177174	5.74725E-17	
Residual	118	9788171.82	82950.60864			
Total	119	17766508.33				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1132.098443	48.64343786	22.80459396	4.60571E-45	1033.790921	1230.405966
MHDD	0.783208353	0.079860298	9.807230585	5.74725E-17	0.625063222	0.941353484

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(20360.9 / 17130.7)^{(1/2) - 1} = 9.0\%$

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

Commercial - Yukon - Destruction Bay

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,933.0		847.2	1,951.3		
Mar-20	2,920.4		849.6	2,856.8		
Apr-20	2,456.4		500.7	2,464.9		
May-20	1,489.1		271.5	1,495.2		
Jun-20	1,288.9		189.0	1,255.5		
Jul-20	-80.1		122.3	-102.0		
Aug-20	1,032.4		185.6	997.4		
Sep-20	1,476.6		298.9	1,471.1		
Oct-20	911.0		596.6	842.7		
Nov-20	1,657.9		899.0	1,579.7		
Dec-20	2,191.7	19,282.0	863.2	2,267.2	18,865.4	
Jan-21	1,893.7		887.5	1,947.4		
Feb-21	1,923.5		1,051.4	1,781.9		
Mar-21	1,781.8		821.5	1,740.3		
Apr-21	1,662.1		565.1	1,620.2		
May-21	1,847.4		337.8	1,801.6		
Jun-21	1,168.6		127.4	1,183.5		
Jul-21	1,243.9		87.3	1,249.4		
Aug-21	1,060.3		153.2	1,050.7		
Sep-21	1,414.9		320.9	1,392.2		
Oct-21	1,303.2		523.3	1,292.3		
Nov-21	1,616.5		877.4	1,555.1		
Dec-21	1,892.5	18,808.4	1,131.7	1,757.6	18,372.2	
Jan-22	2,744.9		1,010.7	2,702.1		
Feb-22	1,603.3		731.0	1,712.6		
Mar-22	1,570.5		678.3	1,641.1		
Apr-22	1,991.6		588.6	1,931.2		
May-22	1,583.9		356.8	1,523.2		
Jun-22	1,177.0		119.9	1,197.8		
Jul-22	1,289.2		96.5	1,296.5		
Aug-22	1,034.1		108.0	1,059.9		
Sep-22	1,213.9		258.4	1,240.2		
Oct-22	1,160.6		452.2	1,205.4		
Nov-22	1,659.6		769.6	1,682.7		
Dec-22	1,842.4	18,879.9	1,121.0	1,715.9	18,908.5	
Jan-23	3,046.7		799.5	3,169.3		
Feb-23	1,238.4		826.3	1,273.1		
Mar-23	1,760.2		821.1	1,719.0		
Apr-23	2,171.2					
May-23	1,726.7					
Jun-23	1,283.2					
Jul-23	1,415.3					
Aug-23	1,127.4					
Sep-23	1,323.5					
Oct-23	1,265.3					
Nov-23	1,809.3					
Dec-23	2,008.6	20,175.9			20,292.0	
Jan-24	3,321.6					
Feb-24	1,350.2					
Mar-24	1,919.0					
Apr-24	2,367.1					
May-24	1,682.5					
Jun-24	1,399.0					
Jul-24	1,543.0					
Aug-24	1,229.1					
Sep-24	1,442.8					
Oct-24	1,379.4					
Nov-24	1,972.5					
Dec-24	2,189.8	21,996.0			21,996.0	

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

Commercial - Yukon - Haines Junction

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	3,192.1		852.0	3,195.9	
Feb-13	2,742.1		665.4	2,933.7	
Mar-13	2,610.9		851.1	2,533.7	
Apr-13	2,527.0		639.9	2,407.1	
May-13	2,124.3		294.0	2,110.6	
Jun-13	2,505.9		112.4	2,537.7	
Jul-13	2,332.0		88.2	2,337.7	
Aug-13	1,818.5		106.5	1,850.6	
Sep-13	2,386.4		264.3	2,412.2	
Oct-13	2,082.8		388.8	2,195.4	
Nov-13	2,143.9		856.5	2,090.3	
Dec-13	2,971.7	29,437.5	1,008.2	2,926.2	29,531.1
Jan-14	3,196.3		745.8	3,392.7	
Feb-14	2,653.6		992.4	2,539.8	
Mar-14	3,069.5		855.1	2,988.6	
Apr-14	2,393.2		499.8	2,404.1	
May-14	2,261.2		269.5	2,270.4	
Jun-14	2,157.7		200.5	2,107.1	
Jul-14	2,258.3		98.0	2,254.8	
Aug-14	2,183.3		144.0	2,180.4	
Sep-14	2,302.1		307.1	2,288.0	
Oct-14	2,082.4		515.6	2,076.6	
Nov-14	2,066.6		772.8	2,091.1	
Dec-14	3,084.0	29,708.1	854.4	3,182.1	29,775.8
Jan-15	3,111.4		927.0	3,138.5	
Feb-15	3,051.3		851.4	3,069.2	
Mar-15	2,358.6		671.3	2,449.4	
Apr-15	2,821.3		453.5	2,875.5	
May-15	2,045.7		192.9	2,126.4	
Jun-15	2,121.3		127.2	2,139.2	
Jul-15	2,370.6		115.7	2,350.6	
Aug-15	2,221.6		183.2	2,182.1	
Sep-15	2,374.2		332.7	2,336.1	
Oct-15	2,129.0		469.8	2,165.9	
Nov-15	2,327.8		759.2	2,365.1	
Dec-15	2,981.6	29,914.2	947.9	2,992.4	30,190.4
Jan-16	3,042.0		827.6	3,162.0	
Feb-16	2,877.6		688.0	3,048.2	
Mar-16	2,637.7		611.6	2,784.2	
Apr-16	2,582.6		386.4	2,699.5	
May-16	1,968.7		252.1	1,994.1	
Jun-16	2,303.1		119.0	2,328.7	
Jul-16	2,376.4		79.2	2,390.5	
Aug-16	2,232.0		111.5	2,259.4	
Sep-16	2,068.1		278.8	2,080.4	
Oct-16	2,303.2		604.3	2,214.6	
Nov-16	2,576.4		694.7	2,673.9	
Dec-16	2,777.4	29,745.2	1,056.2	2,687.0	30,322.5
Jan-17	3,673.5		975.9	3,654.9	
Feb-17	3,087.3		864.8	3,092.7	
Mar-17	2,915.8		947.0	2,749.1	
Apr-17	2,891.3		455.5	2,943.6	
May-17	2,477.1		294.8	2,462.6	
Jun-17	2,483.7		164.5	2,466.8	
Jul-17	2,186.9		127.6	2,155.8	
Aug-17	2,410.4		115.2	2,434.4	
Sep-17	2,000.3		269.7	2,021.1	
Oct-17	2,050.6		509.9	2,050.1	
Nov-17	2,532.6		979.6	2,364.0	
Dec-17	3,077.8	31,787.1	932.1	3,103.4	31,498.5
Jan-18	3,457.5		1,000.0	3,416.4	
Feb-18	3,066.2		1,017.3	2,929.2	
Mar-18	3,004.0		788.7	2,985.1	
Apr-18	3,035.2		552.3	2,997.1	
May-18	2,221.4		294.7	2,207.0	
Jun-18	2,188.5		170.0	2,166.4	
Jul-18	2,363.1		75.7	2,380.5	
Aug-18	2,353.9		130.1	2,363.9	
Sep-18	2,471.4		349.2	2,417.9	
Oct-18	2,091.8		475.8	2,123.2	
Nov-18	2,593.1		695.1	2,690.3	
Dec-18	2,675.1	31,521.3	840.5	2,786.3	31,463.4
Jan-19	3,289.4		998.1	3,250.2	
Feb-19	3,064.7		997.2	2,946.4	
Mar-19	2,740.5		610.4	2,888.1	
Apr-19	2,446.1		473.8	2,481.4	
May-19	2,279.1		229.1	2,326.0	
Jun-19	2,207.4		134.2	2,218.8	
Jul-19	2,092.4		52.4	2,131.5	
Aug-19	2,064.5		171.6	2,035.8	
Sep-19	1,953.9		239.3	2,003.0	
Oct-19	1,639.1		557.4	1,594.3	
Nov-19	2,791.9		687.2	2,896.4	
Dec-19	2,412.2	28,981.1	839.8	2,524.0	29,295.8
Jan-20	2,959.8		1,235.8	2,698.6	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.669747961					
R Square	0.448562332					
Adjusted R Square	0.443889131					
Standard Error	343.7897308					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	11344730.38	11344730.38	95.98610725	6.06896E-17	
Residual	118	13946582.72	118191.379			
Total	119	25291313.1				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1931.840326	59.25772315	32.60065057	7.41519E-61	1814.493901	2049.186751
MHDD	0.933938384	0.095326585	9.797249984	6.06896E-17	0.745165793	1.122710976

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(29295.8 / 31498.5)^{(1/2)} - 1 = -3.6\%$

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

Commercial - Yukon - Haines Junction

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	2,701.3		847.2	2,723.1		
Mar-20	2,350.9		849.6	2,275.1		
Apr-20	3,206.8		500.7	3,216.9		
May-20	1,542.2		271.5	1,549.5		
Jun-20	1,638.1		189.0	1,598.3		
Jul-20	2,269.6		122.3	2,243.5		
Aug-20	1,829.3		185.6	1,787.6		
Sep-20	1,489.7		298.9	1,483.2		
Oct-20	1,755.7		596.6	1,674.2		
Nov-20	2,301.7		899.0	2,208.4		
Dec-20	2,894.5	26,939.7	863.2	2,984.4	26,442.9	
Jan-21	3,309.3		887.5	3,373.3		
Feb-21	2,452.2		1,051.4	2,283.4		
Mar-21	2,681.7		821.5	2,632.2		
Apr-21	2,678.0		565.1	2,628.0		
May-21	1,975.6		337.8	1,921.0		
Jun-21	1,902.4		127.4	1,820.2		
Jul-21	1,825.6		87.3	1,832.2		
Aug-21	1,618.7		153.2	1,607.2		
Sep-21	1,770.4		320.9	1,743.4		
Oct-21	1,896.2		523.3	1,883.2		
Nov-21	2,282.7		877.4	2,209.6		
Dec-21	2,639.1	26,932.0	1,131.7	2,478.2	26,411.8	
Jan-22	3,070.4		1,010.7	3,019.4		
Feb-22	2,699.7		731.0	2,830.1		
Mar-22	2,225.2		678.3	2,309.5		
Apr-22	2,189.7		588.6	2,117.7		
May-22	2,033.3		356.8	1,960.9		
Jun-22	1,837.0		119.9	1,861.7		
Jul-22	1,943.6		96.5	1,941.5		
Aug-22	1,683.6		108.0	1,714.3		
Sep-22	1,928.6		258.4	1,959.9		
Oct-22	1,765.9		452.2	1,819.3		
Nov-22	1,953.2		769.6	1,980.7		
Dec-22	2,619.3	25,949.4	1,121.0	2,468.4	25,983.5	
Jan-23	2,978.2		799.5	3,124.4		
Feb-23	2,372.7		826.3	2,414.1		
Mar-23	2,351.4		821.1	2,302.2		
Apr-23	2,111.7					
May-23	1,960.9					
Jun-23	1,771.6					
Jul-23	1,874.4					
Aug-23	1,623.7					
Sep-23	1,860.0					
Oct-23	1,703.0					
Nov-23	1,883.7					
Dec-23	2,526.0	25,017.2			25,155.6	
Jan-24	2,872.2					
Feb-24	2,288.3					
Mar-24	2,267.7					
Apr-24	2,036.5					
May-24	1,891.1					
Jun-24	1,708.5					
Jul-24	1,807.7					
Aug-24	1,565.9					
Sep-24	1,793.7					
Oct-24	1,642.4					
Nov-24	1,816.6					
Dec-24	2,436.1	24,126.6			24,126.6	

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

Commercial - Yukon - Keno City

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,447.1		852.0	1,448.0	
Feb-13	1,028.6		665.4	1,077.1	
Mar-13	1,314.5		851.1	1,295.0	
Apr-13	1,260.5		639.9	1,230.1	
May-13	618.2		294.0	614.8	
Jun-13	509.5		112.4	517.5	
Jul-13	730.7		88.2	732.1	
Aug-13	595.7		106.5	603.8	
Sep-13	630.6		264.3	637.1	
Oct-13	67.8		388.8	96.3	
Nov-13	623.0		856.5	609.4	
Dec-13	670.3	9,496.5	1,008.2	658.7	9,520.2
Jan-14	801.8		745.8	851.4	
Feb-14	891.8		992.4	863.1	
Mar-14	787.3		855.1	766.8	
Apr-14	747.2		499.8	750.0	
May-14	528.1		269.5	530.4	
Jun-14	566.4		200.5	553.6	
Jul-14	620.0		98.0	619.1	
Aug-14	386.5		144.0	385.8	
Sep-14	746.2		307.1	742.6	
Oct-14	475.6		515.6	474.1	
Nov-14	675.4		772.8	681.6	
Dec-14	758.5	7,984.6	854.4	783.3	8,001.7
Jan-15	758.4		927.0	765.2	
Feb-15	866.9		851.4	871.5	
Mar-15	722.2		671.3	745.1	
Apr-15	627.4		453.5	641.1	
May-15	649.5		192.9	669.9	
Jun-15	202.6		127.2	207.2	
Jul-15	492.5		115.7	487.5	
Aug-15	553.7		183.2	543.7	
Sep-15	508.5		332.7	498.9	
Oct-15	548.4		469.8	557.8	
Nov-15	1,000.7		759.2	1,010.1	
Dec-15	710.6	7,641.5	947.9	713.4	7,711.3
Jan-16	398.8		827.6	429.2	
Feb-16	940.4		688.0	983.5	
Mar-16	174.2		611.6	211.3	
Apr-16	606.8		386.4	636.4	
May-16	388.7		252.1	395.1	
Jun-16	549.8		119.0	556.3	
Jul-16	627.4		79.2	631.0	
Aug-16	495.2		111.5	502.1	
Sep-16	851.1		278.8	854.2	
Oct-16	528.2		604.3	505.8	
Nov-16	633.8		694.7	658.5	
Dec-16	577.9	6,772.5	1,056.2	555.1	6,918.5
Jan-17	881.2		975.9	676.5	
Feb-17	537.6		864.8	539.0	
Mar-17	1,030.5		947.0	988.3	
Apr-17	598.4		455.5	611.6	
May-17	764.1		294.8	760.4	
Jun-17	637.1		164.5	632.8	
Jul-17	558.3		127.6	550.4	
Aug-17	642.4		115.2	648.4	
Sep-17	552.5		269.7	557.8	
Oct-17	582.6		509.9	582.5	
Nov-17	568.1		979.6	525.4	
Dec-17	625.8	7,778.4	832.1	632.3	7,705.4
Jan-18	802.9		1,000.0	732.5	
Feb-18	658.2		1,017.3	623.6	
Mar-18	915.5		788.7	910.8	
Apr-18	694.2		552.3	684.6	
May-18	424.9		294.7	421.2	
Jun-18	692.5		170.0	687.0	
Jul-18	744.9		75.7	749.3	
Aug-18	605.2		130.1	607.7	
Sep-18	856.2		349.2	842.6	
Oct-18	579.4		475.8	587.3	
Nov-18	481.5		695.1	506.1	
Dec-18	844.7	8,300.1	840.5	872.8	8,285.5
Jan-19	304.2		998.1	294.3	
Feb-19	986.5		997.2	956.6	
Mar-19	159.3		610.4	196.6	
Apr-19	609.1		473.8	618.1	
May-19	556.4		229.1	568.3	
Jun-19	655.2		134.2	658.1	
Jul-19	486.2		52.4	496.1	
Aug-19	663.5		171.6	656.3	
Sep-19	409.3		239.3	421.7	
Oct-19	492.5		557.4	481.1	
Nov-19	630.8		687.2	657.2	
Dec-19	493.6	6,446.8	839.8	521.9	6,526.4
Jan-20	936.3		1,235.8	870.1	

Regression Output:

SUMMARY OUTPUT								
Regression Statistics								
Multiple R					0.35164065			
R Square					0.123651147			
Adjusted R Square					0.116224462			
Standard Error					208.8737312			
Observations					120			
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	726391.55	726391.55	16.6495743	8.20781E-05			
Residual	118	5148131.801	43628.2356					
Total	119	5874523.351						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	520.1321324	36.00276748	14.44700418	7.33421E-28	448.8368511	591.4274138	448.8368511	591.4274138
MHDD	0.236323292	0.057916854	4.080388988	8.20781E-05	0.121632154	0.35101443	0.121632154	0.35101443

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(6526.4 / 7705.4) \wedge (1/2) - 1 =$
-8.0%

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

Commercial - Yukon - Keno City

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	539.6		847.2	545.1		
Mar-20	645.3		849.6	626.1		
Apr-20	585.1		500.7	587.6		
May-20	413.1		271.5	415.0		
Jun-20	551.0		189.0	540.9		
Jul-20	549.5		122.3	542.9		
Aug-20	578.9		185.6	568.4		
Sep-20	747.8		298.9	746.2		
Oct-20	831.0		596.6	810.4		
Nov-20	647.6		899.0	624.0		
Dec-20	510.1	7,535.4	863.2	532.9	7,409.7	
Jan-21	863.8		887.5	880.0		
Feb-21	545.2		1,051.4	502.4		
Mar-21	795.7		821.5	783.2		
Apr-21	618.5		565.1	605.8		
May-21	467.6		337.8	453.8		
Jun-21	549.8		127.4	554.3		
Jul-21	685.3		87.3	687.0		
Aug-21	601.3		153.2	598.4		
Sep-21	911.7		320.9	904.8		
Oct-21	696.8		523.3	693.6		
Nov-21	780.2		877.4	761.7		
Dec-21	544.3	8,060.3	1,131.7	503.6	7,928.7	
Jan-22	1,400.5		1,010.7	1,387.5		
Feb-22	601.9		731.0	634.9		
Mar-22	862.5		678.3	883.8		
Apr-22	758.8		588.6	740.6		
May-22	295.4		356.8	277.1		
Jun-22	664.2		119.9	670.5		
Jul-22	249.7		96.5	249.2		
Aug-22	659.0		108.0	666.8		
Sep-22	300.4		258.4	308.3		
Oct-22	587.9		452.2	601.4		
Nov-22	399.6		769.6	406.5		
Dec-22	573.3	7,353.1	1,121.0	535.1	7,361.7	
Jan-23	773.0		799.5	810.0		
Feb-23	606.2		826.3	616.7		
Mar-23	612.3		821.1	599.9		
Apr-23	698.3					
May-23	271.8					
Jun-23	611.3					
Jul-23	229.8					
Aug-23	606.5					
Sep-23	276.5					
Oct-23	541.0					
Nov-23	367.7					
Dec-23	527.6	6,122.1			6,157.1	
Jan-24	711.4					
Feb-24	557.9					
Mar-24	563.5					
Apr-24	642.7					
May-24	250.2					
Jun-24	562.6					
Jul-24	211.5					
Aug-24	559.2					
Sep-24	254.4					
Oct-24	497.9					
Nov-24	338.4					
Dec-24	485.6	5,634.3			5,634.3	

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

Commercial - Yukon - Lower Post

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	2,640.5		1,129.1	2,638.1	
Feb-13	1,772.1		765.8	1,867.7	
Mar-13	1,762.4		950.7	1,699.9	
Apr-13	1,883.1		690.1	1,781.9	
May-13	1,268.9		304.5	1,258.2	
Jun-13	1,256.9		96.3	1,287.6	
Jul-13	1,342.2		105.1	1,323.3	
Aug-13	1,380.3		82.2	1,422.6	
Sep-13	877.8		239.1	927.9	
Oct-13	1,377.9		490.2	1,421.7	
Nov-13	1,375.0		1,021.3	1,320.2	
Dec-13	1,786.6	18,723.6	1,248.8	1,749.9	18,799.0
Jan-14	2,146.3		937.7	2,298.9	
Feb-14	1,728.9		1,204.4	1,569.3	
Mar-14	1,930.2		1,008.9	1,820.6	
Apr-14	1,482.2		570.5	1,477.8	
May-14	1,343.6		331.1	1,311.4	
Jun-14	1,134.6		186.8	1,092.0	
Jul-14	1,168.9		87.6	1,164.2	
Aug-14	1,018.4		144.8	1,010.1	
Sep-14	993.6		295.8	997.7	
Oct-14	1,146.1		539.7	1,149.9	
Nov-14	1,159.9		936.4	1,173.9	
Dec-14	2,014.4	17,267.1	1,176.7	2,036.0	17,101.8
Jan-15	2,433.7		1,022.8	2,517.4	
Feb-15	2,010.6		956.7	2,051.6	
Mar-15	1,780.9		766.3	1,867.7	
Apr-15	1,837.2		497.4	1,892.0	
May-15	1,508.6		210.8	1,573.8	
Jun-15	978.0		111.8	996.2	
Jul-15	1,049.7		92.4	1,041.1	
Aug-15	809.9		147.5	799.4	
Sep-15	1,284.5		336.1	1,256.0	
Oct-15	1,864.1		523.7	1,880.9	
Nov-15	1,657.5		887.6	1,710.9	
Dec-15	1,889.3	18,104.2	1,160.3	1,924.2	18,511.3
Jan-16	2,282.4		1,099.3	2,304.1	
Feb-16	1,873.7		930.8	1,935.7	
Mar-16	1,793.8		724.3	1,914.7	
Apr-16	1,609.8		413.0	1,733.0	
May-16	1,354.7		252.4	1,386.3	
Jun-16	1,331.5		100.8	1,358.5	
Jul-16	1,274.6		45.0	1,304.4	
Aug-16	1,246.6		117.1	1,260.7	
Sep-16	1,373.1		301.7	1,372.4	
Oct-16	1,421.7		623.1	1,358.0	
Nov-16	1,698.1		914.0	1,730.3	
Dec-16	2,215.0	19,475.1	1,300.2	2,136.6	19,794.6
Jan-17	2,376.8		1,081.0	2,413.3	
Feb-17	2,189.6		925.7	2,255.7	
Mar-17	2,370.3		1,015.8	2,255.1	
Apr-17	1,763.2		523.7	1,796.7	
May-17	1,506.8		295.8	1,503.1	
Jun-17	1,723.8		150.0	1,711.0	
Jul-17	1,201.8		101.9	1,185.5	
Aug-17	780.7		124.8	788.5	
Sep-17	1,094.4		254.7	1,131.8	
Oct-17	1,238.0		514.6	1,262.1	
Nov-17	1,707.6		1,120.2	1,572.8	
Dec-17	1,970.3	19,923.0	1,176.2	1,992.3	19,867.8
Jan-18	2,372.6		1,214.2	2,301.2	
Feb-18	2,022.9		1,127.6	1,925.5	
Mar-18	1,899.9		895.5	1,882.2	
Apr-18	1,806.9		622.5	1,760.5	
May-18	1,388.1		276.7	1,400.0	
Jun-18	1,330.1		136.3	1,328.4	
Jul-18	1,124.5		68.0	1,135.7	
Aug-18	1,162.6		123.7	1,171.3	
Sep-18	845.4		410.9	756.4	
Oct-18	1,405.0		551.0	1,399.6	
Nov-18	1,909.6		872.6	1,975.2	
Dec-18	2,038.8	19,306.4	1,175.5	2,061.3	19,097.4
Jan-19	2,183.3		1,105.0	2,200.4	
Feb-19	2,152.5		1,116.0	2,064.5	
Mar-19	1,922.1		755.4	2,017.8	
Apr-19	1,435.9		519.4	1,473.0	
May-19	1,195.0		229.6	1,245.0	
Jun-19	1,236.3		152.8	1,221.2	
Jul-19	1,018.3		58.6	1,037.1	
Aug-19	1,141.9		198.9	1,089.8	
Sep-19	1,011.3		281.6	1,027.0	
Oct-19	1,195.6		575.9	1,170.1	
Nov-19	1,597.4		871.9	1,663.6	
Dec-19	1,735.7	17,825.4	1,049.5	1,880.3	18,069.7
Jan-20	2,405.4		1,353.4	2,221.3	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.731521876					
R Square	0.535124255					
Adjusted R Square	0.53118463					
Standard Error	308.4350189					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	12921922.07	12921922.07	135.8312682	2.34767E-21	
Residual	118	11225594.99	95132.16091			
Total	119	24147517.05				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1028.948226	50.38571931	20.42142575	1.52993E-40	929.170784	1128.725667
MHDD	0.809815737	0.069484244	11.65466723	2.34767E-21	0.672218017	0.947413456

10 Year	
Month	Normal HDD
JAN	1126.1
FEB	1007.3
MAR	873.6
APR	565.1
MAY	291.3
JUN	134.2
JUL	81.8
AUG	134.5
SEP	300.9
OCT	544.4
NOV	953.7
DEC	1203.4

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(18069.7 / 19867.8)^{(1/2)} - 1 =$ **-4.6%**

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

Commercial - Yukon - Lower Post

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,904.4		957.7	1,944.6		
Mar-20	1,596.8		889.6	1,583.8		
Apr-20	2,631.6		569.8	2,627.8		
May-20	154.0		284.0	159.9		
Jun-20	1,015.0		176.5	980.8		
Jul-20	1,253.6		107.5	1,232.8		
Aug-20	1,184.5		177.4	1,149.8		
Sep-20	938.1		317.7	924.5		
Oct-20	1,386.3		623.5	1,322.3		
Nov-20	1,514.9		1,030.7	1,452.5		
Dec-20	1,450.5	17,435.2	1,040.3	1,582.6	17,182.6	
Jan-21	1,910.8		1,117.9	1,917.4		
Feb-21	1,770.0		1,159.7	1,646.6		
Mar-21	1,620.7		886.8	1,610.0		
Apr-21	1,556.2		603.7	1,524.9		
May-21	1,045.9		358.1	991.9		
Jun-21	1,100.4		114.7	1,116.2		
Jul-21	1,276.6		87.5	1,271.9		
Aug-21	975.5		133.5	976.3		
Sep-21	1,065.7		320.2	1,050.1		
Oct-21	1,097.8		553.5	1,090.5		
Nov-21	1,348.3		931.6	1,366.2		
Dec-21	1,517.1	16,284.9	1,454.2	1,314.0	15,876.0	
Jan-22	2,485.4		1,200.8	2,424.9		
Feb-22	1,757.1		928.8	1,820.6		
Mar-22	1,530.9		842.6	1,556.0		
Apr-22	1,783.1		641.0	1,721.7		
May-22	1,288.3		370.3	1,224.4		
Jun-22	1,145.5		116.2	1,160.1		
Jul-22	1,203.1		64.0	1,217.5		
Aug-22	1,135.0		94.8	1,167.1		
Sep-22	1,322.5		251.5	1,362.5		
Oct-22	1,341.3		448.8	1,418.7		
Nov-22	1,154.1		950.2	1,157.0		
Dec-22	1,420.7	17,567.1	1,252.1	1,381.3	17,612.0	
Jan-23	2,048.1		931.1	2,206.0		
Feb-23	1,446.8		945.4	1,496.9		
Mar-23	1,836.0		893.9	1,819.6		
Apr-23	1,700.5					
May-23	1,228.6					
Jun-23	1,092.4					
Jul-23	1,147.4					
Aug-23	1,082.4					
Sep-23	1,261.2					
Oct-23	1,279.2					
Nov-23	1,100.7					
Dec-23	1,354.9	16,578.3			16,770.0	
Jan-24	1,953.2					
Feb-24	1,379.7					
Mar-24	1,750.9					
Apr-24	1,621.7					
May-24	1,171.7					
Jun-24	1,041.8					
Jul-24	1,094.2					
Aug-24	1,032.3					
Sep-24	1,202.8					
Oct-24	1,219.9					
Nov-24	1,049.7					
Dec-24	1,292.2	15,810.3			15,810.3	

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

Commercial - Yukon - Marsh Lake

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,284.8			952.0	1,288.4
Feb-13	1,825.2			665.4	2,010.8
Mar-13	1,310.8			851.1	1,236.1
Apr-13	1,356.7			639.9	1,240.6
May-13	1,217.8			294.0	1,204.5
Jun-13	1,017.0			112.4	1,047.8
Jul-13	819.7			88.2	825.2
Aug-13	885.5			106.5	916.6
Sep-13	876.1			264.3	901.1
Oct-13	1,106.4			388.8	1,215.4
Nov-13	1,143.6			856.5	1,091.7
Dec-13	1,417.3	14,260.9	1,008.2	1,373.2	14,351.5
Jan-14	1,566.0			745.8	1,756.1
Feb-14	1,375.1			992.4	1,265.0
Mar-14	1,386.1			855.1	1,307.7
Apr-14	1,505.5			498.8	1,516.1
May-14	1,125.0			269.5	1,133.8
Jun-14	909.5			200.5	860.6
Jul-14	968.7			98.0	965.3
Aug-14	896.3			144.0	893.5
Sep-14	1,079.0			307.1	1,065.2
Oct-14	1,080.1			515.6	1,074.4
Nov-14	1,342.8			772.8	1,366.5
Dec-14	1,706.0	14,939.9	854.4	1,801.0	15,005.5
Jan-15	1,322.9			927.0	1,349.1
Feb-15	1,197.6			851.4	1,214.9
Mar-15	1,134.0			671.3	1,221.8
Apr-15	1,243.1			453.5	1,295.6
May-15	967.7			192.9	1,045.8
Jun-15	812.6			127.2	830.0
Jul-15	827.5			115.7	808.1
Aug-15	767.1			183.2	728.9
Sep-15	1,174.6			332.7	1,137.8
Oct-15	963.7			469.8	999.5
Nov-15	1,091.6			759.2	1,127.9
Dec-15	1,374.6	12,877.0	947.9	1,385.0	13,144.5
Jan-16	1,331.0			827.6	1,447.2
Feb-16	1,130.8			688.0	1,296.0
Mar-16	1,258.1			611.6	1,399.9
Apr-16	960.7			386.4	1,073.9
May-16	936.2			252.1	960.8
Jun-16	957.6			119.0	982.4
Jul-16	951.1			79.2	964.8
Aug-16	843.9			111.5	870.5
Sep-16	1,266.8			278.8	1,278.7
Oct-16	1,116.7			604.3	1,030.8
Nov-16	1,410.8			694.7	1,505.2
Dec-16	1,745.9	13,909.7	1,056.2	1,658.5	14,468.7
Jan-17	1,861.7			975.9	1,843.7
Feb-17	2,094.1			864.8	2,099.4
Mar-17	1,808.0			947.0	1,646.6
Apr-17	1,480.9			455.5	1,531.6
May-17	1,134.6			294.8	1,120.6
Jun-17	1,112.4			164.5	1,096.0
Jul-17	786.5			127.6	756.4
Aug-17	993.7			115.2	1,017.0
Sep-17	1,004.6			269.7	1,024.7
Oct-17	777.0			509.9	776.5
Nov-17	955.4			979.6	792.1
Dec-17	1,244.8	15,253.6	832.1	1,269.6	14,974.1
Jan-18	1,317.1			1,000.0	1,277.3
Feb-18	1,734.0			1,017.3	1,601.3
Mar-18	1,579.0			788.7	1,560.7
Apr-18	1,772.0			552.3	1,735.1
May-18	1,315.5			294.7	1,301.6
Jun-18	1,084.7			170.0	1,063.3
Jul-18	133.2			75.7	150.0
Aug-18	744.5			130.1	754.2
Sep-18	1,033.6			349.2	981.8
Oct-18	958.5			475.8	988.8
Nov-18	1,329.6			695.1	1,423.7
Dec-18	1,320.9	14,322.5	840.5	1,428.5	14,266.5
Jan-19	1,634.9			998.1	1,496.8
Feb-19	1,800.1			997.2	1,685.6
Mar-19	1,409.8			610.4	1,552.7
Apr-19	1,186.1			473.8	1,220.2
May-19	780.5			229.1	826.0
Jun-19	797.8			134.2	808.8
Jul-19	711.3			52.4	749.2
Aug-19	919.2			171.6	891.4
Sep-19	891.9			239.3	939.5
Oct-19	1,157.3			557.4	1,113.9
Nov-19	1,747.4			687.2	1,848.6
Dec-19	1,507.4	14,443.6	839.8	1,615.6	14,748.4
Jan-20	2,039.3			1,235.8	1,786.3

Regression Output:

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.758229586							
R Square	0.574912105							
Adjusted R Square	0.571309665							
Standard Error	258.2003787							
Observations	120							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	10639432.71	10639432.71	159.58965	1.15581E-23			
Residual	118	7866757.397	66667.43557					
Total	119	18506190.11						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	785.7015824	44.50501335	17.65422642	6.59794E-35	697.5695395	873.8336253	697.5695395	873.8336253
MHDD	0.904441271	0.071594228	12.63287972	1.15581E-23	0.762665208	1.046217334	0.762665208	1.046217334

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(14748.4 / 14974.1)^{(1/2) - 1} = -0.8\%$

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

Commercial - Yukon - Marsh Lake

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,898.3		847.2	1,919.5		
Mar-20	1,976.0		849.6	1,902.6		
Apr-20	1,684.6		500.7	1,694.4		
May-20	948.3		271.5	955.4		
Jun-20	883.9		189.0	845.4		
Jul-20	885.9		122.3	860.6		
Aug-20	958.2		185.6	917.8		
Sep-20	1,085.0		298.9	1,078.7		
Oct-20	1,285.2		596.6	1,206.3		
Nov-20	1,776.6		899.0	1,686.3		
Dec-20	1,752.1	17,173.7	863.2	1,839.2	16,692.6	
Jan-21	2,156.1		887.5	2,218.1		
Feb-21	1,668.7		1,051.4	1,505.2		
Mar-21	1,853.9		821.5	1,805.9		
Apr-21	1,947.8		565.1	1,899.3		
May-21	1,141.5		337.8	1,088.6		
Jun-21	832.1		127.4	849.3		
Jul-21	897.6		87.3	904.0		
Aug-21	846.1		153.2	835.0		
Sep-21	1,094.1		320.9	1,067.9		
Oct-21	1,128.3		523.3	1,115.7		
Nov-21	1,585.6		877.4	1,514.8		
Dec-21	1,558.6	16,710.3	1,131.7	1,402.9	16,206.6	
Jan-22	2,255.6		1,010.7	2,206.2		
Feb-22	1,950.0		731.0	2,076.3		
Mar-22	1,726.7		678.3	1,808.3		
Apr-22	2,074.9		588.6	2,005.3		
May-22	962.6		356.8	892.5		
Jun-22	873.4		119.9	897.4		
Jul-22	987.6		96.5	985.6		
Aug-22	1,139.2		108.0	1,168.9		
Sep-22	1,175.1		258.4	1,205.5		
Oct-22	774.4		452.2	826.1		
Nov-22	1,770.8		769.6	1,797.5		
Dec-22	1,930.9	17,621.3	1,121.0	1,784.8	17,654.3	
Jan-23	2,241.1		799.5	2,382.7		
Feb-23	1,920.5		826.3	1,960.5		
Mar-23	1,977.8		821.1	1,930.2		
Apr-23	2,059.2					
May-23	955.3					
Jun-23	866.8					
Jul-23	980.1					
Aug-23	1,130.5					
Sep-23	1,166.2					
Oct-23	768.5					
Nov-23	1,757.4					
Dec-23	1,916.3	17,739.9			17,921.6	
Jan-24	2,224.2					
Feb-24	1,905.9					
Mar-24	1,962.9					
Apr-24	2,043.7					
May-24	948.1					
Jun-24	860.2					
Jul-24	972.7					
Aug-24	1,122.0					
Sep-24	1,157.4					
Oct-24	762.7					
Nov-24	1,744.1					
Dec-24	1,901.8	17,605.7			17,605.7	

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

Commercial - Yukon - Minto Landing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,887.0		952.0	1,888.7	
Feb-13	1,374.3		665.4	1,460.1	
Mar-13	1,276.0		851.1	1,241.5	
Apr-13	3,197.0		639.9	3,143.4	
May-13	1,080.0		294.0	1,073.9	
Jun-13	1,000.0		112.4	1,014.2	
Jul-13	8,486.7		88.2	8,489.2	
Aug-13	2,260.0		106.5	2,274.4	
Sep-13	1,740.0		264.3	1,751.5	
Oct-13	2,204.0		388.8	2,254.4	
Nov-13	1,179.3		856.5	1,155.3	
Dec-13	1,510.5	27,194.8	1,008.2	1,490.1	27,236.7
Jan-14	4,090.3		745.8	4,178.2	
Feb-14	2,362.7		992.4	2,311.8	
Mar-14	2,352.7		855.1	2,316.5	
Apr-14	-979.5		499.8	994.4	
May-14	3,225.3		269.5	3,229.4	
Jun-14	2,293.3		200.5	2,270.7	
Jul-14	2,779.0		98.0	2,777.4	
Aug-14	1,961.0		144.0	1,959.7	
Sep-14	2,653.3		307.1	2,647.0	
Oct-14	2,039.3		515.6	2,036.7	
Nov-14	1,359.7		772.8	1,370.7	
Dec-14	1,559.3	27,655.5	854.4	1,603.3	27,685.8
Jan-15	2,017.0		927.0	2,029.1	
Feb-15	1,714.6		851.4	1,722.7	
Mar-15	1,707.4		671.3	1,748.0	
Apr-15	1,400.3		453.5	1,424.6	
May-15	940.0		192.9	976.1	
Jun-15	3,319.3		127.2	3,327.4	
Jul-15	5,010.0		115.7	5,001.1	
Aug-15	-599.3		183.2	-617.0	
Sep-15	2,313.3		332.7	2,296.3	
Oct-15	1,871.7		469.8	1,888.2	
Nov-15	1,709.3		759.2	1,726.0	
Dec-15	1,918.3	23,322.0	947.9	1,923.2	23,445.6
Jan-16	2,342.0		827.6	2,395.7	
Feb-16	1,702.0		688.0	1,778.3	
Mar-16	2,780.0		611.6	2,845.6	
Apr-16	1,795.0		386.4	1,847.3	
May-16	924.7		252.1	936.0	
Jun-16	1,993.3		119.0	2,004.8	
Jul-16	2,882.3		79.2	2,888.6	
Aug-16	1,720.3		111.5	1,732.6	
Sep-16	2,124.0		278.8	2,129.5	
Oct-16	2,625.7		604.3	2,586.0	
Nov-16	2,349.0		694.7	2,392.6	
Dec-16	-447.3	22,791.0	1,056.2	-487.8	23,049.4
Jan-17	1,878.5		975.9	1,870.2	
Feb-17	2,977.0		864.8	2,979.4	
Mar-17	2,272.7		947.0	2,198.0	
Apr-17	1,651.5		455.5	1,674.9	
May-17	49.0		294.8	42.5	
Jun-17	2,070.0		164.5	2,062.4	
Jul-17	1,695.0		127.6	1,681.1	
Aug-17	2,023.7		115.2	2,034.4	
Sep-17	1,930.0		269.7	1,939.3	
Oct-17	584.3		509.9	584.1	
Nov-17	1,647.7		979.6	1,572.2	
Dec-17	1,400.7	20,180.0	832.1	1,412.1	20,050.8
Jan-18	1,681.3		1,000.0	1,663.0	
Feb-18	1,436.0		1,017.3	1,374.7	
Mar-18	1,648.3		788.7	1,639.9	
Apr-18	1,547.0		552.3	1,530.0	
May-18	1,556.0		294.7	1,549.6	
Jun-18	2,871.3		170.0	2,861.5	
Jul-18	2,163.0		75.7	2,170.8	
Aug-18	2,737.7		130.1	2,742.2	
Sep-18	2,229.7		349.2	2,205.7	
Oct-18	1,442.3		475.8	1,456.4	
Nov-18	2,119.0		695.1	2,162.5	
Dec-18	1,812.3	23,244.0	840.5	1,862.1	23,218.1
Jan-19	2,151.0		998.1	2,133.4	
Feb-19	1,614.7		997.2	1,561.8	
Mar-19	1,344.7		610.4	1,410.7	
Apr-19	1,772.3		473.8	1,788.1	
May-19	919.3		229.1	940.3	
Jun-19	1,847.3		134.2	1,852.4	
Jul-19	1,757.3		52.4	1,774.8	
Aug-19	2,416.3		171.6	2,403.5	
Sep-19	1,409.3		239.3	1,431.3	
Oct-19	1,291.3		557.4	1,271.3	
Nov-19	1,917.0		687.2	1,963.8	
Dec-19	1,683.3	20,124.0	839.8	1,733.4	20,264.9
Jan-20	1,331.5		1,235.8	1,214.6	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.062699337					
R Square	0.003931207					
Adjusted R Square	-0.004510054					
Standard Error	2209.026528					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	2272586.575	2272586.575	0.465713229	0.49630341	
Residual	118	575816187.7	4879798.201			
Total	119	578088774.3				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1702.787309	380.7614676	4.472057848	1.79297E-05	948.7759416	2456.798677
MHDD	0.418004882	0.612522529	0.682431849	0.49630341	-0.794956484	1.630966248

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(20264.9 / 20050.8) \wedge (1/2) - 1 =$ **0.5%**

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

Commercial - Yukon - Minto Landing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	2,936.0		847.2	2,945.8		
Mar-20	2,820.0		849.6	2,786.1		
Apr-20	2,273.3		500.7	2,277.9		
May-20	4,894.0		271.5	4,897.3		
Jun-20	1,644.3		189.0	1,626.5		
Jul-20	1,935.0		122.3	1,923.3		
Aug-20	-1,037.7		185.6	-1,056.4		
Sep-20	1,659.7		298.9	1,656.8		
Oct-20	1,561.3		596.6	1,524.9		
Nov-20	1,684.3		899.0	1,642.6		
Dec-20	1,734.0	23,435.8	863.2	1,774.3	23,213.5	
Jan-21	1,406.0		887.5	1,434.7		
Feb-21	3,819.3		1,051.4	3,743.8		
Mar-21	18,066.7		821.5	18,044.5		
Apr-21	-330.7		565.1	-353.0		
May-21	-11,182.3		337.8	-11,206.8		
Jun-21	455.7		127.4	463.6		
Jul-21	-271.0		87.3	-268.1		
Aug-21	950.0		153.2	944.9		
Sep-21	546.7		320.9	534.6		
Oct-21	1,120.7		523.3	1,114.8		
Nov-21	1,889.0		877.4	1,856.3		
Dec-21	981.5	17,451.5	1,131.7	909.5	17,218.7	
Jan-22	3,948.0		1,010.7	3,925.1		
Feb-22	1,546.0		731.0	1,604.4		
Mar-22	1,485.0		678.3	1,522.7		
Apr-22	1,989.0		588.6	1,956.8		
May-22	3,266.7		356.8	3,234.3		
Jun-22	1,840.0		119.9	1,851.1		
Jul-22	1,493.3		96.5	1,492.4		
Aug-22	1,606.7		108.0	1,620.4		
Sep-22	1,813.3		258.4	1,827.3		
Oct-22	2,034.0		452.2	2,057.9		
Nov-22	2,466.7		769.6	2,479.0		
Dec-22	1,896.3	25,385.0	1,121.0	1,828.8	25,400.2	
Jan-23	5,131.5		799.5	5,196.9		
Feb-23	3,548.3		826.3	3,566.9		
Mar-23	2,769.3		821.1	2,747.3		
Apr-23	1,999.6					
May-23	3,284.1					
Jun-23	1,849.8					
Jul-23	1,501.3					
Aug-23	1,615.2					
Sep-23	1,823.0					
Oct-23	2,044.8					
Nov-23	2,479.8					
Dec-23	1,906.4	29,953.2			30,015.1	
Jan-24	5,158.8					
Feb-24	3,567.2					
Mar-24	2,784.1					
Apr-24	2,010.2					
May-24	3,301.5					
Jun-24	1,659.6					
Jul-24	1,509.3					
Aug-24	1,623.8					
Sep-24	1,832.7					
Oct-24	2,055.7					
Nov-24	2,493.0					
Dec-24	1,916.6	30,112.6			30,112.6	

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

Commercial - Yukon - Old Crow

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	2,211.6		952.0	2,215.1	
Feb-13	2,681.5		665.4	2,858.7	
Mar-13	1,742.7		851.1	1,671.3	
Apr-13	1,927.2		639.9	1,816.4	
May-13	1,789.1		294.0	1,776.5	
Jun-13	1,923.2		112.4	1,952.5	
Jul-13	1,523.1		88.2	1,528.3	
Aug-13	1,476.1		106.5	1,505.8	
Sep-13	1,782.8		264.3	1,806.7	
Oct-13	1,501.1		388.8	1,605.2	
Nov-13	1,804.0		856.5	1,754.4	
Dec-13	2,055.6	22,417.9	1,008.2	2,013.5	22,504.4
Jan-14	2,443.9		745.8	2,625.5	
Feb-14	1,885.9		992.4	1,780.8	
Mar-14	2,352.5		855.1	2,277.7	
Apr-14	1,990.1		499.8	1,990.2	
May-14	2,079.8		269.5	2,088.3	
Jun-14	1,461.1		200.5	1,414.3	
Jul-14	2,128.2		98.0	2,125.0	
Aug-14	1,127.9		144.0	1,125.2	
Sep-14	1,277.9		307.1	1,264.8	
Oct-14	1,715.1		515.6	1,709.7	
Nov-14	1,813.6		772.8	1,836.3	
Dec-14	1,687.8	21,953.8	854.4	1,778.6	22,016.4
Jan-15	2,652.7		927.0	2,577.8	
Feb-15	1,857.0		851.4	1,873.6	
Mar-15	2,044.5		671.3	2,128.4	
Apr-15	2,002.7		453.5	2,052.8	
May-15	1,573.3		192.9	1,647.9	
Jun-15	1,417.5		127.2	1,434.1	
Jul-15	1,733.8		115.7	1,715.3	
Aug-15	1,307.3		183.2	1,270.8	
Sep-15	1,863.3		332.7	1,828.1	
Oct-15	1,331.0		469.8	1,365.1	
Nov-15	1,730.8		759.2	1,765.2	
Dec-15	2,196.0	21,609.9	947.9	2,206.0	21,865.2
Jan-16	2,531.5		827.6	2,642.4	
Feb-16	2,136.8		688.0	2,294.5	
Mar-16	2,258.0		611.6	2,393.5	
Apr-16	2,461.0		386.4	2,569.0	
May-16	1,825.6		252.1	1,849.1	
Jun-16	1,599.9		119.0	1,623.6	
Jul-16	1,813.6		79.2	1,826.6	
Aug-16	1,319.3		111.5	1,344.7	
Sep-16	1,846.2		278.8	1,857.6	
Oct-16	1,864.3		604.3	1,782.3	
Nov-16	1,922.7		694.7	2,012.8	
Dec-16	2,045.5	23,624.3	1,056.2	1,962.0	24,158.0
Jan-17	2,753.8		975.9	2,736.7	
Feb-17	2,214.3		864.8	2,219.4	
Mar-17	2,178.4		947.0	2,024.2	
Apr-17	2,752.3		455.5	2,800.7	
May-17	2,104.3		294.8	2,090.9	
Jun-17	1,919.4		164.5	1,903.7	
Jul-17	1,676.4		127.6	1,647.6	
Aug-17	1,562.3		115.2	1,584.5	
Sep-17	1,929.9		269.7	1,949.1	
Oct-17	1,787.0		509.9	1,786.5	
Nov-17	2,051.7		979.6	1,895.8	
Dec-17	2,610.0	25,539.6	932.1	2,633.6	25,272.7
Jan-18	2,402.8		1,000.0	2,364.8	
Feb-18	2,812.4		1,017.3	2,685.7	
Mar-18	2,099.2		788.7	2,081.8	
Apr-18	2,095.6		552.3	2,060.5	
May-18	1,821.1		294.7	1,807.9	
Jun-18	1,902.1		170.0	1,881.7	
Jul-18	1,622.7		75.7	1,638.8	
Aug-18	1,838.0		130.1	1,847.3	
Sep-18	1,648.3		349.2	1,598.9	
Oct-18	1,754.6		475.8	1,783.6	
Nov-18	2,333.5		695.1	2,423.3	
Dec-18	2,099.2	24,429.7	840.5	2,202.0	24,376.2
Jan-19	2,300.8		998.1	2,264.5	
Feb-19	2,695.1		997.2	2,585.8	
Mar-19	1,693.2		610.4	1,829.6	
Apr-19	2,476.9		473.8	2,509.5	
May-19	2,038.3		229.1	2,081.7	
Jun-19	1,925.8		134.2	1,936.3	
Jul-19	1,550.6		52.4	1,586.8	
Aug-19	1,967.4		171.6	1,940.9	
Sep-19	1,903.5		239.3	1,949.0	
Oct-19	1,459.0		557.4	1,417.5	
Nov-19	2,249.2		687.2	2,345.8	
Dec-19	2,197.5	24,457.2	839.8	2,300.8	24,748.2
Jan-20	2,583.2		1,235.8	2,341.6	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.569640764					
R Square	0.3244906					
Adjusted R Square	0.318765944					
Standard Error	413.6274959					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	9697762.237	9697762.237	56.68298734	1.12329E-11	
Residual	118	20188349.23	171087.7054			
Total	119	29886111.47				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1535.25303	71.29539205	21.53369223	1.08941E-42	1394.068744	1676.437316
MHDD	0.863489184	0.114691316	7.528810486	1.12329E-11	0.636369153	1.090609214

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(24748.2 / 25272.7) \wedge (1/2) - 1 = -1.0\%$

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

Commercial - Yukon - Old Crow

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	2,363.1		847.2	2,383.3		
Mar-20	2,350.2		849.6	2,280.2		
Apr-20	1,900.9		500.7	1,910.2		
May-20	1,851.9		271.5	1,958.7		
Jun-20	2,041.7		189.0	2,004.9		
Jul-20	1,123.9		122.3	1,099.7		
Aug-20	1,480.9		185.6	1,442.3		
Sep-20	1,540.2		298.9	1,534.2		
Oct-20	1,211.8		596.6	1,136.5		
Nov-20	2,075.8		899.0	1,989.5		
Dec-20	1,900.8	22,524.4	863.2	1,983.9	22,065.1	
Jan-21	4,895.8		887.5	4,955.0		
Feb-21	2,874.1		1,051.4	2,718.0		
Mar-21	2,855.8		821.5	2,810.0		
Apr-21	3,252.8		565.1	3,206.6		
May-21	1,881.0		337.8	1,930.5		
Jun-21	2,017.9		127.4	2,034.3		
Jul-21	1,485.3		87.3	1,491.4		
Aug-21	1,387.6		153.2	1,377.0		
Sep-21	1,779.2		320.9	1,754.2		
Oct-21	1,428.1		523.3	1,416.0		
Nov-21	1,978.8		877.4	1,911.2		
Dec-21	2,019.0	27,955.5	1,131.7	1,870.3	27,474.5	
Jan-22	2,818.3		1,010.7	2,771.1		
Feb-22	2,022.5		731.0	2,143.1		
Mar-22	1,783.2		678.3	1,861.1		
Apr-22	2,497.6		588.6	2,431.1		
May-22	1,940.7		356.8	1,873.8		
Jun-22	1,606.7		119.9	1,629.6		
Jul-22	1,691.9		96.5	1,690.0		
Aug-22	1,419.2		108.0	1,447.6		
Sep-22	1,793.0		258.4	1,821.9		
Oct-22	1,410.2		452.2	1,459.6		
Nov-22	2,284.9		769.6	2,310.4		
Dec-22	3,087.0	24,355.3	1,121.0	2,947.6	24,386.8	
Jan-23	2,663.7		799.5	2,798.9		
Feb-23	1,888.3		826.3	1,926.6		
Mar-23	1,936.4		821.1	1,891.0		
Apr-23	2,471.6					
May-23	1,920.4					
Jun-23	1,590.0					
Jul-23	1,674.3					
Aug-23	1,404.4					
Sep-23	1,774.3					
Oct-23	1,395.5					
Nov-23	2,261.1					
Dec-23	3,054.8	24,034.8			24,162.8	
Jan-24	2,636.0					
Feb-24	1,868.6					
Mar-24	1,916.2					
Apr-24	2,445.8					
May-24	1,900.4					
Jun-24	1,573.4					
Jul-24	1,656.8					
Aug-24	1,389.7					
Sep-24	1,755.8					
Oct-24	1,381.0					
Nov-24	2,237.5					
Dec-24	3,023.0	23,784.1			23,784.1	

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

Commercial - Yukon - Pelly Crossing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	3,754.3		852.0	3,759.3	
Feb-13	3,099.0		665.4	3,353.4	
Mar-13	3,471.9		851.1	3,369.4	
Apr-13	3,529.6		639.9	3,370.6	
May-13	3,227.7		294.0	3,209.5	
Jun-13	2,231.5		112.4	2,273.6	
Jul-13	2,381.5		88.2	2,389.0	
Aug-13	2,619.9		106.5	2,662.5	
Sep-13	2,288.9		264.3	2,323.1	
Oct-13	3,366.7		388.8	3,516.1	
Nov-13	2,890.6		856.5	2,819.5	
Dec-13	2,376.0	35,237.6	1,008.2	2,315.6	35,361.7
Jan-14	4,282.9		745.8	4,543.4	
Feb-14	3,335.3		992.4	3,184.3	
Mar-14	3,028.9		855.1	2,921.6	
Apr-14	2,752.8		499.8	2,767.4	
May-14	2,665.4		269.5	2,677.6	
Jun-14	2,325.8		200.5	2,258.7	
Jul-14	2,327.6		98.0	2,323.0	
Aug-14	2,103.8		144.0	2,099.9	
Sep-14	2,434.6		307.1	2,415.8	
Oct-14	3,153.4		515.6	3,145.7	
Nov-14	2,926.3		772.8	2,958.9	
Dec-14	3,933.6	35,270.4	854.4	4,063.9	35,360.2
Jan-15	3,237.5		927.0	3,273.5	
Feb-15	3,137.1		851.4	3,161.0	
Mar-15	2,860.1		671.3	2,980.5	
Apr-15	3,287.5		453.5	3,359.4	
May-15	2,545.6		192.9	2,652.7	
Jun-15	2,348.6		127.2	2,372.4	
Jul-15	2,811.1		115.7	2,784.6	
Aug-15	2,235.2		183.2	2,182.8	
Sep-15	2,671.8		332.7	2,621.3	
Oct-15	2,956.5		469.8	3,005.5	
Nov-15	2,782.0		759.2	2,831.5	
Dec-15	3,262.4	34,135.5	947.9	3,276.8	34,501.9
Jan-16	3,213.3		827.6	3,372.4	
Feb-16	2,808.9		688.0	3,035.2	
Mar-16	2,794.6		611.6	2,989.0	
Apr-16	3,218.1		386.4	3,373.2	
May-16	2,319.2		252.1	2,352.9	
Jun-16	2,272.6		119.0	2,306.6	
Jul-16	2,623.1		79.2	2,641.8	
Aug-16	2,137.1		111.5	2,173.6	
Sep-16	2,730.2		278.8	2,746.5	
Oct-16	2,614.8		604.3	2,497.2	
Nov-16	2,735.7		694.7	2,865.1	
Dec-16	3,525.3	32,992.9	1,056.2	3,405.4	33,758.9
Jan-17	4,125.9		975.9	4,101.3	
Feb-17	3,666.3		864.8	3,673.5	
Mar-17	3,906.7		947.0	3,685.4	
Apr-17	2,716.1		455.5	2,785.5	
May-17	2,598.7		294.8	2,579.5	
Jun-17	2,807.9		164.5	2,785.4	
Jul-17	2,310.2		127.6	2,269.0	
Aug-17	2,812.9		115.2	2,844.7	
Sep-17	2,525.9		269.7	2,553.5	
Oct-17	2,518.5		509.9	2,517.9	
Nov-17	2,903.1		979.6	2,679.4	
Dec-17	3,444.0	36,336.2	932.1	3,478.0	35,953.2
Jan-18	3,705.0		1,000.0	3,650.6	
Feb-18	3,733.2		1,017.3	3,551.4	
Mar-18	3,521.9		788.7	3,496.8	
Apr-18	2,647.4		552.3	2,596.9	
May-18	3,152.5		294.7	3,133.4	
Jun-18	2,419.5		170.0	2,390.2	
Jul-18	2,346.1		75.7	2,369.2	
Aug-18	3,068.1		130.1	3,081.5	
Sep-18	2,418.0		349.2	2,347.1	
Oct-18	2,719.6		475.8	2,761.2	
Nov-18	3,472.4		695.1	3,601.3	
Dec-18	2,525.9	35,829.7	840.5	2,773.4	35,752.9
Jan-19	4,782.3		998.1	4,730.1	
Feb-19	3,386.9		997.2	3,230.0	
Mar-19	2,765.9		610.4	2,961.8	
Apr-19	2,591.1		473.8	2,637.9	
May-19	2,833.2		229.1	2,895.4	
Jun-19	2,181.7		134.2	2,196.8	
Jul-19	2,272.6		52.4	2,324.5	
Aug-19	2,597.1		171.6	2,559.0	
Sep-19	1,953.9		239.3	2,019.1	
Oct-19	2,900.7		557.4	2,841.1	
Nov-19	2,790.2	33,674.6	687.2	2,928.9	34,092.2
Dec-19	2,619.1		839.8	2,767.4	
Jan-20	4,069.8		1,235.8	3,723.1	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.702705703					
R Square	0.493795305					
Adjusted R Square	0.488905434					
Standard Error	416.5917958					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	19976721.73	19976721.73	115.1072807	3.71462E-19	
Residual	118	20478749.47	173548.7243			
Total	119	40455471.2				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	2223.817285	71.80633711	30.96965219	1.68773E-58	2081.621189	2366.013382
MHDD	1.239319393	0.115513262	10.72880612	3.71462E-19	1.010571686	1.468067101

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(34092.2 / 35953.2)^{(1/2) - 1} =$ **-2.6%**

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

Commercial - Yukon - Pelly Crossing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	2,946.7		847.2	2,975.7		
Mar-20	3,052.9		849.6	2,952.3		
Apr-20	3,188.8		500.7	3,202.3		
May-20	2,284.7		271.5	2,294.4		
Jun-20	1,849.6		189.0	1,796.8		
Jul-20	2,003.2		122.3	1,968.5		
Aug-20	1,806.8		185.6	1,751.4		
Sep-20	2,153.9		298.9	2,145.3		
Oct-20	3,074.1		596.6	2,966.0		
Nov-20	2,429.8		899.0	2,306.0		
Dec-20	3,374.5	32,234.8	863.2	3,493.8	31,575.6	
Jan-21	3,686.9		887.5	3,771.8		
Feb-21	3,110.9		1,051.4	2,886.9		
Mar-21	2,939.5		821.5	2,873.8		
Apr-21	3,121.4		565.1	3,055.1		
May-21	2,414.8		337.8	2,342.3		
Jun-21	1,868.7		127.4	1,892.2		
Jul-21	2,111.9		87.3	2,120.5		
Aug-21	2,596.7		153.2	2,581.5		
Sep-21	2,876.9		320.9	2,841.0		
Oct-21	2,457.7		523.3	2,440.4		
Nov-21	3,106.6		877.4	3,009.6		
Dec-21	2,807.0	33,099.1	1,131.7	2,593.6	32,408.8	
Jan-22	3,808.9		1,010.7	3,741.1		
Feb-22	4,806.0		731.0	4,979.0		
Mar-22	3,145.0		678.3	3,256.7		
Apr-22	3,534.1		588.6	3,438.6		
May-22	2,343.4		356.8	2,247.4		
Jun-22	2,653.4		119.9	2,686.2		
Jul-22	2,109.6		96.5	2,106.9		
Aug-22	2,210.6		108.0	2,251.4		
Sep-22	2,668.1		258.4	2,709.6		
Oct-22	2,726.5		452.2	2,797.4		
Nov-22	3,036.2		769.6	3,072.8		
Dec-22	3,423.3	36,465.1	1,121.0	3,223.1	36,510.3	
Jan-23	4,577.6		799.5	4,771.6		
Feb-23	3,136.8		826.3	3,191.7		
Mar-23	3,067.1		821.1	3,001.9		
Apr-23	3,441.4					
May-23	2,282.0					
Jun-23	2,583.8					
Jul-23	2,054.3					
Aug-23	2,152.7					
Sep-23	2,598.1					
Oct-23	2,655.0					
Nov-23	2,956.6					
Dec-23	3,333.5	34,838.9			35,022.5	
Jan-24	4,457.5					
Feb-24	3,054.5					
Mar-24	2,986.7					
Apr-24	3,351.2					
May-24	2,222.1					
Jun-24	2,516.0					
Jul-24	2,000.4					
Aug-24	2,096.2					
Sep-24	2,530.0					
Oct-24	2,585.4					
Nov-24	2,879.1					
Dec-24	3,246.1	33,925.2			33,925.2	

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

Commercial - Yukon - Ross River

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	2,515.6		852.0	2,520.1	
Feb-13	3,270.1		665.4	3,437.2	
Mar-13	2,454.6		851.1	2,363.1	
Apr-13	2,640.4		639.9	2,498.3	
May-13	2,290.4		294.0	2,274.2	
Jun-13	2,319.5		112.4	2,357.1	
Jul-13	1,923.8		88.2	1,930.5	
Aug-13	2,300.6		106.5	2,338.7	
Sep-13	1,599.0		264.3	1,629.5	
Oct-13	1,854.0		388.8	1,987.4	
Nov-13	2,684.1		856.5	2,620.6	
Dec-13	2,244.9	28,096.9	1,008.2	2,191.0	28,207.8
Jan-14	3,380.5		745.8	3,613.2	
Feb-14	2,160.3		992.4	2,025.5	
Mar-14	2,961.8		855.1	2,865.9	
Apr-14	2,719.7		499.8	2,732.7	
May-14	2,361.6		269.5	2,372.5	
Jun-14	2,018.5		200.5	1,958.6	
Jul-14	1,901.3		98.0	1,897.2	
Aug-14	2,363.5		144.0	2,360.1	
Sep-14	1,574.4		307.1	1,557.6	
Oct-14	2,266.6		515.6	2,259.7	
Nov-14	2,842.4		772.8	2,871.5	
Dec-14	2,628.7	29,179.3	854.4	2,745.0	29,259.5
Jan-15	3,214.4		927.0	3,246.5	
Feb-15	2,846.2		851.4	2,867.5	
Mar-15	2,570.3		671.3	2,677.8	
Apr-15	2,938.5		453.5	3,002.7	
May-15	2,530.8		192.9	2,626.4	
Jun-15	1,760.8		127.2	1,782.0	
Jul-15	1,488.7		115.7	1,465.0	
Aug-15	1,847.4		183.2	1,800.6	
Sep-15	1,958.7		332.7	1,913.6	
Oct-15	2,464.5		469.8	2,508.3	
Nov-15	2,265.0		759.2	2,309.2	
Dec-15	2,765.8	28,651.1	947.9	2,778.6	28,978.4
Jan-16	3,375.8		827.6	3,518.0	
Feb-16	2,777.7		688.0	2,979.8	
Mar-16	2,697.0		611.6	2,870.6	
Apr-16	2,754.7		386.4	2,893.2	
May-16	2,268.7		252.1	2,298.8	
Jun-16	2,061.4		119.0	2,091.7	
Jul-16	2,321.9		79.2	2,338.6	
Aug-16	1,930.9		111.5	1,963.4	
Sep-16	2,402.0		278.8	2,416.5	
Oct-16	2,160.3		604.3	2,055.3	
Nov-16	2,468.0		694.7	2,583.6	
Dec-16	3,315.6	30,534.0	1,056.2	3,208.6	31,218.1
Jan-17	3,090.1		975.9	3,068.2	
Feb-17	2,693.0		864.8	2,699.4	
Mar-17	2,789.2		947.0	2,591.5	
Apr-17	2,718.2		455.5	2,780.2	
May-17	2,481.2		294.8	2,464.1	
Jun-17	2,088.0		164.5	2,068.0	
Jul-17	1,891.0		127.6	1,854.1	
Aug-17	2,229.8		115.2	2,258.3	
Sep-17	1,578.8		269.7	1,603.4	
Oct-17	2,009.1		509.9	2,008.5	
Nov-17	2,347.5		979.6	2,147.8	
Dec-17	3,022.1	28,938.0	932.1	3,052.5	28,595.9
Jan-18	2,584.7		1,000.0	2,536.1	
Feb-18	3,315.5		1,017.3	3,153.1	
Mar-18	3,430.3		788.7	3,407.9	
Apr-18	2,519.5		552.3	2,474.4	
May-18	1,960.9		294.7	1,943.9	
Jun-18	2,056.8		170.0	2,030.7	
Jul-18	1,783.4		75.7	1,804.0	
Aug-18	1,824.6		130.1	1,836.6	
Sep-18	1,758.5		349.2	1,695.1	
Oct-18	1,833.0		475.8	1,870.2	
Nov-18	2,627.7		695.1	2,742.8	
Dec-18	2,532.8	28,227.9	840.5	2,664.5	28,159.3
Jan-19	2,794.4		998.1	2,747.8	
Feb-19	3,534.5		997.2	3,394.4	
Mar-19	2,736.2		610.4	2,911.2	
Apr-19	2,300.0		473.8	2,341.8	
May-19	2,055.1		229.1	2,110.7	
Jun-19	1,382.0		134.2	1,395.6	
Jul-19	1,603.4		52.4	1,649.8	
Aug-19	1,740.0		171.6	1,706.0	
Sep-19	1,525.9		239.3	1,584.2	
Oct-19	1,809.2		557.4	1,756.0	
Nov-19	2,896.5		687.2	3,020.3	
Dec-19	2,367.5	26,744.9	839.8	2,500.0	27,117.9
Jan-20	2,677.0		1,235.8	2,367.3	

Regression Output:

SUMMARY OUTPUT					
Regression Statistics					
Multiple R	0.67172404				
R Square	0.451213186				
Adjusted R Square	0.446562451				
Standard Error	405.2637209				
Observations	120				

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	15934394.97	15934394.97	97.01974366	4.55415E-17
Residual	118	19380164.65	164238.6835		
Total	119	35314559.62			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	1744.871801	68.85376009	24.97892452	6.18101E-49	1606.542338	1883.201263	1606.542338	1883.201263
MHDD	1.106850396	0.112372195	9.849860083	4.55415E-17	0.884322857	1.329377934	0.884322857	1.329377934

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(27117.9 / 28595.9) \wedge (1/2) - 1 =$ **-2.6%**

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

Commercial - Yukon - Ross River

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	3,617.0		847.2	3,643.0		
Mar-20	2,565.8		849.6	2,476.0		
Apr-20	2,368.8		500.7	2,380.9		
May-20	2,165.8		271.5	2,174.5		
Jun-20	1,459.7		189.0	1,412.5		
Jul-20	1,897.8		122.3	1,866.8		
Aug-20	1,604.3		185.6	1,554.8		
Sep-20	1,956.4		298.9	1,948.7		
Oct-20	1,548.8		596.6	1,452.2		
Nov-20	2,188.6		899.0	2,078.0		
Dec-20	2,318.0	26,368.0	863.2	2,424.5	25,779.2	
Jan-21	2,918.6		887.5	2,994.4		
Feb-21	1,929.8		1,051.4	1,729.7		
Mar-21	3,305.0		821.5	3,246.3		
Apr-21	2,758.2		565.1	2,698.9		
May-21	1,609.2		337.8	1,544.4		
Jun-21	1,897.1		127.4	1,918.2		
Jul-21	1,490.2		87.3	1,498.0		
Aug-21	1,574.3		153.2	1,560.6		
Sep-21	1,718.3		320.9	1,686.3		
Oct-21	1,787.7		523.3	1,772.3		
Nov-21	1,998.8		877.4	1,912.1		
Dec-21	2,157.7	25,144.8	1,131.7	1,967.1	24,528.3	
Jan-22	3,913.3		1,010.7	3,852.8		
Feb-22	2,471.5		731.0	2,626.1		
Mar-22	2,344.9		678.3	2,444.7		
Apr-22	2,480.4		588.6	2,395.1		
May-22	2,098.0		356.8	2,012.2		
Jun-22	1,888.9		119.9	1,918.2		
Jul-22	1,756.7		96.5	1,754.2		
Aug-22	1,965.0		108.0	2,001.4		
Sep-22	1,591.7		258.4	1,628.8		
Oct-22	1,828.9		452.2	1,892.2		
Nov-22	2,139.3		769.6	2,172.0		
Dec-22	3,056.8	27,535.5	1,121.0	2,878.1	27,575.9	
Jan-23	2,960.3		799.5	3,133.6		
Feb-23	2,391.3		826.3	2,440.3		
Mar-23	2,642.1		821.1	2,583.9		
Apr-23	2,415.5					
May-23	2,043.0					
Jun-23	1,939.4					
Jul-23	1,710.7					
Aug-23	1,913.6					
Sep-23	1,550.0					
Oct-23	1,781.0					
Nov-23	2,083.3					
Dec-23	2,976.8	26,307.0			26,471.1	
Jan-24	2,882.8					
Feb-24	2,328.7					
Mar-24	2,573.0					
Apr-24	2,352.2					
May-24	1,989.5					
Jun-24	1,791.3					
Jul-24	1,665.9					
Aug-24	1,863.5					
Sep-24	1,509.4					
Oct-24	1,734.4					
Nov-24	2,028.7					
Dec-24	2,898.8	25,618.1			25,618.1	

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

Commercial - Yukon - Stewart Crossing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	2,107.2		852.0	2,111.8	
Feb-13	2,070.4		865.4	2,300.0	
Mar-13	2,883.5		851.1	2,791.1	
Apr-13	1,928.8		639.9	1,785.2	
May-13	1,760.9		294.0	1,744.4	
Jun-13	1,495.6		112.4	1,533.6	
Jul-13	1,264.5		88.2	1,271.3	
Aug-13	1,622.2		106.5	1,660.7	
Sep-13	1,199.5		264.3	1,230.4	
Oct-13	1,587.8		388.8	1,722.7	
Nov-13	1,494.1		856.5	1,429.9	
Dec-13	1,641.0	21,055.6	1,008.2	1,586.5	21,167.6
Jan-14	3,117.1		745.8	3,352.3	
Feb-14	1,937.6		992.4	1,801.4	
Mar-14	1,861.8		855.1	1,764.9	
Apr-14	1,584.3		499.8	1,597.5	
May-14	1,522.7		269.5	1,533.7	
Jun-14	1,097.5		200.5	1,037.0	
Jul-14	1,367.0		98.0	1,362.8	
Aug-14	793.7		144.0	790.3	
Sep-14	1,102.4		307.1	1,085.4	
Oct-14	1,629.8		515.6	1,622.8	
Nov-14	1,808.2		772.8	1,837.6	
Dec-14	2,139.9	19,962.1	854.4	2,257.4	20,043.2
Jan-15	2,014.6		927.0	2,047.1	
Feb-15	2,493.4		851.4	2,514.9	
Mar-15	2,049.6		671.3	2,158.3	
Apr-15	1,641.2		453.5	1,706.2	
May-15	1,651.8		192.9	1,748.5	
Jun-15	856.1		127.2	877.6	
Jul-15	1,343.0		115.7	1,319.0	
Aug-15	849.3		183.2	801.9	
Sep-15	1,262.1		332.7	1,216.5	
Oct-15	1,338.1		469.8	1,383.3	
Nov-15	1,530.9		759.2	1,575.6	
Dec-15	1,728.2	18,759.4	947.9	1,741.2	19,090.2
Jan-16	2,523.0		827.6	2,666.7	
Feb-16	1,741.6		688.0	1,945.9	
Mar-16	1,551.3		611.6	1,726.7	
Apr-16	1,182.7		386.4	1,322.7	
May-16	740.8		252.1	771.3	
Jun-16	945.4		119.0	976.0	
Jul-16	1,282.8		79.2	1,299.7	
Aug-16	1,011.5		111.5	1,044.3	
Sep-16	1,251.8		278.8	1,266.5	
Oct-16	1,160.9		604.3	1,054.7	
Nov-16	1,732.9		694.7	1,849.7	
Dec-16	1,997.6	17,122.2	1,056.2	1,889.4	17,813.7
Jan-17	2,007.7		975.9	1,985.5	
Feb-17	2,193.4		864.8	2,199.9	
Mar-17	2,390.2		947.0	2,190.5	
Apr-17	1,492.6		455.5	1,555.3	
May-17	1,574.9		294.8	1,557.5	
Jun-17	1,256.6		164.5	1,236.4	
Jul-17	1,183.7		127.6	1,146.5	
Aug-17	1,393.9		115.2	1,422.7	
Sep-17	1,001.7		269.7	1,026.6	
Oct-17	1,307.6		509.9	1,307.0	
Nov-17	1,553.5		979.6	1,351.6	
Dec-17	2,236.4	19,592.3	932.1	2,267.1	19,246.5
Jan-18	2,365.7		1,000.0	2,316.5	
Feb-18	2,856.9		1,017.3	2,492.8	
Mar-18	2,378.5		788.7	2,355.8	
Apr-18	1,642.1		552.3	1,596.6	
May-18	1,681.3		294.7	1,664.1	
Jun-18	854.1		170.0	827.7	
Jul-18	1,164.0		75.7	1,184.8	
Aug-18	1,739.5		130.1	1,751.6	
Sep-18	1,125.6		349.2	1,061.5	
Oct-18	1,469.3		475.8	1,506.9	
Nov-18	1,819.6		695.1	1,935.9	
Dec-18	1,284.7	20,181.2	840.5	1,417.8	20,111.9
Jan-19	2,537.5		998.1	2,480.4	
Feb-19	2,158.2		997.2	2,016.6	
Mar-19	2,000.5		610.4	2,177.3	
Apr-19	1,279.4		473.8	1,321.7	
May-19	1,213.5		229.1	1,269.6	
Jun-19	1,144.7		134.2	1,158.3	
Jul-19	1,345.3		52.4	1,392.1	
Aug-19	1,215.0		171.6	1,180.6	
Sep-19	1,077.9		239.3	1,136.7	
Oct-19	1,522.6		557.4	1,468.8	
Nov-19	1,551.7	18,579.9	687.2	1,676.9	18,956.9
Dec-19	1,533.8		839.8	1,667.7	
Jan-20	2,893.4		1,235.8	2,580.4	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R		0.673928157				
R Square		0.454179161				
Adjusted R Square		0.449553561				
Standard Error		407.1617746				
Observations		120				
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	16277702.07	16277702.07	98.18815471	3.29742E-17	
Residual	118	19562123.86	165780.7107			
Total	119	35839825.92				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1054.365001	70.18092035	15.02352771	3.63495E-29	915.3876725	1193.34233
MHDD	1.11871042	0.11289849	9.908993628	3.29742E-17	0.895140673	1.342280167

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(18956.9 / 19246.5) \wedge (1/2) - 1 =$ **-0.8%**

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

Commercial - Yukon - Stewart Crossing

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	2,383.5		847.2	2,409.6		
Mar-20	1,760.3		849.6	1,669.5		
Apr-20	1,678.1		500.7	1,690.2		
May-20	1,508.8		271.5	1,517.5		
Jun-20	1,699.9		189.0	1,652.3		
Jul-20	1,453.3		122.3	1,422.0		
Aug-20	1,111.0		185.6	1,061.0		
Sep-20	1,166.0		298.9	1,158.2		
Oct-20	1,401.9		596.6	1,304.3		
Nov-20	1,358.5		899.0	1,246.8		
Dec-20	1,949.4	20,364.0	863.2	2,057.1	19,769.0	
Jan-21	1,877.5		887.5	1,954.1		
Feb-21	2,135.6		1,051.4	1,933.3		
Mar-21	1,106.9		821.5	1,047.5		
Apr-21	1,565.8		565.1	1,505.9		
May-21	1,075.9		337.8	1,010.5		
Jun-21	1,285.7		127.4	1,307.0		
Jul-21	466.2		87.3	474.0		
Aug-21	917.3		153.2	903.5		
Sep-21	1,143.7		320.9	1,111.3		
Oct-21	2,454.7		523.3	2,439.1		
Nov-21	1,285.9		877.4	1,198.3		
Dec-21	2,558.5	17,873.5	1,131.7	2,365.9	17,250.4	
Jan-22	2,540.5		1,010.7	2,479.4		
Feb-22	1,974.7		731.0	2,130.9		
Mar-22	2,777.6		678.3	2,878.4		
Apr-22	3,234.6		588.6	3,148.4		
May-22	2,532.0		356.8	2,445.3		
Jun-22	1,148.0		119.9	1,177.6		
Jul-22	416.3		96.5	413.8		
Aug-22	1,555.9		108.0	1,592.7		
Sep-22	1,863.0		258.4	1,900.5		
Oct-22	1,924.3		452.2	1,988.2		
Nov-22	1,989.8		769.6	2,022.8		
Dec-22	1,863.3	23,819.9	1,121.0	1,682.6	23,860.7	
Jan-23	3,007.7		799.5	3,182.8		
Feb-23	2,781.9		826.3	2,831.5		
Mar-23	2,330.1		821.1	2,271.2		
Apr-23	3,210.2					
May-23	2,512.9					
Jun-23	1,139.3					
Jul-23	413.1					
Aug-23	1,544.2					
Sep-23	1,848.9					
Oct-23	1,909.7					
Nov-23	1,974.8					
Dec-23	1,849.2	24,522.0			24,687.8	
Jan-24	2,985.0					
Feb-24	2,760.9					
Mar-24	2,312.5					
Apr-24	3,185.9					
May-24	2,493.9					
Jun-24	1,130.7					
Jul-24	410.0					
Aug-24	1,532.5					
Sep-24	1,835.0					
Oct-24	1,895.3					
Nov-24	1,959.9					
Dec-24	1,835.2	24,336.8			24,336.8	

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

Commercial - Yukon - Swift River

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,442.2		1,129.1	1,440.1	
Feb-13	1,138.9		765.8	1,307.9	
Mar-13	1,204.2		950.7	1,150.3	
Apr-13	1,109.5		690.1	1,022.0	
May-13	876.7		304.5	867.5	
Jun-13	797.9		96.3	824.4	
Jul-13	764.5		105.1	748.2	
Aug-13	780.0		82.2	816.6	
Sep-13	849.5		239.1	892.7	
Oct-13	966.5		490.2	1,004.4	
Nov-13	1,222.6		1,021.3	1,175.3	
Dec-13	1,574.9	12,727.4	1,248.8	1,543.1	12,792.5
Jan-14	1,506.7		937.7	1,638.5	
Feb-14	1,359.1		1,204.4	1,221.2	
Mar-14	1,275.6		1,008.9	1,180.9	
Apr-14	1,276.7		570.5	1,272.9	
May-14	1,276.5		331.1	844.7	
Jun-14	905.1		186.8	868.3	
Jul-14	820.9		87.6	816.8	
Aug-14	1,020.9		144.8	1,013.7	
Sep-14	829.6		295.8	833.2	
Oct-14	1,041.8		539.7	1,045.1	
Nov-14	1,312.1		936.4	1,324.2	
Dec-14	1,437.6	13,658.7	1,176.7	1,456.3	13,515.9
Jan-15	1,555.4		1,022.8	1,627.7	
Feb-15	1,542.7		956.7	1,578.1	
Mar-15	1,159.8		766.3	1,234.8	
Apr-15	1,159.4		497.4	1,206.8	
May-15	1,036.8		210.8	1,093.1	
Jun-15	706.8		111.8	722.5	
Jul-15	694.1		92.4	686.6	
Aug-15	653.8		147.5	644.7	
Sep-15	846.5		336.1	821.9	
Oct-15	900.5		523.7	914.9	
Nov-15	1,340.5		887.6	1,386.6	
Dec-15	1,415.5	13,011.8	1,160.3	1,445.7	13,363.4
Jan-16	1,696.5		1,099.3	1,715.3	
Feb-16	1,385.5		930.8	1,439.0	
Mar-16	1,161.2		724.3	1,265.7	
Apr-16	1,145.3		413.0	1,251.7	
May-16	751.6		252.4	778.9	
Jun-16	599.2		100.8	622.6	
Jul-16	599.0		45.0	624.7	
Aug-16	664.4		117.1	676.5	
Sep-16	728.0		301.7	727.5	
Oct-16	1,112.6		623.1	1,057.5	
Nov-16	1,175.8		914.0	1,203.6	
Dec-16	1,892.6	12,911.8	1,300.2	1,824.9	13,187.8
Jan-17	2,169.5		1,081.0	2,201.0	
Feb-17	1,858.8		925.7	1,915.9	
Mar-17	2,112.9		1,015.8	2,013.4	
Apr-17	1,600.6		523.7	1,629.6	
May-17	1,401.0		295.8	1,397.9	
Jun-17	923.3		150.0	912.2	
Jul-17	888.5		101.9	874.5	
Aug-17	790.7		124.8	797.5	
Sep-17	994.0		254.7	1,026.3	
Oct-17	1,441.5		514.6	1,462.4	
Nov-17	1,928.5		1,120.2	1,812.0	
Dec-17	1,292.8	17,402.3	1,176.2	1,311.8	17,354.6
Jan-18	1,532.2		1,214.2	1,470.6	
Feb-18	1,240.5		1,127.6	1,156.3	
Mar-18	1,610.8		895.5	1,595.5	
Apr-18	1,331.4		622.5	1,291.2	
May-18	871.8		276.7	882.1	
Jun-18	730.8		136.3	729.4	
Jul-18	635.5		68.0	645.2	
Aug-18	777.6		123.7	785.2	
Sep-18	791.3		410.9	714.4	
Oct-18	1,117.0		551.0	1,112.4	
Nov-18	1,160.7		872.6	1,217.4	
Dec-18	1,381.9	13,161.5	1,175.5	1,381.4	12,980.9
Jan-19	1,554.9		1,105.0	1,569.7	
Feb-19	1,771.3		1,116.0	1,695.2	
Mar-19	1,596.6		755.4	1,679.3	
Apr-19	1,220.7		519.4	1,252.7	
May-19	1,011.8		229.6	1,055.0	
Jun-19	675.5		152.8	662.5	
Jul-19	671.6		58.6	687.8	
Aug-19	785.0		198.9	739.9	
Sep-19	653.0		281.6	666.5	
Oct-19	905.4		575.9	883.3	
Nov-19	1,059.8		871.9	1,117.0	
Dec-19	1,211.0	13,116.6	1,049.5	1,318.7	13,327.7
Jan-20	1,731.4		1,353.4	1,572.3	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.755705933					
R Square	0.571091457					
Adjusted R Square	0.567456638					
Standard Error	247.768991					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	9645325.266	9645325.266	157.116926	1.96592E-23	
Residual	118	7243957.8	61389.47288			
Total	119	16889283.07				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	637.2327589	40.47536131	15.74372009	8.97537E-31	557.0805241	717.3849937
MHDD	0.699650409	0.0558174	12.53462907	1.96592E-23	0.58911676	0.810184057

10 Year	
Month	Normal HDD
JAN	1126.1
FEB	1007.3
MAR	873.6
APR	565.1
MAY	291.3
JUN	134.2
JUL	81.8
AUG	134.5
SEP	300.9
OCT	544.4
NOV	953.7
DEC	1203.4

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(13327.7 / 17354.6)^{(1/2)} - 1 = -12.4\%$

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

Commercial - Yukon - Swift River

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,323.6		957.7	1,358.3		
Mar-20	1,368.7		889.6	1,357.5		
Apr-20	935.5		569.8	932.2		
May-20	637.5		284.0	642.6		
Jun-20	840.5		176.5	811.0		
Jul-20	638.5		107.5	620.4		
Aug-20	462.7		177.4	432.7		
Sep-20	617.8		317.7	606.1		
Oct-20	689.7		623.5	634.4		
Nov-20	918.5		1,030.7	864.6		
Dec-20	874.9	11,039.4	1,040.3	989.0	10,821.2	
Jan-21	1,389.9		1,117.9	1,395.7		
Feb-21	1,165.9		1,159.7	1,059.3		
Mar-21	991.6		886.8	982.4		
Apr-21	1,149.7		603.7	1,122.7		
May-21	684.9		358.1	638.2		
Jun-21	699.4		114.7	713.0		
Jul-21	457.5		87.5	453.4		
Aug-21	475.5		133.5	476.2		
Sep-21	551.8		320.2	538.3		
Oct-21	606.6		553.5	600.3		
Nov-21	856.6		931.6	871.1		
Dec-21	997.2	10,025.7	1,454.2	821.7	9,672.4	
Jan-22	1,021.0		1,200.8	968.8		
Feb-22	1,159.5		928.8	1,214.5		
Mar-22	1,013.0		842.6	1,034.7		
Apr-22	997.5		641.0	944.5		
May-22	619.5		370.3	564.3		
Jun-22	516.7		116.2	529.4		
Jul-22	565.4		64.0	577.8		
Aug-22	509.7		94.8	537.5		
Sep-22	588.6		251.5	623.2		
Oct-22	735.0		448.8	801.9		
Nov-22	1,143.5		950.2	1,146.0		
Dec-22	1,031.6	9,901.2	1,252.1	997.5	9,939.9	
Jan-23	871.5		931.1	1,008.0		
Feb-23	862.4		945.4	905.8		
Mar-23	1,420.7		893.9	1,406.5		
Apr-23	874.2					
May-23	542.9					
Jun-23	452.8					
Jul-23	495.4					
Aug-23	446.7					
Sep-23	515.8					
Oct-23	644.1					
Nov-23	1,002.1					
Dec-23	904.0	9,032.7			9,198.4	
Jan-24	763.7					
Feb-24	755.8					
Mar-24	1,245.0					
Apr-24	766.1					
May-24	475.8					
Jun-24	396.8					
Jul-24	434.2					
Aug-24	391.5					
Sep-24	452.1					
Oct-24	564.5					
Nov-24	878.2					
Dec-24	792.2	7,915.7			7,915.7	

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

Commercial - Yukon - Tagish

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	1,248.3		952.0	1,251.3	
Feb-13	1,046.9		665.4	1,201.2	
Mar-13	1,001.3		851.1	939.1	
Apr-13	929.8		639.9	833.2	
May-13	617.5		294.0	606.5	
Jun-13	755.7		112.4	781.3	
Jul-13	715.6		88.2	720.2	
Aug-13	768.1		106.5	793.9	
Sep-13	608.2		264.3	629.0	
Oct-13	653.0		388.8	743.6	
Nov-13	904.0		856.5	860.9	
Dec-13	964.3	10,212.6	1,008.2	927.7	10,288.0
Jan-14	1,768.1		745.8	1,926.3	
Feb-14	1,171.3		992.4	1,079.7	
Mar-14	1,148.8		855.1	1,083.6	
Apr-14	1,085.0		498.8	1,093.9	
May-14	1,710.8		269.5	1,718.2	
Jun-14	874.4		200.5	833.7	
Jul-14	807.7		98.0	804.9	
Aug-14	786.4		144.0	784.0	
Sep-14	776.8		307.1	765.4	
Oct-14	713.3		515.6	708.6	
Nov-14	951.7		772.8	971.5	
Dec-14	1,028.6	12,822.9	854.4	1,107.7	12,877.4
Jan-15	2,339.1		927.0	2,360.9	
Feb-15	1,559.1		851.4	1,573.6	
Mar-15	544.7		671.3	617.7	
Apr-15	1,214.5		453.5	1,258.1	
May-15	931.4		192.9	996.4	
Jun-15	649.2		127.2	663.7	
Jul-15	673.8		115.7	657.7	
Aug-15	562.6		183.2	530.8	
Sep-15	798.1		332.7	767.5	
Oct-15	1,243.5		469.8	1,273.3	
Nov-15	1,360.4		759.2	1,390.4	
Dec-15	1,384.5	13,260.9	947.9	1,393.2	13,483.3
Jan-16	1,636.8		827.6	1,733.4	
Feb-16	1,615.8		688.0	1,753.2	
Mar-16	1,348.8		611.6	1,466.8	
Apr-16	1,313.4		386.4	1,407.6	
May-16	647.4		252.1	667.9	
Jun-16	778.9		119.0	799.5	
Jul-16	911.3		79.2	922.6	
Aug-16	771.1		111.5	793.2	
Sep-16	917.9		278.8	927.8	
Oct-16	765.6		604.3	694.2	
Nov-16	933.1		694.7	1,011.7	
Dec-16	1,411.1	13,051.4	1,056.2	1,338.4	13,516.3
Jan-17	1,682.7		975.9	1,667.8	
Feb-17	1,338.0		864.8	1,342.3	
Mar-17	1,600.2		947.0	1,465.9	
Apr-17	1,306.1		455.5	1,348.3	
May-17	1,084.7		294.8	1,073.1	
Jun-17	990.8		164.5	977.2	
Jul-17	838.9		127.6	813.9	
Aug-17	884.5		115.2	903.9	
Sep-17	955.3		269.7	972.1	
Oct-17	725.1		509.9	724.7	
Nov-17	1,349.8		979.6	1,214.0	
Dec-17	1,237.4	13,993.6	832.1	1,258.0	13,761.1
Jan-18	1,636.0		1,000.0	1,602.9	
Feb-18	1,396.6		1,017.3	1,286.3	
Mar-18	1,490.8		788.7	1,475.6	
Apr-18	1,342.9		552.3	1,312.2	
May-18	1,157.7		294.7	1,146.1	
Jun-18	1,119.2		170.0	1,101.5	
Jul-18	925.6		75.7	939.6	
Aug-18	968.8		130.1	976.9	
Sep-18	995.6		349.2	952.5	
Oct-18	930.7		475.8	956.0	
Nov-18	1,054.8		695.1	1,133.0	
Dec-18	1,457.1	14,475.9	840.5	1,546.6	14,429.3
Jan-19	1,796.1		998.1	1,766.4	
Feb-19	1,536.4		997.2	1,441.2	
Mar-19	1,508.2		610.4	1,627.0	
Apr-19	1,463.0		473.8	1,491.4	
May-19	673.5		229.1	711.2	
Jun-19	1,031.8		134.2	1,041.0	
Jul-19	892.6		52.4	924.1	
Aug-19	998.1		171.6	975.0	
Sep-19	811.5		239.3	851.1	
Oct-19	986.5		557.4	950.4	
Nov-19	1,262.3		687.2	1,346.5	
Dec-19	1,199.0	14,160.9	839.8	1,289.0	14,414.4
Jan-20	1,693.3		1,235.8	1,482.9	

Regression Output:

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.701465601							
R Square	0.49205399							
Adjusted R Square	0.487749362							
Standard Error	253.717742							
Observations	120							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	7358323.659	7358323.659	114.308154	4.55667E-19			
Residual	118	7598977.725	64372.69258					
Total	119	14954301.38						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	728.623235	43.73235837	16.66096369	8.79404E-33	642.0212593	815.2252106	642.0212593	815.2252106
MHDD	0.752160598	0.070351275	10.69149915	4.55667E-19	0.61284592	0.891475275	0.61284592	0.891475275

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(14414.4 / 13761.1)^{(1/2) - 1} = 2.3\%$

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

Commercial - Yukon - Tagish

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,339.3		847.2	1,356.9		
Mar-20	1,322.2		849.6	1,261.2		
Apr-20	1,492.8		500.7	1,500.9		
May-20	987.1		271.5	993.0		
Jun-20	767.3		189.0	735.3		
Jul-20	747.9		122.3	726.8		
Aug-20	717.6		185.6	684.0		
Sep-20	696.9		298.9	691.7		
Oct-20	1,027.1		596.6	961.5		
Nov-20	1,433.8		899.0	1,358.6		
Dec-20	1,345.8	13,571.1	863.2	1,418.2	13,171.0	
Jan-21	1,586.7		887.5	1,638.2		
Feb-21	1,516.5		1,051.4	1,380.5		
Mar-21	1,405.9		821.5	1,366.0		
Apr-21	1,552.3		565.1	1,512.0		
May-21	946.5		337.8	902.5		
Jun-21	781.1		127.4	795.4		
Jul-21	692.4		87.3	697.6		
Aug-21	807.8		153.2	798.6		
Sep-21	755.8		320.9	734.0		
Oct-21	965.6		523.3	955.1		
Nov-21	1,686.5		877.4	1,627.6		
Dec-21	1,487.5	14,184.5	1,131.7	1,357.9	13,765.5	
Jan-22	1,638.0		1,010.7	1,596.9		
Feb-22	1,289.7		731.0	1,394.7		
Mar-22	1,806.4		678.3	1,874.2		
Apr-22	1,815.7		588.6	1,757.7		
May-22	1,154.1		356.8	1,095.8		
Jun-22	934.9		119.9	954.8		
Jul-22	791.1		96.5	789.5		
Aug-22	960.6		108.0	985.3		
Sep-22	928.8		258.4	954.0		
Oct-22	1,001.2		452.2	1,044.2		
Nov-22	1,427.0		769.6	1,449.2		
Dec-22	1,546.4	15,293.8	1,121.0	1,425.0	15,321.3	
Jan-23	2,293.3		799.5	2,411.0		
Feb-23	1,349.3		826.3	1,382.6		
Mar-23	1,905.2		821.1	1,865.6		
Apr-23	1,858.3					
May-23	1,181.1					
Jun-23	956.8					
Jul-23	809.7					
Aug-23	983.1					
Sep-23	950.6					
Oct-23	1,024.6					
Nov-23	1,460.4					
Dec-23	1,582.7	16,355.2			16,466.7	
Jan-24	2,347.1					
Feb-24	1,380.9					
Mar-24	1,949.9					
Apr-24	1,901.9					
May-24	1,208.9					
Jun-24	979.2					
Jul-24	828.7					
Aug-24	1,006.2					
Sep-24	972.9					
Oct-24	1,048.7					
Nov-24	1,494.7					
Dec-24	1,619.9	16,738.9			16,738.9	

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

Commercial - Yukon - Teslin

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	2,935.6			952.0	2,940.8
Feb-13	3,120.6			865.4	3,381.9
Mar-13	2,459.6			851.1	2,354.4
Apr-13	2,295.5			639.9	2,132.1
May-13	1,700.1			294.0	1,681.4
Jun-13	2,023.1			112.4	2,066.4
Jul-13	1,598.2			88.2	1,606.0
Aug-13	1,832.3			106.5	1,876.1
Sep-13	1,632.3			264.3	1,667.5
Oct-13	1,594.1			388.8	1,747.6
Nov-13	2,757.6			856.5	2,684.5
Dec-13	2,796.5	26,745.5	1,008.2	2,734.5	26,873.1
Jan-14	3,041.4			745.8	3,309.1
Feb-14	2,563.2			992.4	2,408.1
Mar-14	2,530.3			855.1	2,420.0
Apr-14	2,098.3			499.8	2,113.3
May-14	2,126.6			269.5	2,139.1
Jun-14	1,657.1			200.5	1,588.2
Jul-14	1,672.3			98.0	1,667.6
Aug-14	1,922.9			144.0	1,918.9
Sep-14	1,642.3			307.1	1,622.9
Oct-14	2,158.8			515.6	2,150.9
Nov-14	2,408.0			772.8	2,441.5
Dec-14	2,728.6	26,549.7	854.4	2,862.3	26,642.0
Jan-15	3,082.8			927.0	3,119.8
Feb-15	2,490.2			851.4	2,514.7
Mar-15	2,521.6			671.3	2,645.3
Apr-15	2,004.9			453.5	2,078.8
May-15	1,879.4			192.9	1,989.4
Jun-15	1,680.0			127.2	1,704.5
Jul-15	1,895.3			115.7	1,868.1
Aug-15	1,640.7			183.2	1,586.8
Sep-15	1,851.7			332.7	1,799.8
Oct-15	2,130.2			469.8	2,180.5
Nov-15	2,255.6			759.2	2,306.6
Dec-15	2,689.6	26,122.2	947.9	2,704.4	26,498.6
Jan-16	3,141.3			827.6	3,304.8
Feb-16	2,588.1			688.0	2,820.6
Mar-16	2,152.1			611.6	2,351.8
Apr-16	2,584.2			386.4	2,743.5
May-16	1,710.2			252.1	1,744.9
Jun-16	1,663.5			119.0	1,698.4
Jul-16	2,037.6			79.2	2,056.9
Aug-16	1,877.0			111.5	1,914.4
Sep-16	1,932.6			278.8	1,949.3
Oct-16	1,931.9			604.3	1,811.0
Nov-16	2,387.0			694.7	2,519.9
Dec-16	2,781.5	26,767.0	1,056.2	2,638.4	27,553.8
Jan-17	3,674.9			975.9	3,649.6
Feb-17	2,716.3			864.8	2,723.6
Mar-17	3,068.8			947.0	2,841.5
Apr-17	2,360.5			455.5	2,431.9
May-17	1,818.8			294.8	1,799.1
Jun-17	2,074.7			164.5	2,051.7
Jul-17	1,787.1			127.6	1,744.7
Aug-17	1,703.2			115.2	1,735.9
Sep-17	2,069.3			269.7	2,097.6
Oct-17	1,935.7			509.9	1,935.0
Nov-17	2,766.0			979.6	2,536.3
Dec-17	2,452.8	28,427.9	832.1	2,487.7	28,034.5
Jan-18	2,949.0			1,000.0	2,893.0
Feb-18	2,781.4			1,017.3	2,594.7
Mar-18	2,727.3			788.7	2,701.5
Apr-18	2,392.1			552.3	2,340.2
May-18	1,702.3			294.7	1,682.7
Jun-18	1,852.3			170.0	1,822.2
Jul-18	1,742.6			75.7	1,766.2
Aug-18	1,856.0			130.1	1,869.7
Sep-18	1,588.8			349.2	1,515.9
Oct-18	1,551.2			475.8	1,593.9
Nov-18	2,456.8			695.1	2,589.2
Dec-18	2,191.8	25,791.4	840.5	2,343.2	25,712.6
Jan-19	2,547.9			998.1	2,494.4
Feb-19	2,939.4			997.2	2,778.2
Mar-19	2,306.7			610.4	2,507.9
Apr-19	1,898.4			473.8	1,946.5
May-19	1,603.3			229.1	1,667.3
Jun-19	1,715.9			134.2	1,731.5
Jul-19	1,500.4			52.4	1,553.7
Aug-19	1,844.4			171.6	1,805.3
Sep-19	1,397.1			239.3	1,464.1
Oct-19	1,852.9			557.4	1,791.8
Nov-19	2,679.3			687.2	2,821.7
Dec-19	2,496.0	24,781.9	839.8	2,648.4	25,210.8
Jan-20	3,410.3			1,235.8	3,054.2

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.715440926					
R Square	0.511855719					
Adjusted R Square	0.507718903					
Standard Error	412.7289952					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	21077122.58	21077122.58	123.7318086	4.28019E-20	
Residual	118	20100736.37	170345.2235			
Total	119	41177858.95				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1531.248425	71.14052091	21.52429313	1.13517E-42	1390.371826	1672.127025
MHDD	1.272995289	0.114442178	11.12348006	4.28019E-20	1.046368619	1.499621959
	Lower 95.0%	Upper 95.0%				
Intercept	1390.371826	1672.127025				
MHDD	1.046368619	1.499621959				

10 Year Normal HDD	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(25210.8 / 28034.5)^{(1/2) - 1} = -5.2\%$

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

Commercial - Yukon - Teslin

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	2,566.6		847.2	2,596.4		
Mar-20	2,341.4		849.6	2,238.1		
Apr-20	2,340.4		500.7	2,354.2		
May-20	1,853.9		271.5	1,693.9		
Jun-20	1,431.4		189.0	1,377.2		
Jul-20	1,649.4		122.3	1,613.7		
Aug-20	1,249.3		185.6	1,192.3		
Sep-20	4,014.6		298.9	4,005.8		
Oct-20	-404.7		596.6	-515.8		
Nov-20	2,890.5		899.0	2,763.3		
Dec-20	2,278.8	25,421.9	863.2	2,401.4	24,744.8	
Jan-21	2,980.5		887.5	3,067.7		
Feb-21	2,811.8		1,051.4	2,581.7		
Mar-21	2,391.2		821.5	2,323.7		
Apr-21	2,622.5		565.1	2,554.4		
May-21	1,748.7		337.8	1,674.3		
Jun-21	1,656.9		127.4	1,681.1		
Jul-21	1,750.8		87.3	1,759.7		
Aug-21	1,549.9		153.2	1,534.2		
Sep-21	1,850.1		320.9	1,813.2		
Oct-21	2,089.5		523.3	2,071.7		
Nov-21	2,471.9		877.4	2,372.2		
Dec-21	2,543.1	26,467.0	1,131.7	2,323.9	25,757.9	
Jan-22	3,523.9		1,010.7	3,454.3		
Feb-22	2,366.8		731.0	2,544.5		
Mar-22	2,819.2		678.3	2,934.0		
Apr-22	1,904.5		588.6	1,806.5		
May-22	1,681.1		356.8	1,582.5		
Jun-22	1,595.2		119.9	1,628.9		
Jul-22	2,102.8		96.5	2,100.0		
Aug-22	1,811.8		108.0	1,853.7		
Sep-22	1,978.3		258.4	2,021.0		
Oct-22	2,039.7		452.2	2,112.4		
Nov-22	2,408.7		769.6	2,446.3		
Dec-22	2,992.1	27,224.1	1,121.0	2,786.5	27,270.5	
Jan-23	2,743.8		799.5	2,943.1		
Feb-23	2,468.6		826.3	2,525.0		
Mar-23	2,653.8		821.1	2,586.8		
Apr-23	1,806.1					
May-23	1,594.2					
Jun-23	1,512.7					
Jul-23	1,994.1					
Aug-23	1,718.1					
Sep-23	1,876.0					
Oct-23	1,934.2					
Nov-23	2,284.2					
Dec-23	2,837.4	25,423.3			25,612.0	
Jan-24	2,602.0					
Feb-24	2,341.0					
Mar-24	2,516.7					
Apr-24	1,712.7					
May-24	1,511.8					
Jun-24	1,434.5					
Jul-24	1,891.0					
Aug-24	1,629.3					
Sep-24	1,779.0					
Oct-24	1,834.2					
Nov-24	2,166.1					
Dec-24	2,690.7	24,109.0			24,109.0	

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

Commercial - Yukon - Upper Liard

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	2,580.4		1,129.1	2,579.2	
Feb-13	1,867.5		765.8	1,957.8	
Mar-13	1,806.4		950.7	1,777.5	
Apr-13	1,877.5		690.1	1,830.8	
May-13	1,384.7		304.5	1,379.8	
Jun-13	1,122.6		96.3	1,136.8	
Jul-13	1,324.2		105.1	1,315.4	
Aug-13	1,260.5		82.2	1,280.0	
Sep-13	1,045.0		239.1	1,068.1	
Oct-13	1,052.5		490.2	1,072.7	
Nov-13	1,256.1		1,021.3	1,230.8	
Dec-13	2,312.2	18,889.5	1,248.8	2,295.2	18,924.3
Jan-14	1,907.7		937.7	1,978.2	
Feb-14	1,040.7		1,204.4	967.0	
Mar-14	1,346.8		1,008.9	1,296.2	
Apr-14	1,530.5		570.5	1,528.5	
May-14	1,260.2		331.1	1,245.3	
Jun-14	967.4		186.8	947.7	
Jul-14	1,167.2		87.6	1,165.0	
Aug-14	1,011.7		144.8	1,007.8	
Sep-14	1,062.0		295.8	1,063.9	
Oct-14	1,020.7		539.7	1,022.5	
Nov-14	1,324.1		936.4	1,330.5	
Dec-14	1,396.0	15,035.0	1,176.7	1,406.0	14,958.6
Jan-15	1,242.5		1,022.8	1,281.1	
Feb-15	1,042.5		956.7	1,061.5	
Mar-15	878.7		766.3	918.9	
Apr-15	1,043.4		497.4	1,068.7	
May-15	1,227.2		210.8	1,257.3	
Jun-15	1,089.6		111.8	1,098.0	
Jul-15	1,410.8		92.4	1,406.8	
Aug-15	1,476.9		147.5	1,472.0	
Sep-15	1,455.5		336.1	1,442.3	
Oct-15	1,322.9		523.7	1,330.6	
Nov-15	1,198.9		887.8	1,223.6	
Dec-15	916.0	14,304.9	1,160.3	932.1	14,492.9
Jan-16	1,815.0		1,099.3	1,625.0	
Feb-16	518.1		930.8	546.8	
Mar-16	970.0		724.3	1,025.8	
Apr-16	1,350.4		413.0	1,407.3	
May-16	1,172.3		252.4	1,186.9	
Jun-16	1,130.3		100.8	1,142.8	
Jul-16	1,198.7		45.0	1,212.5	
Aug-16	1,361.9		117.1	1,368.4	
Sep-16	1,270.2		301.7	1,269.9	
Oct-16	1,376.9		623.1	1,347.5	
Nov-16	1,578.0		914.0	1,592.8	
Dec-16	1,703.2	15,245.2	1,300.2	1,667.0	15,392.8
Jan-17	1,711.8		1,081.0	1,728.7	
Feb-17	1,279.0		925.7	1,309.5	
Mar-17	1,383.3		1,015.8	1,330.1	
Apr-17	1,203.5		523.7	1,218.9	
May-17	999.1		295.8	997.4	
Jun-17	1,078.4		150.0	1,072.5	
Jul-17	1,295.9		101.9	1,288.4	
Aug-17	1,077.8		124.8	1,081.4	
Sep-17	1,065.3		254.7	1,082.5	
Oct-17	1,200.8		514.6	1,212.0	
Nov-17	1,785.3		1,120.2	1,723.0	
Dec-17	1,202.2	15,282.5	1,176.2	1,212.4	15,257.0
Jan-18	1,645.2		1,214.2	1,612.2	
Feb-18	1,675.1		1,127.6	1,630.1	
Mar-18	1,777.1		895.5	1,768.9	
Apr-18	545.9		622.5	524.5	
May-18	915.3		276.7	920.8	
Jun-18	1,107.1		136.3	1,106.3	
Jul-18	1,244.1		68.0	1,249.3	
Aug-18	1,486.4		123.7	1,490.4	
Sep-18	1,392.4		410.9	1,351.3	
Oct-18	1,682.9		551.0	1,680.4	
Nov-18	1,445.9		872.6	1,476.3	
Dec-18	1,535.2	16,452.6	1,175.5	1,545.6	16,356.0
Jan-19	1,807.4		1,105.0	1,615.3	
Feb-19	1,640.0		1,116.0	1,599.4	
Mar-19	1,432.4		755.4	1,476.6	
Apr-19	1,597.1		519.4	1,614.2	
May-19	2,027.6		229.6	2,050.7	
Jun-19	1,128.6		152.8	1,121.7	
Jul-19	1,220.4		58.6	1,229.1	
Aug-19	1,466.9		198.9	1,442.8	
Sep-19	1,056.4		281.6	1,063.6	
Oct-19	1,510.8		575.9	1,499.0	
Nov-19	1,278.4	17,634.1	871.9	1,309.0	17,746.9
Dec-19	1,667.9		1,049.5	1,725.5	
Jan-20	2,061.8		1,353.4	1,976.8	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.43012005					
R Square	0.185003258					
Adjusted R Square	0.178096506					
Standard Error	320.7571218					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	2755866.184	2755866.184	26.78585479	9.44005E-07	
Residual	118	12140445.48	102885.1312			
Total	119	14896311.66				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1079.299303	52.39864902	20.597846	6.91233E-41	975.5357125	1183.062894
MHDD	0.373982875	0.072260167	5.175505269	9.44005E-07	0.230888072	0.517077679

10 Year	
Month	Normal HDD
JAN	1126.1
FEB	1007.3
MAR	873.6
APR	565.1
MAY	291.3
JUN	134.2
JUL	81.8
AUG	134.5
SEP	300.9
OCT	544.4
NOV	953.7
DEC	1203.4

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC}) \wedge (1/(2019 - 2017)) - 1 =$
 $(17746.9 / 15257) \wedge (1/2) - 1 = 7.9\%$

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

Commercial - Yukon - Upper Liard

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	1,281.5		957.7	1,300.1		
Mar-20	1,314.9		889.6	1,308.9		
Apr-20	223.1		569.8	221.4		
May-20	965.8		284.0	968.5		
Jun-20	655.1		176.5	639.3		
Jul-20	1,015.4		107.5	1,005.7		
Aug-20	960.0		177.4	943.9		
Sep-20	872.5		317.7	866.2		
Oct-20	1,049.7		623.5	1,020.1		
Nov-20	1,112.9		1,030.7	1,084.1		
Dec-20	1,202.5	12,715.3	1,040.3	1,263.5	12,598.7	
Jan-21	2,156.0		1,117.9	2,159.1		
Feb-21	1,785.9		1,159.7	1,729.0		
Mar-21	1,475.4		886.8	1,470.4		
Apr-21	1,292.0		603.7	1,277.6		
May-21	1,471.9		358.1	1,447.0		
Jun-21	1,104.7		114.7	1,112.0		
Jul-21	987.0		87.5	984.9		
Aug-21	997.6		133.5	997.9		
Sep-21	979.3		320.2	972.1		
Oct-21	1,031.6		553.5	1,028.2		
Nov-21	1,089.1		931.6	1,097.4		
Dec-21	1,355.4	15,725.9	1,454.2	1,261.6	15,537.0	
Jan-22	1,781.3		1,200.8	1,753.4		
Feb-22	1,816.5		928.8	1,845.8		
Mar-22	1,540.3		842.6	1,551.9		
Apr-22	1,327.2		641.0	1,298.8		
May-22	963.3		370.3	953.8		
Jun-22	1,123.9		116.2	1,130.6		
Jul-22	1,258.4		64.0	1,265.0		
Aug-22	1,108.8		94.8	1,123.6		
Sep-22	1,237.9		251.5	1,256.4		
Oct-22	1,032.3		448.8	1,068.1		
Nov-22	876.7		950.2	878.0		
Dec-22	1,131.9	15,218.5	1,252.1	1,113.7	15,239.2	
Jan-23	1,664.5		931.1	1,737.4		
Feb-23	1,085.2		945.4	1,108.4		
Mar-23	1,523.7		893.9	1,516.2		
Apr-23	1,431.4					
May-23	1,060.5					
Jun-23	1,212.1					
Jul-23	1,357.2					
Aug-23	1,195.9					
Sep-23	1,335.1					
Oct-23	1,113.4					
Nov-23	945.6					
Dec-23	1,220.8	15,145.3			15,233.9	
Jan-24	1,795.2					
Feb-24	1,170.4					
Mar-24	1,643.4					
Apr-24	1,543.8					
May-24	1,143.8					
Jun-24	1,307.3					
Jul-24	1,463.8					
Aug-24	1,289.8					
Sep-24	1,439.9					
Oct-24	1,200.8					
Nov-24	1,019.8					
Dec-24	1,316.7	16,334.5			16,334.5	

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

Commercial - Yukon - Watson Lake

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	4,155.1		1,129.1	4,151.8	
Feb-13	3,609.9		765.8	3,674.6	
Mar-13	3,776.8		950.7	3,692.2	
Apr-13	3,507.1		690.1	3,370.0	
May-13	3,010.4		304.5	2,996.0	
Jun-13	2,795.4		96.3	2,837.0	
Jul-13	2,585.7		105.1	2,560.1	
Aug-13	2,720.1		82.2	2,777.4	
Sep-13	2,414.7		239.1	2,482.5	
Oct-13	2,678.8		490.2	2,738.3	
Nov-13	3,090.9		1,021.3	3,016.7	
Dec-13	3,627.4	37,972.3	1,248.8	3,577.5	38,074.4
Jan-14	4,237.6		937.7	4,444.2	
Feb-14	3,596.9		1,204.4	3,380.8	
Mar-14	3,855.1		1,008.9	3,706.7	
Apr-14	3,427.9		570.5	3,421.9	
May-14	3,394.0		331.1	3,350.4	
Jun-14	2,668.3		186.8	2,610.6	
Jul-14	3,015.0		87.6	3,008.5	
Aug-14	2,811.6		144.8	2,800.3	
Sep-14	2,721.4		295.8	2,727.0	
Oct-14	2,919.7		539.7	2,924.9	
Nov-14	3,198.0		936.4	3,216.9	
Dec-14	3,987.2	39,832.6	1,176.7	4,016.4	39,608.7
Jan-15	4,362.2		1,022.8	4,475.5	
Feb-15	3,655.2		956.7	3,710.7	
Mar-15	3,474.4		766.3	3,592.0	
Apr-15	3,297.9		497.4	3,372.2	
May-15	3,178.7		210.8	3,267.1	
Jun-15	2,518.2		111.8	2,542.8	
Jul-15	2,966.9		92.4	2,955.2	
Aug-15	2,801.6		147.5	2,787.3	
Sep-15	2,907.1		336.1	2,868.5	
Oct-15	2,902.6		523.7	2,925.3	
Nov-15	3,591.4		987.8	3,663.6	
Dec-15	3,736.5	39,392.7	1,160.3	3,783.7	39,944.0
Jan-16	4,315.3		1,099.3	4,344.7	
Feb-16	3,758.9		930.8	3,842.8	
Mar-16	3,769.2		724.3	3,932.9	
Apr-16	2,920.0		413.0	3,086.8	
May-16	2,883.3		252.4	2,926.0	
Jun-16	2,835.0		100.8	2,871.6	
Jul-16	2,823.8		45.0	2,864.2	
Aug-16	2,574.1		117.1	2,593.2	
Sep-16	2,844.3		301.7	2,843.5	
Oct-16	3,081.2		623.1	2,994.9	
Nov-16	3,491.2		914.0	3,534.7	
Dec-16	3,991.4	39,287.6	1,300.2	3,985.2	39,720.3
Jan-17	4,275.3		1,081.0	4,324.8	
Feb-17	3,699.2		925.7	3,788.7	
Mar-17	3,842.7		1,015.8	3,686.7	
Apr-17	3,330.5		523.7	3,375.9	
May-17	3,129.9		295.8	3,125.0	
Jun-17	2,879.0		150.0	2,861.7	
Jul-17	2,737.9		101.9	2,715.8	
Aug-17	2,950.0		124.8	2,960.7	
Sep-17	2,706.1		254.7	2,756.8	
Oct-17	2,670.6		514.6	2,703.3	
Nov-17	3,278.3		1,120.2	3,095.7	
Dec-17	3,507.6	39,007.2	1,176.2	3,537.4	38,932.5
Jan-18	4,094.7		1,214.2	3,998.1	
Feb-18	3,683.6		1,127.6	3,551.6	
Mar-18	3,744.4		895.5	3,720.4	
Apr-18	4,096.3		622.5	4,033.3	
May-18	2,605.0		276.7	2,621.1	
Jun-18	2,747.7		136.3	2,745.4	
Jul-18	2,467.0		68.0	2,482.1	
Aug-18	2,772.8		123.7	2,784.6	
Sep-18	3,018.0		410.9	2,897.5	
Oct-18	2,609.7		551.0	2,602.4	
Nov-18	3,384.2		872.6	3,473.1	
Dec-18	3,621.6	38,845.1	1,175.5	3,652.2	38,562.0
Jan-19	3,714.7		1,105.0	3,737.8	
Feb-19	4,032.5		1,116.0	3,913.3	
Mar-19	3,371.3		755.4	3,500.9	
Apr-19	3,370.1		519.4	3,420.3	
May-19	3,072.9		229.6	3,140.6	
Jun-19	2,763.5		152.8	2,743.1	
Jul-19	2,795.8		58.6	2,821.2	
Aug-19	2,928.7		198.9	2,858.1	
Sep-19	2,714.4		281.6	2,735.5	
Oct-19	3,248.0		575.9	3,213.5	
Nov-19	3,494.2		871.9	3,583.9	
Dec-19	3,428.2	38,934.2	1,049.5	3,597.0	39,265.0
Jan-20	4,470.8		1,353.4	4,221.5	

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.778470107					
R Square	0.606015708					
Adjusted R Square	0.602676858					
Standard Error	361.3676127					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	23702024.04	23702024.04	181.5043262	1.27283E-25	
Residual	118	15409213.08	130586.5515			
Total	119	39111237.13				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	2530.549015	59.03274915	42.86686714	8.59595E-74	2413.6481	2647.44993
MHDD	1.096769514	0.081408899	13.47235414	1.27283E-25	0.935557731	1.257981297

10 Year Normal HDD	
Month	Normal HDD
JAN	1126.1
FEB	1007.3
MAR	873.6
APR	565.1
MAY	291.3
JUN	134.2
JUL	81.8
AUG	134.5
SEP	300.9
OCT	544.4
NOV	953.7
DEC	1203.4

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(39265 / 38932.5)^{(1/2) - 1} =$ **0.4%**

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

Commercial - Yukon - Watson Lake

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Watson Lake) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	3,703.8		957.7	3,758.2		
Mar-20	3,402.1		889.6	3,384.6		
Apr-20	3,174.6		569.8	3,169.4		
May-20	2,838.3		284.0	2,847.3		
Jun-20	2,346.0		176.5	2,239.6		
Jul-20	2,481.4		107.5	2,453.2		
Aug-20	2,680.5		177.4	2,633.4		
Sep-20	2,278.8		317.7	2,260.4		
Oct-20	2,559.9		623.5	2,473.1		
Nov-20	3,086.5		1,030.7	3,002.0		
Dec-20	3,444.6	36,468.0	1,040.3	3,623.4	36,126.1	
Jan-21	3,792.9		1,117.9	3,801.9		
Feb-21	3,530.8		1,159.7	3,363.7		
Mar-21	3,428.1		886.8	3,413.6		
Apr-21	4,756.6		603.7	4,714.2		
May-21	1,455.3		358.1	1,382.0		
Jun-21	2,375.1		114.7	2,396.6		
Jul-21	2,492.6		87.5	2,486.3		
Aug-21	2,436.1		133.5	2,437.2		
Sep-21	2,424.6		320.2	2,403.4		
Oct-21	2,763.7		553.5	2,753.8		
Nov-21	3,267.2		931.6	3,291.4		
Dec-21	3,534.3	36,257.1	1,454.2	3,259.2	35,703.2	
Jan-22	4,287.4		1,200.8	4,205.5		
Feb-22	3,525.8		928.8	3,611.9		
Mar-22	3,337.3		842.6	3,371.3		
Apr-22	3,687.4		641.0	3,604.2		
May-22	2,705.9		370.3	2,619.3		
Jun-22	2,558.5		116.2	2,576.3		
Jul-22	2,674.5		64.0	2,693.9		
Aug-22	2,510.3		94.8	2,553.8		
Sep-22	2,601.5		251.5	2,655.7		
Oct-22	2,574.6		448.8	2,679.5		
Nov-22	2,915.6		950.2	2,919.5		
Dec-22	3,435.7	36,814.5	1,252.1	3,382.3	36,875.3	
Jan-23	4,033.3		931.1	4,247.2		
Feb-23	3,189.7		945.4	3,257.7		
Mar-23	3,343.1		893.9	3,320.9		
Apr-23	3,703.1					
May-23	2,717.5					
Jun-23	2,569.4					
Jul-23	2,685.9					
Aug-23	2,521.0					
Sep-23	2,612.6					
Oct-23	2,585.6					
Nov-23	2,928.0					
Dec-23	3,450.3	36,339.5			36,599.2	
Jan-24	4,050.5					
Feb-24	3,203.3					
Mar-24	3,357.4					
Apr-24	3,718.9					
May-24	2,729.0					
Jun-24	2,580.4					
Jul-24	2,697.3					
Aug-24	2,531.7					
Sep-24	2,623.7					
Oct-24	2,596.6					
Nov-24	2,940.5					
Dec-24	3,465.0	36,494.4			36,494.4	

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

Commercial - Yukon - WHITEHORSE + TAKHINI

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)
Jan-13	7,408.7			852.0	7,416.4
Feb-13	5,906.5			665.4	6,299.9
Mar-13	6,007.4			851.1	5,849.7
Apr-13	6,200.6			639.9	5,955.9
May-13	4,955.5			294.0	4,927.5
Jun-13	5,029.2			112.4	5,094.0
Jul-13	5,028.3			88.2	5,039.9
Aug-13	5,115.0			106.5	5,180.6
Sep-13	4,622.8			264.3	4,675.5
Oct-13	5,009.1			388.8	5,239.1
Nov-13	5,393.0			856.5	5,283.5
Dec-13	5,960.4	66,638.4	1,008.2	5,867.5	66,829.5
Jan-14	6,897.7			745.8	7,298.7
Feb-14	5,794.0			992.4	5,561.7
Mar-14	6,031.3			855.1	5,866.1
Apr-14	5,576.4			499.8	5,598.8
May-14	4,909.5			269.5	4,928.2
Jun-14	4,702.8			200.5	4,599.6
Jul-14	4,877.1			98.0	4,870.0
Aug-14	4,369.8			144.0	4,363.9
Sep-14	4,905.5			307.1	4,876.5
Oct-14	4,564.0			515.6	4,552.1
Nov-14	5,621.7			772.8	5,671.9
Dec-14	5,649.2	63,899.0	854.4	5,849.6	64,037.2
Jan-15	7,074.6			927.0	7,130.0
Feb-15	5,959.4			851.4	5,996.0
Mar-15	5,706.8			671.3	5,892.1
Apr-15	5,418.8			453.5	5,529.5
May-15	4,730.1			192.9	4,894.9
Jun-15	4,398.0			127.2	4,434.6
Jul-15	4,703.8			115.7	4,662.9
Aug-15	4,254.6			183.2	4,173.9
Sep-15	4,776.7			332.7	4,698.9
Oct-15	4,616.3			469.8	4,691.8
Nov-15	5,305.0			759.2	5,381.1
Dec-15	5,573.6	62,517.6	947.9	5,595.8	63,081.5
Jan-16	6,588.3			827.6	6,833.3
Feb-16	5,605.9			688.0	5,954.2
Mar-16	5,511.4			611.6	5,810.6
Apr-16	5,390.7			386.4	5,629.4
May-16	4,489.0			252.1	4,540.9
Jun-16	4,669.0			119.0	4,721.3
Jul-16	4,782.0			79.2	4,810.7
Aug-16	4,616.2			111.5	4,672.3
Sep-16	4,724.8			278.8	4,749.8
Oct-16	4,850.3			604.3	4,669.3
Nov-16	5,286.3			694.7	5,487.4
Dec-16	5,701.2	62,217.2	1,056.2	5,516.7	63,396.1
Jan-17	6,736.8			975.9	6,698.9
Feb-17	6,284.1			864.8	6,295.2
Mar-17	6,408.0			947.0	6,067.5
Apr-17	5,514.9			455.5	5,621.8
May-17	4,760.8			294.8	4,731.2
Jun-17	5,111.5			164.5	5,077.0
Jul-17	4,563.5			127.6	4,500.0
Aug-17	4,752.7			115.2	4,801.7
Sep-17	4,623.2			269.7	4,665.6
Oct-17	4,618.6			509.9	4,617.6
Nov-17	5,724.5			979.6	5,380.2
Dec-17	6,010.5	65,109.2	832.1	6,062.9	64,519.8
Jan-18	6,673.9			1,000.0	6,590.0
Feb-18	6,697.1			1,017.3	6,417.3
Mar-18	6,137.8			788.7	6,099.2
Apr-18	6,227.5			552.3	6,149.8
May-18	4,586.6			294.7	4,557.3
Jun-18	4,704.9			170.0	4,659.9
Jul-18	4,741.3			75.7	4,776.7
Aug-18	4,722.2			130.1	4,742.8
Sep-18	4,977.7			349.2	4,868.5
Oct-18	5,107.4			475.8	5,171.4
Nov-18	5,296.1			695.1	5,494.5
Dec-18	5,891.8	65,564.3	840.5	5,918.7	65,446.2
Jan-19	6,434.1			998.1	6,413.9
Feb-19	6,692.7			997.2	6,451.3
Mar-19	6,002.7			610.4	6,304.2
Apr-19	5,288.5			473.8	5,360.6
May-19	4,980.2			229.1	5,076.0
Jun-19	4,688.6			134.2	4,711.9
Jul-19	4,662.4			52.4	4,742.3
Aug-19	4,980.4			171.6	4,921.8
Sep-19	4,531.7			239.3	4,632.1
Oct-19	4,810.3			557.4	4,718.7
Nov-19	5,582.1			687.2	5,795.6
Dec-19	5,605.7	64,319.6	839.8	5,834.0	64,962.3
Jan-20	6,693.1			1,235.8	6,159.5

Regression Output:

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.805467777					
R Square	0.648778339					
Adjusted R Square	0.645801884					
Standard Error	465.9124245					
Observations	120					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	47315740.44	47315740.44	217.9701669	1.40084E-28	
Residual	118	25614777.7	217074.3873			
Total	119	72930518.15				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	4274.854326	80.30764565	53.23104196	2.40947E-84	4115.823522	4433.88513
MHDD	1.907321727	0.129188968	14.76381275	1.40084E-28	1.6514924	2.163151055

10 Year	
Month	Normal HDD
JAN	956.0
FEB	870.6
MAR	768.5
APR	511.6
MAY	279.3
JUN	146.4
JUL	94.3
AUG	140.9
SEP	291.9
OCT	509.4
NOV	799.1
DEC	959.5

2 year Compound Annual Growth Rate =
 $(2019 \text{ Normalized UPC} / 2017 \text{ Normalized UPC})^{(1/(2019 - 2017)) - 1} =$
 $(64962.3 / 64519.8)^{(1/2)} - 1 = 0.3\%$

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

Commercial - Yukon - WHITEHORSE + TAKHINI

Residential Monthly	UPC (kWh)	Annual Actual / Forecast UPC (kWh)	(Whitehorse) MHDD	Normalized UPC (kWh)	Annual Normalized UPC (kWh)	Regression Output:
Feb-20	6,242.2		847.2	6,286.9		
Mar-20	5,729.5		849.6	5,574.7		
Apr-20	5,871.8		500.7	5,892.5		
May-20	4,569.7		271.5	4,594.6		
Jun-20	3,659.6		189.0	3,577.4		
Jul-20	4,366.5		122.3	4,313.1		
Aug-20	4,017.5		185.6	3,932.2		
Sep-20	4,707.4		298.9	4,694.1		
Oct-20	4,725.2		596.6	4,558.8		
Nov-20	4,997.0		899.0	4,806.5		
Dec-20	5,702.5	61,280.9	863.2	5,886.2	60,266.4	
Jan-21	6,463.3		887.5	6,594.0		
Feb-21	5,925.7		1,051.4	5,580.8		
Mar-21	5,792.3		821.5	5,691.1		
Apr-21	6,269.3		565.1	6,167.2		
May-21	4,480.8		337.8	4,369.2		
Jun-21	4,226.0		127.4	4,262.3		
Jul-21	4,263.4		87.3	4,276.7		
Aug-21	4,213.9		153.2	4,190.4		
Sep-21	4,240.8		320.9	4,185.6		
Oct-21	4,595.4		523.3	4,568.9		
Nov-21	4,946.5		877.4	4,797.2		
Dec-21	5,674.8	61,092.2	1,131.7	5,346.4	60,029.8	
Jan-22	7,096.3		1,010.7	6,992.1		
Feb-22	5,869.2		731.0	6,135.4		
Mar-22	5,227.3		678.3	5,399.3		
Apr-22	5,644.0		588.6	5,497.1		
May-22	4,658.5		356.8	4,510.8		
Jun-22	4,265.1		119.9	4,315.7		
Jul-22	4,556.6		96.5	4,552.3		
Aug-22	4,041.8		108.0	4,104.5		
Sep-22	4,287.8		258.4	4,351.8		
Oct-22	4,800.8		452.2	4,909.8		
Nov-22	4,740.0		769.6	4,796.3		
Dec-22	5,842.1	61,029.6	1,121.0	5,534.0	61,099.2	
Jan-23	6,933.5		799.5	7,232.1		
Feb-23	5,665.8		826.3	5,750.3		
Mar-23	5,859.9		821.1	5,759.5		
Apr-23	5,515.9					
May-23	4,526.2					
Jun-23	4,330.5					
Jul-23	4,567.9					
Aug-23	4,118.6					
Sep-23	4,366.7					
Oct-23	4,926.7					
Nov-23	4,812.7					
Dec-23	5,553.0	61,177.4			61,460.1	
Jan-24	7,256.8					
Feb-24	5,770.0					
Mar-24	5,779.2					
Apr-24	5,534.8					
May-24	4,541.7					
Jun-24	4,345.3					
Jul-24	4,583.6					
Aug-24	4,132.7					
Sep-24	4,381.6					
Oct-24	4,943.5					
Nov-24	4,829.2					
Dec-24	5,572.0	61,670.5			61,670.5	

SECTION 3: PURCHASE POWER

3.1 Overview

1. The volumes of actuals and forecast Purchase Power over the period of 2018-2024 are outlined in Schedule 3.1 as follows:

Table 3.1: 2016-2024 Purchase Power (\$000s)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Primary Purchase Power	25,108	27,069	27,658	27,507	28,817	28,959	28,796	29,015	30,086
Secondary Purchase Power	243	460	16	0	8	330	276	358	358
Less: Capitalized	-216	-5	0	-88	0	0	0	-49	0
Total Wholesales Purchase Power	25,135	27,525	27,674	27,419	28,825	29,289	29,072	29,323	30,444
Independent Purchases	-	-	-	-	-	143	426	455	517
Total Purchase Power	25,135	27,525	27,674	27,419	28,825	29,432	29,498	29,778	30,961

2. The Primary and Secondary Purchase Power costs are forecast to remain relatively flat over the Test Period. The Primary Purchase Power costs are based on the currently approved Rate Schedule 42 effective July 1, 2011, and the Secondary Purchase Power costs are based on April 1, 2023, Quarterly Rate Schedule 43.

3.2 Background

3. From 2018 to 2020, AEY purchased an average of 92.2 percent of the required power supply from YEC due to Fish Lake Unit #2 being under major repairs. In 2021, the required supply from YEC declined by 1.2 percent due to Fish Lake Unit #2 coming back online. The remainder of AEY's required power supply has been provided by diesel generation, hydro generation, independent power purchases and MG program. The percentage of power that AEY purchased from YEC in 2022 was 91.0 percent and is forecast to be 90.9 percent and 91.0 percent in the 2023 and 2024 Test Years, respectively.

4. The forecast Fish Lake Hydro Generation in the Test Period outlined in Schedule 3.2¹ is based on the recent 2021-2022 output, planned maintenance, water availability and is adjusted for any planned decreases in generation due to capital rebuilds.

5. The forecast Independent Power Purchases of solar power in the Test Period outlined in Schedule 3.2² is based on the dispatch protocol in the Electricity Purchase Agreement between AEY and Vuntut Gwitchin First Nation.

6. In the Hydro Zone and Burwash Landing, the forecast MG in the Test Period outlined in Schedule 3.2³ is based on a linear regression from the last five-years of exported energy. Due to a lack of data in the communities of Old Crow and Beaver Creek, forecast MG exports were based on an average yearly export and a four-year regression, respectively.

3.3 Deferral Account

3.3.1 Purchase Power Flow Through

7. The cost of Purchase Power in this Application is based on YEC's rates that are currently in place for Primary Energy and Secondary Sales, and are outlined in Schedule 3.1.⁴ These rates do not include any adjustment to the rates associated with YEC's Energy Reconciliation Adjustment (ERA). Any increases or decreases to these rates, including any ERA amounts charged by YEC, are continuing to be flowed through to customers.

8. AEY is of the view that the changes to the wholesale rates (including any ERA charges) continue to meet the criteria for the establishment of a deferral account, and any variance should continue to be included in the Purchase Power Flow Through Deferral Account. The Board has relied upon the standard criteria for the establishment of a

¹ Schedule 3.2, line 7.

² Schedule 3.2, line 11.

³ Schedule 3.2, line 12.

⁴ Schedule 3.1, lines 7 and 8.

deferral account to include: (a) costs that are not under the control of the company and are not reasonably forecastable, or (b) where a variance in forecasting could produce a loss or gain of a substantial magnitude.

9. As such, changes made by YEC to the wholesale rates, including any ERA charges, are clearly not under the control of AEY and cannot be reasonably forecast by AEY. Furthermore, any changes may produce a loss or gain of substantial magnitude. Therefore, consistent with these criteria and the Board's prior approval of this deferral account, AEY submits it is appropriate for a continuation of this deferral account to capture any changes to the wholesale rates, including any ERA charges.

3.4 Independent Power Producers (IPP) Deferral

10. The Yukon Government's Order in Council 2019/25 directed the utilities to:

- Design rates for electricity purchase from IPP proponents, in Off Grid communities, that are based on the weighted average cost of diesel fuel for thermal generation and account for any reduction in maintenance and capital costs;
- Provide potential proponents with pricing and market certainty for their generated power; and
- Contract term will be of a duration that aligns with the serviceable life of the renewable technology and is to be at least 20 years.

11. To meet these mandates, and provide clarity and certainty to each party, Electricity Purchase Agreements (EPAs) were required. To ensure the IPPs are not unduly put at risk of poor system availability, Constraint Payments were required. Constraint Payments occur when the IPP is producing power and, due to circumstances outside the IPP's control, an incident occurs that results in the inability of the IPP to access AEY's grid and sell power to AEY. Examples include distribution line outages or a constraint of the Battery Energy Storage System (BESS). In addition, there are legal costs and contracting costs associated with setting up these EPAs.

12. The constraint payment is paid to the IPP for the minimum energy purchase in the EPA . These minimum energy purchases are required to ensure the IPP is kept financially whole in situations where they would otherwise be able to sell electricity to AEY.

13. Under the IPP program, the risks and impacts of unplanned events are amplified. If an unplanned event results in an IPP's inability to provide the expected energy to the grid, then the reduced generation is normally made up through the running of diesel plants. This requirement to run diesel plants results in increased fuel usage during the constraint period and AEY must pay for both the increase in fuel costs and the minimum energy purchase.

14. In addition to Constraint Payments, AEY is responsible for the maintenance of the BESS, Microgrid Controller (MGC) and distribution interconnections of the IPP projects. As this is a new area, there is a degree of uncertainty regarding the quantum of work and effort required to maintain the BESS, MGC and other system integration components required for the IPP projects to successfully operate.

15. There are several IPPs energizing in the Test Period, which increases the risk for Constraint Payments and increases the amount of maintenance work required. As the Constraint Payment is based on the unforeseen events that are outside the normal course of operations and control of AEY, there are no forecast costs in the GRA. In addition, there is uncertainty around the estimated maintenance costs of the IPP projects for which AEY is responsible. AEY is requesting deferral treatment on both Constraint Payments as well as maintenance costs related to the IPP projects.

3.5 Forecast Process

16. The energy component of the purchase power cost is determined by applying YEC's currently approved wholesale rate to the total forecast energy purchases. Total forecast purchases are determined by applying a forecast line loss percentage to AEY's sales load forecast that was discussed in Section 2. Line losses have been determined to be 6.1 percent and are calculated using a five-year historical average, consistent with Board Order 2014-06.

SECTION 4: FUEL COSTS

4.1 Overview

1. The fuel costs included in this Application are outlined in Schedule 4.1 and are as follows:

Table 4.1: Fuel Cost (\$000)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Fuel Costs	5,363	5,571	5,403	5,432	5,709	5,353	5,766	9,181	9,023
Litres	5,655	5,877	5,783	5,812	5,890	5,725	5,872	5,738	5,759

2. The forecast fuel cost increase in 2023 is mainly due to higher fuel prices than previously approved, which are currently used as base fuel prices in Rider F.

3. Please refer to Schedule 4.1 for the details associated with the calculation of fuel costs for 2018 to 2024.

4.2 Background

4. Fuel is purchased on an ongoing basis for each of the five isolated diesel plants operated by AEY. AEY conducts a diesel fuel tendering process in which a vendor is selected to be the provider of diesel fuel to AEY.

5. AEY also has modest generation and fuel requirements associated with standby units at Carmacks, Teslin, Haines Junction, Ross River, Pelly Crossing and Stewart Crossing. These units generate power in the event of an interruption of power from the Yukon Interconnected System.

6. AEY has also considered the exported energy from the MG program in the Old Crow, Beaver Creek and Destruction Bay Communities.

4.3 Forecasting Fuel Costs

7. Fuel costs are recorded as the fuel is consumed by the plant.

8. Fuel costs are a function of forecast sales, line losses, plant efficiencies, and delivered fuel prices.

4.3.1 Line Losses

9. As outlined in Section 3, and consistent with the approach approved in Board Order 2014-06, line losses have been calculated based on a five-year average.

4.3.2 Plant Efficiencies

10. Plant efficiencies are based on the average efficiencies of the previous five years adjusted for any changes due to the replacement of units. This approach is consistent with the approach approved in Board Order 2014-06.

4.3.3 Forecasted Fuel Prices

11. Price forecasts for each community are based on April 2023 actual prices for diesel fuel. The respective fuel prices for each location are shown in Schedule 4.2.

4.4 Fuel Price Flow Through

4.4.1 Diesel Fuel Deferral Account

12. The variance between actual and forecast fuel prices, as outlined in Schedule 4.2, are refunded to, or recovered from, customers through a fuel price flow through and the associated Rider F.

13. The previously approved methodology for the fuel deferral uses Board approved community-based plant efficiencies (or 'heat rate', kWh/Litre) and the plant's monthly gross generation to determine the quantum of litres for the monthly fuel deferral calculation. The difference between the actual and Board approved price per litre is then applied to this number of litres to arrive at the fuel deferral amount for the month.

SECTION 5: OPERATIONS AND MAINTENANCE EXPENSES

1. This Section outlines the forecast of AEY's Operations and Maintenance (O&M) expenses and consists of the following subsections:

- 5.1 Overview: is an overview of AEY's forecast and forecasting process;
- 5.2 Labour Costs: outlines the change in labour from the 2016–2017 GRA to the forecast labour costs in the Test Period;
- 5.3 O&M Costs by Function: outlines the high-level drivers for cost increases forecast in the Test Period; and
- 5.4 Related Party Costs.

2. Year over year changes in operating and administrative costs for the 2016-2024 period have been provided in Schedule 5.2.

5.1 Overview

3. AEY's forecast process involves a review of business requirements by function to ensure that the activities performed in each area are incorporated for the ongoing provision of safe and reliable electricity service. The forecast is based on historical costs and incorporates the consideration of the best information available at the time the forecast is developed. A separate forecast is developed for labour and non-labour costs.

4. Total forecast labour costs are calculated by multiplying the number of staff per job class by the rate of pay for each job class. These labour costs are then distributed to O&M accounts or capital accounts depending on the nature of work being performed by the staff in that job class.

5. Non-labour costs are forecast in two parts: (i) Ongoing operational and administrative activities, based on historic spending requirements; and ii) adjustments for known changes to work to be completed in the Test Period.

6. Total O&M expenses included in this Application are outlined and explained in detail in Schedules 5.1, 5.2, and 5.3. Table 5.1 summarizes the actual and forecast labour and non-labour operating costs from 2016 to 2024, detailing the general areas where

costs are increasing or decreasing from the 2017 approved amounts in the 2016-2017 GRA, the last time AEY was before the Board. These increases and decreases in costs are discussed in more detail in Sections 5.2 and 5.3.

7. The O&M expense approved for 2017 was \$11.7 million. The total O&M expense, for the 2023-2024 Test Period is \$14.8 million and \$15.1 million, respectively, representing an increase of \$3.1 million in 2023 and \$3.3 million in 2024 over 2017 approved costs. The overall increases in O&M expense are mainly attributable to rising labour, contractor and material costs due to inflation, in addition to incremental labour and non-labour costs driven by higher demands from customer growth and operating a more robust and complex electrical system.

8. AEY continues to experience (1) an increase in asset base to operate and maintain, due to an increase in the number of customer accounts; (2) higher costs for materials and contractors; and (3) more frequent maintenance requirements on aging production assets. Beginning in the Test Period, AEY will also begin to incur additional annual subscription fees related to the lifecycle replacement of ATCO's Computer Information Systems (CIS) with Oracle Customer Cloud Service Solution (CSS). Please refer to Schedule 5.2 Operations and Maintenance Expenses for AEY's historical year-over-year variance explanations by function and activity from 2016 through 2022.

**Table 5.1: Operations and Maintenance (O&M) Expenses
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Labour	5,671	5,643	6,042	5,917	6,037	6,266	6,483	7,133	7,295
Non-Labour:									
Production	1,170	1,379	1,036	1,012	794	1,343	1,946	1,954	1,635
Distribution	932	1,298	873	990	1,098	2,131	2,197	1,649	1,643
General	205	285	181	246	258	410	502	351	359
Public Information	25	78	37	59	68	131	157	85	88
Customer Accounting	562	587	598	467	656	519	664	831	1,148
Admin & General	2,576	2,613	2,346	2,413	3,055	3,013	2,844	2,607	2,695
Total Non-Labour	5,470	6,240	5,071	5,187	5,929	7,548	8,311	7,477	7,568
Total O&M	11,141	11,883	11,113	11,104	11,966	13,814	14,794	14,609	14,863
2017 Approved								11,754	11,754
Increase over approved								2,855	3,109

*Table may not add due to rounding.

5.2 Labour Costs

9. The total O&M labour costs, as outlined in Table 5.2, are forecast to be \$7.1 million and \$7.3 million in 2023 and 2024, respectively, representing an increase of \$1.1 million in 2023 and \$1.2 million in 2024 over the 2017 approved labour costs. These increases are largely attributable to inflationary increases. Compounded over the six-year period since AEY's 2016-2017 GRA, inflation attributes to \$0.8 million and \$0.9 million in 2023 and 2024, respectively.

**Table 5.2: Labour Costs by Function
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	Test Period	
	Actuals							2023	2024
Production	959	941	1,238	1,102	1,088	1,226	1,161	1,422	1,461
Distribution	2,040	1,919	2,063	2,199	2,156	2,119	2,284	2,485	2,547
General	12	18	26	9	23	19	18	19	19
Public Information	69	113	21	15	16	25	92	94	98
Customer Accounting	1,455	1,365	1,462	1,524	1,520	1,445	1,504	1,655	1,694
Admin & General	1,136	1,287	1,232	1,068	1,234	1,432	1,424	1,458	1,476
Total Labour	5,671	5,643	6,042	5,917	6,037	6,266	6,483	7,133	7,295
2017 Approved								6,073	6,073
Increase over Approved								1,060	1,222

10. Incremental FTEs as discussed in Section 1 of this Application, account for the remaining \$0.3 million in operating expenses. Additional FTEs in O&M are required to support the additional maintenance needs of the growing asset base and growing number of customer accounts. Additional administrative workload is required to oversee the increasing volumes of work due to the substantial system growth, as well as addressing the need for strong, productive government relations to support the energy transition.

5.3 Operations and Maintenance (O&M) Costs by Function

5.3.1 Production

11. The Production function includes routine preventative (scheduled) and restorative (unscheduled) maintenance costs. The timing of scheduled overhauls is determined by the manufacturer's specifications and varies by unit type and number of hours in operation. As assets age, costs increase in order to perform additional monitoring and the completion of unscheduled maintenance. The additional monitoring and maintenance activities are necessary to ensure the continued reliability and efficiency of the power generation equipment. The Production function also contains costs related to managing and storing required spare parts and consumables, maintaining documentation and records of maintenance activities, developing and updating maintenance procedures, and required activity to comply with safety regulations and environmental standards.

**Table 5.3: Production Costs
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Labour	959	941	1,238	1,102	1,088	1,226	1,161	1,422	1,461
Non-Labour:									
Hydro Generation	160	145	187	123	124	236	197	358	193
Diesel Generation	179	135	104	119	145	264	262	257	286
Hydro Maintenance	44	122	99	21	29	36	104	99	101
Diesel Maintenance	787	977	646	749	496	807	1,383	1,240	1,055
Total Non-Labour	1,170	1,379	1,036	1,012	794	1,343	1,946	1,954	1,635
Total Production	2,129	2,320	2,274	2,114	1,882	2,569	3,107	3,376	3,096
2017 Approved								1,980	1,980
Increase over Approved								1,396	1,116

12. Production costs are forecast to increase by \$1.4 million and \$1.1 million in 2023 and 2024, respectively, over 2017 approved costs, as outlined in Table 5.3. The increase in costs is mainly due to additional labour requirements which includes the addition of the Team Lead, Plant position, contractor expenses to address the incremental maintenance requirements at the generation facilities due to the aging of the assets (\$0.9 million), labour and contractor related inflationary costs (\$0.4 million) and additional environmental costs in 2023 to conduct a dam breach study at Fish Lake to maintain the water license (\$0.1 million). Many of the generation assets are nearing end-of-life, which results in additional monitoring and maintenance to continue to operate the assets safely and reliably until the assets are replaced.

5.3.2 Distribution

13. The Distribution function includes costs to perform routine preventative (scheduled) and restorative (unscheduled) maintenance on the various components within the distribution infrastructure, including line and substation maintenance, vegetation management, meter maintenance, streetlight maintenance and transformer repairs.

**Table 5.4: Distribution Costs
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Labour	2,040	1,919	2,063	2,199	2,156	2,119	2,284	2,485	2,547
Non Labour:									
Brushing	422	635	247	410	430	743	849	538	551
Maintenance and Repair	447	545	597	631	694	712	1,310	1,063	1,089
Other	63	118	29	(51)	(26)	676	38	48	3
Total Non-labour	932	1,298	873	990	1,098	2131	2,197	1,649	1,643
Total Distribution	2,972	3,217	2,936	3,189	3,254	4,250	4,481	4,134	4,190
2017 Approved								3,248	3,314
Increase over Approved								886	876

14. Distribution costs are forecast to increase by \$0.9 million in 2023 and 2024, over 2017 approved costs, as outlined in Table 5.4. The combined impact of rising labour and non-labour inflation has been the primary driver contributing to the overall increase of Distribution costs accounting for approximately \$0.6 million of the increase over the past six years.

15. In addition to inflation increases, distribution maintenance costs have increased by \$0.3 million for incremental right-of-way clearing and pole testing, due to additional maintenance requirements to support a larger asset base resulting from system growth in recent years. Since 2017, AEY has seen approximately five percent growth in distribution assets through its new extension capital program. This growth trend is predicted to continue through the Test Period.

5.3.3 General Costs

16. The General Costs function includes costs related to internal communication systems and maintenance activities for company owned properties and warehouses. Over the Test Period, the costs are forecast to increase by \$0.1 in 2023 and 2024 over 2017 approved costs, as outlined in Table 5.5. The increase is mainly attributable to rising costs for ongoing maintenance and repair activities and the annual subscriptions for the

new satellite phone and radio system. The new system was required as the existing system was no longer operational.

**Table 5.5: General Costs
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Labour	12	18	26	9	23	19	18	19	19
Non-Labour									
Communication	9	19	24	34	29	39	50	110	113
Maintenance Company-Owned Houses	69	108	(29)	27	35	34	21	48	49
Maintenance Warehouse and Office	127	158	186	185	194	337	431	193	197
Total Non-Labour	205	285	181	246	258	410	502	351	359
Total	217	303	207	255	281	429	520	370	378
2017 Approved								303	303
Increase over Approved								67	75

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.

**Table 5.6: Public Information
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actual							Test Period	
Labour	69	113	21	15	16	25	92	94	98
Non-Labour	25	78	37	59	68	131	157	85	88
Total	94	191	58	74	84	156	249	179	186
2017 Approved								153	153
Increase over Approved								26	33

5.3.5 Customer Accounting

18. The Customer Accounting function includes costs related to work on customer applications, contracts, orders, credit investigations, billing and accounting, meter reading, collections and complaints.

**Table 5.7: Customer Accounting Costs
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Labour	1,455	1,365	1,462	1,524	1,520	1,445	1,504	1,655	1,694
Non-Labour:									
Customer Application & Service Orders	81	82	71	52	36	34	113	72	74
Meter Reading	152	175	175	165	190	206	226	208	214
Customer Billing & Accounting	265	253	221	271	246	275	246	450	760
Other	64	77	131	(21)	184	4	79	100	100
Total Non-Labour	562	587	598	467	656	519	664	830	1,148
Total Customer Accounting	2,017	1,952	2,060	1,991	2,176	1,964	2,168	2,485	2,842
2017 Approved								2,208	2,208
Increase over Approved								277	634

19. Customer Accounting costs are forecast to increase by \$0.3 million and \$0.6 million in 2023 and 2024, respectively, over 2017 approved costs, as outlined in Table 5.7. The primary driver for the increase in costs is the annual subscription fees required to operate the new Oracle Customer Cloud Service Solution (CCS) billing software, being implemented in the middle of 2023. The new CCS system will replace the old ATCO Computer Information Systems (CIS). As CCS is a cloud-based system, the annual subscription fees cannot be capitalized. For additional details on the lifecycle replacement of ATCO CIS with CCS, please refer to Business Case #23: ATCO CIS Replacement. Please refer to Schedule 5.12.

20. For the non-labour costs which vary from year to year and are not driven by the number of customers (i.e., service requests, collections, etc.), AEY has forecast these costs using a five-year average plus inflation.

5.3.6 Admin & General

21. The Admin and General function include costs that are forecast in connection with the general administration of AEY's operations, or costs which are not specifically assignable to a particular operating function. These costs include both AEY's internal administrative costs as well as costs related to administrative services provided by ATCO Electric (i.e., Financial Reporting, Regulatory Support, Governance, etc.).

**Table 5.8: Administration & General Costs
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Labour	1,136	1,287	1,233	1,068	1,234	1,432	1,424	1,458	1,476
Non-Labour									
Training and Safety	68	127	79	112	66	53	142	141	84
Relocation	153	16	66	128	165	164	110	130	130
Insurance	93	88	89	98	117	132	154	158	165
Audit/Legal Fees & Special Studies	142	110	159	79	248	453	226	198	203
IT Charges	290	393	325	294	792	649	419	472	472
Financial Services	642	721	548	562	544	510	360	697	792
Other	1,192	1150	1080	1140	1123	1052	1434	811	849
Total Non-Labour	2,576	2,613	2,346	2,413	3,055	3,013	2,844	2,607	2,695
Total Admin & General	3,712	3,900	3,578	3,481	4,289	4,445	4,268	4,065	4,171
2017 Approved								3,863	3,863
Increase over Approved								202	308

22. The overall costs are forecast to increase by \$0.2 and \$0.3 million in each of 2023 and 2024 from 2017 approved. The increases, as outlined in Table 5.8, are attributable to inflationary pressures on labour costs, insurance, audit and legal costs, as experienced over the 2016 to 2022 period, as well as the addition of administrative positions. AEY continues to experience increasing administrative and head office demand. AEY requires resources to oversee and address policy changes, coordinate with an increasing volume of external parties on matters related to energy transition as well as manage and oversee increasing volumes of matters and transactions that accompany customer growth and large capital programs.

23. Effective July 2021 AEY switched its IT service provider to Kyndryl, a subsidiary of IBM and terminated its contract with its previous provider, Wipro. The change in IT service provider was necessary given the fast-paced requirements to modernize, progression from on-premises to cloud-based services, and transformation of user services to address remote working and in-field solutions. One-time costs associated with the termination of the previous contract and transition to the new service provider were incurred in 2020 and 2021 and were excluded in all determinations of the 2023 and 2024 revenue requirements.

5.4 Related Party Costs

24. AEY outsources certain major administrative functions to affiliate companies, such as ATCO Electric, to take advantage of the economies associated with the scope and scale of services available from a larger utility. The costs of these services are detailed in Schedule 5.3 and are based on a fully allocated cost methodology that does not contain any element of profit or return.

25. Labour support is purchased from ATCO Electric for various services, including financial reporting, regulatory support, governance, human resources, health and safety, payroll, IT services, and customer care & billing support.

Section 6: Taxes Other Than Income

6.1 Overview

1. The property taxes included in this Application are as follows:

**Table 6.1: Taxes Other than Income
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Property Taxes	253	253	264	277	277	267	275	285	292

6.2 Property Taxes

2. Property taxes are paid to the communities annually for AEY’s office building, generation facilities, substation properties and power lines. The forecast increases over the Test Period are due to inflation.

SECTION 7: DEPRECIATION

7.1 Summary

1. The depreciation expenses included in this Application are outlined in Schedule 7.1. Please note that the depreciation expenses are placeholders and that updated amounts for 2023 and 2024 will be refiled upon completion of the Depreciation Study.

Table 7.1: Depreciation (\$000)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Depreciation Expense - Life	5,835	6,115	6,293	6,382	6,707	6,950	7,343	7,324	9,045
Net Salvage ¹	-	-	-	-	-	-	-	2,066	2,174
Total Deprecation Expense	5,835	6,115	6,293	6,382	6,707	6,950	7,343	9,390	11,219

2. The annual increases in depreciation expense from 2018 to 2022 are due to growth in property, plant and equipment. The increases from 2022 to 2023 and 2024 are mainly driven by the restart of the Net Salvage collection which is explained below in Section 7.2. In addition, the depreciation expense has increased from 2023 to 2024, as a result of a full year depreciation of the CIS Program, the capitalization of large renewable projects (which are contributed projects and the expense is offset by the Amortization of Contribution, as reflected in Table 7.2) as well as the increased customer base resulting in increased distribution improvements.

Table 7.2: Amortization of Contributions (\$000)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Amortization	(1,499)	(1,525)	(1,538)	(1,635)	(1,754)	(1,877)	(2,033)	(2,159)	(2,528)

3. The depreciation rates used to calculate actual 2018 through 2022 and to forecast 2023-2024 depreciation expense were placeholders determined by a Depreciation

¹ Subject to change based on the results of the Concentric Depreciation Study.

Technical Update conducted in 2018 based on Depreciation Parameters approved in Board Orders 2014-06 & 2017-01.

4. AEY has engaged Concentric to complete a full depreciation study for the 2023-2024 GRA. This study is not yet complete as of the filing date of this Application; therefore, AEY is proposing to continue with the existing depreciation parameters as placeholders for this Application. Once AEY receives the completed study (expected by late August or early September 2023), AEY will update its depreciation rates and parameters and file an update to this Application.

7.2 Negative Net Salvage

**Table 7.3: Negative Net Salvage
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Opening Net Salvage	(3,692)	(3,469)	(3,286)	(2,846)	(2,158)	(1,661)	(1,351)	(477)	(1,542)
Removals	223	183	440	688	497	310	874	1,000	1,264
Salvage Depreciation	-	-	-	-	-	-	-	(2,066)	(2,175)
Ending Net Salvage	(3,469)	(3,286)	(2,846)	(2,158)	(1,661)	(1,351)	(477)	(1,542)	(2,453)

5. AEY discontinued collection of Future Removal and Site Restoration, or Negative Net Salvage as directed in Board Orders 2009-2 and 2014-06. Current reserve balances are not sufficient to fund planned salvage over the next several years.

6. As AEY's current assets continue to age there is an increase in the amount of salvage work and site restoration required, as reflected in the increasing forecast of removals in the table above. In addition, there are larger projects that will require salvage work such as the Old Crow Project. If AEY does not build up this reserve to address aging assets, the funding will not be available when the work is required and there is a risk of generational inequity where future customers will be funding the salvage of assets from which previous customers benefitted.

7. The placeholder estimates for salvage depreciation were provided by Concentric and will be updated with final estimates in September. The placeholder estimates were used to demonstrate the need for the collection of net salvage in this Application.

8. AEY is requesting Board approval to resume collection of Negative Net Salvage in revenue requirement and will file updated parameters based on the findings of the ongoing Depreciation Study.

SECTION 8: RETURN ON RATE BASE

8.1 Overview

1. The return on rate base included in this Application is outlined in Schedule 8.1 and is as follows:

**Table 8.1: Return on Rate Base
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Return on Rate Base	7,280	8,409	8,490	8,646	8,584	8,228	8,440	8,301	9,102

2. The increases from 2017 approved to the 2024 forecast are primarily due to growth in rate base as a result of capital additions discussed in Section 9, as well as an increase in the return on equity as discussed below. These increases are partially offset by lower costs of long-term financing due to maturity of older debt issued at higher interest rates than recently experienced.

3. The components of the return on rate base are as follows and are discussed below:

- Cost of Capital:
 - Capital Structure and Cost of Capital;
 - Forecast Long Term Debt Rates; and
 - No Cost Capital.
- Rate Base:
 - Capital Additions;
 - Contributions;
 - Deferred Charges and Credits; and
 - Working Capital.

8.2 Cost of Capital

8.2.1 Background

4. In its 2013-2015 GRA, AEY requested that its Return on Equity (ROE) be linked to the British Columbia Utility Commission (BCUC) benchmark rate plus a risk premium consistent with that approved in Board Order 2009-02.

5. In Board Order 2017-01 related to the 2016-2017 GRA, the Board approved a ROE based on the BCUC approved benchmark with an adder to recognize AEY's increased business risk. In that Decision, the Board found that the small size of AEY was the most important risk factor to quantify the risk premium over the BCUC benchmark utility.

6. Since AEY's 2016-2017 GRA, the utility industry has experienced significant changes and challenges. In particular, these changes and challenges include: labour and supply challenges due to the evolution of related markets as a result of the global pandemic; evolving and pending legislation and Government policies surrounding decarbonization and net-zero targets; and rapid technological advances and innovation.

7. The BCUC is currently undertaking a GCOC proceeding (Stage 1 proceeding)¹ to determine the appropriate benchmark ROE which was previously set at 8.75 percent. A decision is expected to be released either in the third or fourth quarter of this year.

8. AEY submits that the determination of whether a ROE premium is appropriate with respect to AEY should address the relative business risks of AEY compared to the BCUC benchmark utility and other similar utilities across Canada, taking into account the stand-alone principle.

9. The stand-alone principle is a well-accepted, fundamental concept of utility regulation that has been applied by federal and provincial regulatory agencies across Canada. Section 3 of OIC 1995/90 requires the Board to set rates in accordance with the principles established in Canada for utilities, including by regulatory authorities of the Government of Canada and by provinces regulating hydro and non-hydro electric utilities. Therefore, it is appropriate for the Board to observe the stand-alone principle and the business risk of AEY in determining the appropriate ROE premium.

8.2.2 Business Risk Analysis

10. AEY has engaged Concentric Energy Advisors, Inc (Concentric) to satisfy the Board's direction² and determine whether a risk premium relative to the BCUC GCOC

¹ Application ID 849.

² Board Order 2017-01, Appendix A.

would be appropriate and, if so, what that risk premium should be. Consistent with the evidence of Concentric included in Attachment 8.1, AEY submits that its ongoing business risks encompass market demand and operational risks. Further, AEY's small size and the economic and geographic environments in which AEY operates expose it to a greater degree of business risk compared to the BCUC benchmark utility as well as most utilities located in other areas of Canada.

11. Market demand risks relate to the volatility of sales and their impact on ROE. Realization of sales forecasts in AEY's service territory is subject to many variables including the weather and the economic health of the community. AEY's sales are more sensitive to weather than other electric utilities due to the extreme range of temperatures experienced in northern Canada.

12. AEY also serves a relatively small market with considerably less economic strength and diversity than the service areas of other utilities. Its residential and commercial sales are primarily affected by the general economic activity within the communities served.

13. Since AEY's last GRA, transformational change has started to occur in the electric utility industry with emphasis on decarbonization, increased focus on Environmental, Social and Governance (ESG), the need for grid modernization, and general changes to the way in which customers receive utility service (e.g., self-supply). These changes increase risk and uncertainty for utilities to a level never experienced before, and particularly affect AEY because of the small customer base over which costs can be shared.

14. Operational cost risks exist due to the potential to under-estimate various cost items including: capital expenditures, financing costs and O&M expenses. The remote locations served by AEY can result in higher than anticipated repair costs for unplanned maintenance of facilities. Also, due to the severe weather conditions that can occur in northern Canada, repair costs can deviate substantially from those forecast in operating budgets which are based on normalized weather conditions. The length of the winter

period increases the probability that these severe weather conditions may be experienced.

15. Based on the above, and as supported by the expert evidence of Concentric, AEY faces greater business risk than the average Canadian or British Columbia benchmark utility and such that a risk premium is appropriate. As such, Concentric has determined an appropriate risk premium to be 75 basis points.

8.2.3 Requested ROE

16. In accordance with prior Board direction,³ AEY is requesting to link its ROE for the 2023-2024 Test Period to the soon to be determined BCUC GCOC benchmark rate plus a risk premium of 0.75 percent.

17. In this Application, AEY has utilized the existing 8.75 percent as a placeholder and is proposing to true-up to the benchmark approved by the BCUC in its upcoming GCOC decision as part of AEY's Compliance Filing to this Application.

8.2.4 Common Equity Ratio

18. AEY is seeking continuation of its currently approved common equity ratio of 40 percent for each of 2023 and 2024.

8.2.5 Forecast Long Term Debt Rates

19. AEY is forecasting to issue long term debt in the Test Period. The forecast debenture rates detailed in the following table are based on the best information available at the time the forecast was prepared. AEY used an average Long Canada Bond Rate and applied a spread to determine the forecast debenture rate. The forecast for Long Canada Bonds and credit spreads were based on discussions with ATCO's Treasury Department at the time of the filing. The credit spread of 1.55 percent is based on the average spread on long-term debt issued by CU Inc. from 2011 through 2022.

³ Board Order 2017-01, Appendix A.

**Table 8.2: Economic Indicators
(%)**

	2023	2024
Long Canada Bond Rate	2.50 - 3.00	2.55 - 3.05
Credit Spread	1.55	1.55
Debenture Rate	4.70	4.55
Recommended Rate	4.56	4.56
Issue Costs	0.05	0.05
Recommended All-In Rate	4.61	4.61

20. The cost of debt includes the weighted average cost of all long term advances from AEY's parent company. The cost of issuing the debt is included in the overall embedded costs.

8.2.6 No Cost Capital

21. The no cost capital included in this Application relates to the balances for deferred pensions including Other Post Employment Benefit (OPEB) plans as well as the Reserve for Injuries and Damages (RID).

22. OPEB's are administered on a combined basis with CU Limited, and affiliate corporations to cover such things as drug, health and dental costs for retirees. For these benefits, AEY is assessed a percentage of its payroll at a rate calculated for the plan as a whole. Consistent with its last GRA, both the pension plan and OPEB have been accounted for on the cash basis in the Test Period.

23. The RID is used for uninsured and uninsurable losses and the deductible portion of insurance claims. Maintaining the reserve mitigates rate fluctuations by smoothing out the charges to O&M with respect to these types of losses. The establishment of the reserve provides financial advantages over-paying significantly higher insurance premiums in order to reduce deductibles or to insure items which carry prohibitively high premiums.

24. Please refer to Attachment 8.2 for a description of the incident that has been included in the test period. AEY has collected balances based on a placeholder for potential events, as there has been a period of time with no event, AEY has reduced the

2023-2024 revenue requirements to refund a portion of funds collected in previously approved rates to maintain previously approved reserve balances for potential future events.

25. The continuity schedule for no cost capital is outlined in Schedule 8.4 and the balances are as follows:

Table 8.3: No Cost Capital (\$000)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
No Cost Capital ¹	703	809	915	1,023	1,130	1,238	1,344	1,158	880

¹ These are the mid-year no cost capital amounts that can be found on Schedule 8.4.

8.3 Rate Base

8.3.1 Capital Additions

26. Total capital additions included in Schedule 8.6 and outlined in detail in Section 9 are as follows:

Table 8.4: Capital Additions (\$000)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Expenditures	14,784	10,476	9,491	13,529	13,001	15,147	18,914	31,234	25,073
Capital Additions	12,079	8,393	11,159	9,982	11,893	11,014	15,857	34,734	31,780

27. These additions are primarily driven by a requirement to upgrade, enhance and replace components on the distribution and generation systems that have reached the end of their life cycle as well as meet system needs due to load growth.

28. Please refer to Section 9 for further discussion of capital expenditures.

8.3.2 Contributions

29. Contributions in aid of construction are received from customers in accordance with the company's investment policy that was approved in Board Order 2010-13. The contributions outlined in Schedule 8.12 are as follows:

**Table 8.5: Contributions in Aid of Construction
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Contributions in Aid of Construction (per year)	1,241	2,204	3,212	5,969	4,220	5,250	2,529	10,119	16,431

30. AEY's forecasting process involves a review of projects included in the capital additions outlined in Section 9 to identify those which will require a customer contribution.

8.3.3 Deferred Charges and Credits

31. The mid-year deferred charges and credit amounts included in rate base are outlined in Schedule 8.8 and are as follows:

**Table 8.6: Deferred Charges and Credits
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Mid-Year Balance	424	261	1	(487)	(901)	(1,263)	(1,651)	(1,100)	(225)

32. The deferred charges and credit amounts include the following:

- (a) Rate Case Reserve - AEY is using a deferral account to flow through to customers the costs associated with filing its GRAs. Please refer to Schedule 8.9 for a breakdown of the costs forecast for this GRA. As directed in Board Order 2022-13, AEY will refund balances collected since the test period to customers through 2023 and has updated for expected costs associated with this proceeding. Please refer to Schedule 8.9 for a breakdown of the costs forecast for this GRA;
- (b) Watson Lake Study Costs - AEY has collected balances related to LNG Study Costs as approved in Board Order 2017-01. Balances collected in excess of original cost will be refunded to customers in 2023. AEY proposes

closing the deferral account at the end of 2023 and resetting revenue requirement for 2024 without the deferral; and

- (c) Defined Benefit Pension Deferral – AEY has included in the deferred charge account the refund over the two-year Test Period related to the over-collection of \$154,000 related to the 2014 and 2015 defined benefit pension amounts.
- (d) Independent Power Producer Deferral – AEY has collected balances related to the execution of EPAs for IPPs that align with OIC 2019 025, as proposed in the requested deferral account. The accumulated costs are proposed to be collected over the Test Period.

8.4 Working Capital

8.4.1 Overview

33. Working capital is a component of the company’s total rate base as generally the payment of expense occurs in advance of the receipt of revenues.

34. The components of working capital are:

- Purchased Power;
- Fuel Expenses;
- Operations and Maintenance;
- Income Tax;
- Goods and Services Tax;
- Depreciation Expense;
- Interest Expense;
- Common Equity (retained earnings component);
- Common Equity (dividend component); and
- Material and Supplies Inventory (based on the estimated inventory balance).

35. To determine the working capital for the Test Period, AEY completed a review of the components of each of the items in necessary working capital to ensure that the nature of the revenue/expenses included in each category had not changed materially since the previous lead/lag study. Based on this review, AEY has not identified any material updates required to the lead/lag days as previously determined and approved in Board Order 2017-01.

36. The working capital included in rate base in this Application is outlined on Schedule 8.5 with the details on the components incorporating working capital disclosed on Schedule 8.10 and is as follows:

**Table 8.7: Working Capital
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals						Test Period		
Working Capital	3,062	3,206	3,383	3,330	3,240	3,662	4,655	5,235	4,315

37. The overall increase in the forecast working capital requirements over the Test Period is mainly a result of increased operating expenses including purchase power and fuel as discussed in Section 3, Section 4 and Section 5 of this Application as well as increased depreciation costs discussed in Section 7.

**PREPARED FOR:
ATCO ELECTRIC YUKON**

**PRESENTED TO:
YUKON UTILITIES BOARD**

JULY 05, 2023



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1 **I. INTRODUCTION**

2 **A. Qualifications**

3 My name is John P. Trogonoski, and I am employed by Concentric Energy Advisors, Inc.
4 (“Concentric”) as an Assistant Vice President. My business address is 293 Boston Post Road West,
5 Suite 500, Marlborough, MA 01752. I am testifying on behalf of ATCO Electric Yukon (“AEY” or
6 the “Company”), a wholly-owned subsidiary of ATCO Electric Ltd.

7 I am among Concentric’s professionals who provide expert testimony before federal, state and
8 Canadian federal and provincial agencies on matters pertaining to economics, finance, and public
9 policy in the energy industry. Concentric provides financial, economic and regulatory advisory
10 services to clients across North America, including utility companies, regulatory and public
11 agencies, and utility sector investors. I provide expert testimony before U.S. state and Canadian
12 provincial regulatory agencies on matters pertaining to finance, economics, and public policy in
13 the utility industry. I have testified or provided expert evidence on more than 25 occasions in
14 various U.S. state and Canadian provincial jurisdictions. This testimony has been provided on
15 behalf of both utilities and regulatory commission staff.

16 Prior to joining Concentric, I was a member of the Staff of the Colorado Public Utilities
17 Commission from 1999-2008, where I supervised the financial analysts in the energy and
18 telecommunications sections, provided advisory services to the Commissioners on financial and
19 economic matters, and filed expert testimony on rate of return, revenue requirement, cost
20 allocation, rate design, incentive regulation, and public policy matters. I hold a M.S. in Business
21 Administration and a B.S. in Marketing from the University of Colorado at Denver. My
22 qualifications are detailed more fully in Exhibit JPT-1.

23 **B. Purpose**

24 AEY has retained Concentric to provide an assessment of the risk of AEY in relation to other
25 electric and gas distribution utilities, and to determine whether this assessment indicates that
26 AEY’s business and financial risks justify a risk premium, and, if so, to quantify an appropriate
27 risk premium for AEY. As discussed below, the Yukon Utilities Board (the “Board”) has previously
28 expressed its preference for using a benchmark utility from another jurisdiction (chiefly British



1 Columbia) to determine the authorized return on equity for AEY.¹ Concentric's risk assessment
2 compares:

3 1) The business and financial risk of AEY to FortisBC Energy, the benchmark utility in
4 British Columbia, as well as other regulated electric and gas distribution utilities in
5 Canada; and

6 2) The business and financial risk of AEY today to the Company's risk profile at the time
7 of the Company's 2016 GRA filing, when the Board determined that a 25 basis point
8 risk premium was justified.

9 **C. Background**

10 In previous decisions,² the Board has set out three questions that need to be answered in relation
11 to applicable generic cost-of-capital methods and risk premiums:

12 1) Which generic cost-of-capital model should be used and from which jurisdiction?

13 2) Should a risk premium be applied?

14 3) What risk premium should be applied to AEY?

15 In Board Order 2017-01, the Board approved a risk premium of 25 basis points for AEY (formerly
16 known as Yukon Electrical Company Ltd.) over the British Columbia Utilities Commission's
17 ("BCUC") benchmark utility, FortisBC Energy.³ This resulted in an authorized ROE of 9.00 percent
18 for AEY. In 2014, the Board issued Board Order 2014-06, in which it was determined that AEY
19 had not provided sufficient evidence to justify a risk premium over the benchmark utility.

20 In Board Order 2009-02, the Board made the following findings with regard to the risk premium
21 for AEY:⁴

¹ See, for example, Board Order 2017-01 – Appendix A: Reasons for Decision, issued April 27, 2017, at para. 182.

² See, for example, Board Order 2014-06 – Appendix A: Reasons for Decision, issued April 23, 2014, at 50.

³ *Ibid*, at 51.

⁴ Appendix A to Board Order 2009-02 – Reasons for Decision, at 29.



- 1) The Board directs that the BCUC generic cost of capital is the most appropriate as it has been the most recently reviewed, and is generally accepted by the parties;
- 2) The Board accepts that when using the BCUC generic cost of capital, a risk premium is required for Yukon utilities; and
- 3) The Board finds it reasonable to place the risk premium for YECL (now known as AEY) at the midpoint of the risk premiums for Yukon Energy Corporation and FortisBC (the electric utility) – at 46 basis points.

D. Executive Summary

Figure 1 shows the currently authorized ROEs and equity ratios for selected Canadian electric and gas utilities and the average for electric transmission and distribution utilities in the U.S., as well as my assessment of the relative risk of AEY to the group of Canadian comparators.

Figure 1: Authorized ROEs and Equity Ratios

	Authorized ROE	Equity Ratio	Business Risk Compared to AEY
ATCO Electric Yukon (current)	9.00%	40.0%	N/A
Canadian Electric & Gas Utilities			
FortisBC Energy	8.75%	38.5%	Lower
FortisBC Electric	9.15%	40.0%	Lower
Ontario Electric Distributors	9.36%	40.0%	Lower
Newfoundland Power	8.50%	45.0%	Lower
Maritime Electric Company Ltd	9.35%	40.0%	Similar
ATCO Electric Distribution	8.50%	37.0%	Lower
Pacific Northern Gas-West	9.50%	46.5%	Higher
2022-2023 U.S. Electric Utilities			
Electric T&D Utilities	9.56%	51.6%	Lower

Concentric recommends that the Board once again establish the authorized ROE for AEY based on the BCUC’s authorized ROE for FortisBC Energy, Inc. (the benchmark utility) plus a risk



1 premium adder to reflect the higher risk of AEY relative to the benchmark. This same approach
2 has been used by the BCUC to set the authorized return for smaller utilities, including FortisBC
3 Inc. (the electric utility) and Pacific Northern Gas (a small gas distributor).

4 The 2022 Generic Cost of Capital (“GCOC”) proceeding is ongoing in British Columbia and a
5 decision is expected in the third quarter of 2023. The benchmark utility, FortisBC Energy, Inc.
6 (“FEI”), has lower business risk than AEY. FEI is substantially larger than AEY, both in terms of
7 retail customers served and regulated rate base. FEI serves 54X more retail gas distribution
8 customers, and its rate base is 48X larger than AEY’s. FEI has more cost recovery protection
9 through deferral and variance accounts and more revenue stability through a full revenue
10 decoupling mechanism than AEY has. As a gas distributor, FEI owns its regulated gas distribution
11 system, whereas AEY owns the electric distribution system and some generation facilities. FEI
12 currently has an authorized ROE of 8.75 percent on 38.5 percent common equity, while AEY has
13 an authorized ROE of 9.0 percent and a slightly higher equity ratio of 40 percent.

14 Among the group of distribution utilities in Figure 1, only PNG-West has higher business risk than
15 AEY. PNG-West was awarded a risk premium of 75 basis points above the benchmark utility by
16 the BCUC in the previous GCOC Stage 2 proceeding.⁵ PNG-West also has 46.5 percent deemed
17 common equity, as compared to AEY’s 40 percent common equity ratio, which also accounts for
18 PNG’s higher business risk. PNG-West is 5 percent larger than AEY in terms of retail customers
19 served, and PNG-West’s rate base is approximately 57 percent larger than AEY’s. The BCUC
20 determined in the GCOC Stage 2 proceeding that PNG-West had higher risk with respect to
21 customer growth, market demand and throughput risk (due to the loss of a major customer,
22 which caused total system throughput to decline by 87 percent from 2003-2012).⁶ While AEY
23 has not experienced these same issues related to customer growth or declining volume, use per
24 customer has fluctuated significantly over the past decade, especially for the commercial class, as
25 discussed later in my report.

26 The BCUC established a risk premium of 40 basis points for FortisBC Electric (“FBC”), an electric
27 utility, above the benchmark utility in the GCOC Stage 2 proceeding. Like AEY, FBC has 40 percent
28 deemed common equity. FBC serves more than 7X more retail electric customers than AEY, and

⁵ BCUC Generic Cost of Capital Proceeding (Stage 2) Decision, March 25, 2014, at 113.

⁶ Ibid, at 102.



1 its rate base is about 14X greater than AEY. FBC owns 225 MW of generation and supplies
2 approximately 45 percent of its load through company-owned hydro generation, while AEY
3 supplies about 8 percent of its load through company-owned facilities, indicating that FBC has
4 relatively greater generation risk. As discussed later in the report, companies that generate a
5 larger percentage of their power supply from company-owned facilities are viewed by investors
6 and credit rating agencies as being higher risk.

7 AEY's generation profile and customer mix is more comparable to Newfoundland Power, which
8 supplies about 7 percent of its load requirements through company-owned regulated generation
9 assets and also serves only residential and commercial customers. Newfoundland Power has 14X
10 more retail electric customers, and its rate base is approximately 11X larger than AEY's. The
11 majority of Newfoundland Power's residential customers use electricity for space heating
12 purposes, which increases variability in usage per customer depending on weather conditions,
13 and the company has a weather normalization adjustment clause to account for volumetric risk
14 due to abnormal weather conditions. Newfoundland Power's currently authorized ROE is 8.50
15 percent, with a deemed equity ratio of 45 percent, as compared to 40 percent for AEY.

16 AEY is smaller than Maritime Electric and has similar risk from generation ownership. Maritime
17 Electric owns 90 MW of on-island generation facilities to serve as back-up supply in case of supply
18 interruptions, but this accounted for only 0.1 percent of the company's electricity supply in 2021.
19 Maritime Electric purchased 80.5 percent of its power from New Brunswick Power and 19.4
20 percent from on-island wind generation facilities that are owned by the provincial government
21 and operated by the utility company. Maritime Electric derives a smaller percentage of its supply
22 from company-owned electric generation than AEY. Maritime Electric has 4X more retail
23 customers than AEY, and its rate base is also about 4X larger than AEY's. Maritime Electric has
24 an authorized ROE of 9.35 percent and a deemed equity ratio of 40 percent. Maritime Electric
25 was allowed to implement a weather normalization variance account in its 2018 rate application,
26 while AEY has no protection against volumetric risk.

27 ATCO Electric Distribution ("ATCO Electric") is purely a distribution utility that does not own
28 electric generation. ATCO Electric is approximately 12X larger than AEY in terms of customers
29 served and 24X larger in terms of rate base. AEY has more variability in returns and energy sales
30 due to its very small size than ATCO Electric. ATCO Electric's return is set by the AUC as part of
31 the GCOC proceeding. The company's current authorized ROE in Alberta is 8.50 percent and its



1 deemed equity ratio is 37.0 percent. There is an ongoing GCOC proceeding in Alberta, with a
2 hearing that concluded in June 2023 and a decision expected later in 2023. Alberta does not have
3 DSM/energy efficiency programs, unlike Yukon which approved DSM programs for AEY several
4 years ago.⁷ For that reason, AEY has somewhat more volumetric risk associated with energy
5 efficiency and conservation programs than ATCO Electric.

6 The extremely small size of AEY is a key factor in determining the risk premium that investors
7 require. In Board Order 2017-01, the Board stated: “Based on the evidence, the Board has
8 determined that small size is the most significant factor to be considered in determining a risk
9 premium for AEY.”⁸ On that basis, the Board determined that a risk premium of 25 basis points
10 was appropriate for AEY in 2017. As discussed in more detail later in this report, the extremely
11 small size of AEY would support a risk premium of almost 400 basis points above the return for
12 a large capitalization company.

13 Based on Concentric’s research and analysis, I conclude that an ROE risk premium from 40 to 100
14 basis points is appropriate for AEY in relation to the benchmark utility, FEI.⁹ This range is
15 consistent with the current risk premium for FortisBC Electric on the lower end and considers
16 the small size premium data discussed later in this report on the upper end. From within that
17 range, a risk premium for AEY of 75 basis points is reasonable, if not conservative. At a minimum,
18 the risk premium for AEY should be set no lower than 40 basis points, which is what the BCUC
19 has established for FortisBC Electric, an electric utility company which is much larger than AEY
20 in terms of retail customers served and rate base, has more deferral and variance accounts and
21 full revenue decoupling, and operates in a service territory with a stronger and more diversified
22 economy.

⁷ AEY has several DSM programs in place through Yukon Energy Corporation.

⁸ Board Order 2017-01, Appendix A: Reasons for Decision, April 27, 2017, at para. 218.

⁹ My understanding is that AEY plans to update its rate filing once the base ROE for the benchmark utility (FortisBC Energy Inc.) is established by the BCUC. If the BCUC establish separate ROEs and capital structures for FEI and FBC, as requested, it may be appropriate to consider FBC as the benchmark.



1 **II. KEY REGULATORY PRECEDENTS FOR THE DETERMINATION OF A FAIR RETURN**

2 **A. The Fair Return Standard**

3 The principles surrounding the concept of a “fair return” for a regulated company were first
4 established by the Supreme Court of Canada in *Northwestern Utilities v. City of Edmonton* (1929)
5 (“*Northwestern*”), where the Supreme Court found:

6 By a fair return is meant that the company will be allowed as large a return
7 on the capital invested in its enterprise (which will be net to the company) as
8 it would receive if it were investing the same amount in other securities
9 possessing an attractiveness, stability and certainty equal to that of the
10 company’s enterprise.¹⁰

11 Similar precedent may be found in the United States common law in landmark cases such as
12 *Bluefield Water Works & Improvement Company v. Public Service Commission of West Virginia* (262
13 U.S. 679, 693 (1923)) and *Federal Power Commission v. Hope Natural Gas Company* (320 U.S. 591,
14 603 (1944)).

15 The Fair Return Standard has been interpreted many times in both Canada and the U.S. For
16 example, the National Energy Board (“NEB”) summarized its interpretation of the “fair return
17 standard” in its RH-2-2004 Phase II Decision and more recently reiterated that interpretation in
18 its *Trans Québec & Maritimes Pipelines Inc.* RH-1-2008 Decision.

19 The Board is of the view that the fair return standard can be articulated by
20 having reference to three particular requirements. Specifically, a fair or
21 reasonable return on capital should:

- 22 • be comparable to the return available from the application of the
23 invested capital to other enterprises of like risk (the comparable
24 investment standard);
- 25 • enable the financial integrity of the regulated enterprise to be
26 maintained (the financial integrity standard); and
- 27 • permit incremental capital to be attracted to the enterprise on
28 reasonable terms and conditions (the capital attraction standard).

29 In the Board’s view, the determination of a fair return in accordance with
30 these enunciated standards will, when combined with other aspects for the
31 Mainline’s revenue requirement, result in tolls that are just and reasonable.¹¹

¹⁰ *Northwestern*, at p. 186.

¹¹ National Energy Board RH-2-2004 Reasons for Decision, TransCanada PipeLines Ltd, Phase II, April 2005, at p. 17.



1 As observed by the Ontario Energy Board (“OEB”) in its 2009 Generic Cost of Capital Order, all
2 three requirements of the Fair Return Standard must be met, and none ranks in priority to the
3 others.

4 The Board affirms its view that the Fair Return Standard frames the discretion
5 of a regulator, by setting out the three requirements that must be satisfied by
6 the cost of capital determinations of the tribunal. Meeting the standard is not
7 optional; it is a legal requirement. Notwithstanding this obligation, the Board
8 notes that the Fair Return Standard is sufficiently broad that the regulator
9 that applies it must still use informed judgment and apply its discretion in the
10 determination of a rate regulated entity’s cost of capital.¹²

11 ***

12 ... all three standards or requirements (comparable investment, financial
13 integrity, and capital attraction) must be met and none ranks in priority to the
14 others. The Board agrees with the comments made to the effect that the cost
15 of capital must satisfy all three requirements which can be measured through
16 specific tests and that focusing on meeting the financial integrity and capital
17 attraction tests without giving adequate comparability to the comparable
18 investment test is not sufficient to meet the [Fair Return Standard].¹³

19 The assessment of whether the Fair Return Standard has been met requires an examination of
20 the required returns by investors in comparable risk enterprises. Investors must consider
21 whether there are alternative investment opportunities that would provide a better return for
22 the same risk. This weighing of alternatives and the highly competitive nature of capital markets
23 causes stocks and bonds to settle on a price that provides investors with a return that is adequate
24 for the risks involved. Thus, for any given level of risk, there is a corresponding return that
25 investors expect in order to take on that risk and not invest their money elsewhere. That return
26 is referred to as the “opportunity cost” of capital or “investor required” return.

27 In addition to setting the fair return at the “opportunity cost” of capital, a fair return must also be
28 adequate to maintain the financial integrity of the utility, which requires a return sufficient to
29 maintain credit metrics such that the utility can sustain a favorable credit rating in order to
30 minimize debt costs and provide lenders assurance that the company’s earnings are adequate to

¹² Ontario Energy Board, EB-2009-084, Report of the Board on the Cost of Capital for Ontario’s Regulated Utilities, December 11, 2009, at i.

¹³ *Ibid*, at p. 19.



1 meet its fixed obligations. Finally, a fair return must be sufficient to attract incremental capital
2 on reasonable terms and conditions, to the benefit of both investors and customers.

3 **B. The Stand-Alone Principle**

4 The stand-alone principle provides that the utility must be regulated as if it were a stand-alone
5 entity. In this way, capital may be efficiently allocated, with each business segment earning a
6 return based on its own unique set of risks and business characteristics regardless of affiliations
7 within the holding company structure. In order to establish a fair return and satisfy the stand-
8 alone principle, the utility must be authorized a return sufficient to meet all three requirements
9 of the Fair Return Standard on the basis of the utility's individual merits.

10 The stand-alone principle is commonly recognized among Canadian regulators. The Board,
11 however, historically has not accepted the Stand-Alone principle, which is inconsistent with
12 general practice among other regulators in Canada including the BCUC, the AUC, and the OEB.
13 For example, in the 2014 Generic Cost of Capital (Stage 2) Decision, the BCUC stated:

14 In its Stage 1 Decision, the Commission acknowledged the long history and
15 importance of the stand-alone principle in Canadian utility regulation. The
16 Panel found no reason to deviate from this principle even in the case of small
17 utilities or projects whether or not they are part of a larger utility.¹⁴

18 The Alberta Utilities Commission ("AUC") also has recognized the stand-alone principle in
19 previous cost of capital decisions. For example, in the 2009 Generic Cost of Capital Decision, the
20 AUC stated: "As a result, some utilities argued, they are not attracting equity capital on their own
21 merit, and this is contrary to the stand-alone principle the Commission has embraced."¹⁵

22 AEY is 100 percent owned by ATCO Electric, which in turn is a wholly-owned subsidiary of CU
23 Inc. ("CUI"). CUI raises debt on behalf of AEY and through ATCO Electric provides equity capital
24 to AEY mirrored down from ATCO Electric and CUI. CUI's long-term issuer rating from Standard
25 and Poor's is BBB+, with a stable outlook as of August 11, 2022. Debt raised by CUI is also
26 mirrored down to the individual ATCO Utilities, including AEY, at the cost incurred by CUI. AEY's
27 customers, therefore, receive the benefits of CUI's credit ratings. As a stand-alone entity, AEY
28 would not be able to issue debt in public markets and likely would not be able to obtain

¹⁴ BCUC Generic Cost of Capital Proceeding (Stage 2) Decision, March 25, 2014, at 6.

¹⁵ AUC D-2009-216, 2009 Generic Cost of Capital, November 12, 2009, at 14.



1 investment grade credit ratings given its small size. The estimate of a reasonable ROE risk
2 premium for AEY should take into consideration the benefits and cost savings that AEY customers
3 receive through AEY's ability to access debt and equity capital through CUI instead of on its own.

4 **C. The Relationship Between Capital Structure and ROE**

5 The cost of common equity depends in part on the company's capital structure. The equity ratio
6 and equity rate of return must therefore be considered together to determine whether the Fair
7 Return Standard has been met. Other factors being equal, firms with lower common equity ratios
8 require higher rates of return to compensate shareholders for the additional financial risks.
9 Consequently, when a regulator approves a capital structure, that decision impacts the required
10 rate of return on common equity.

11 The risk to the earnings stream of the company is a function of both its business and financial
12 risk. Business risk refers to the political and regulatory environment that the company operates
13 within and the operational and competitive forces that could potentially exert pressure on
14 earnings. Financial risk refers to the amount of debt in the utility's capital structure and the
15 extent to which fixed debt obligations must be met before utility shareholders receive their
16 returns. Both business and financial risks therefore need to be considered when setting the
17 capital structure.



1 **III. ECONOMIC CONDITIONS**

2 **A. Economic Conditions in Canada**

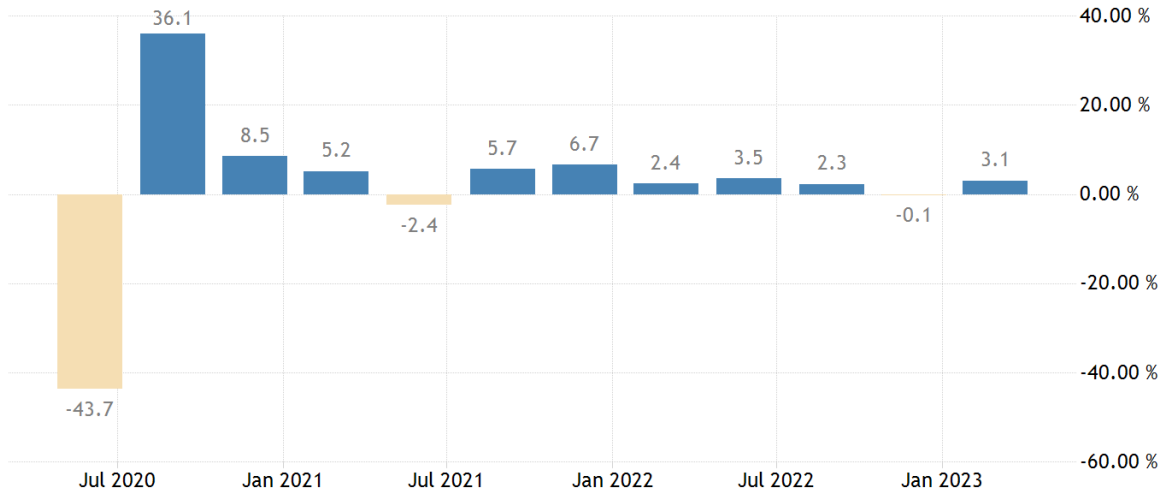
3 As of June 2023, the Canadian economy has almost fully recovered from sharp contractions in
4 2020. Extraordinary policy measures were required by the central bank and federal government
5 to stabilize the financial system in the immediate aftermath of the COVID-19 pandemic, to
6 support economic growth, and to provide additional unemployment benefits to those in
7 industries most affected by COVID. This policy response caused a precipitous drop in interest
8 rates on government and corporate bonds. Those bond yields, however, have increased
9 substantially since July 2020 as the economic recovery strengthened and as inflationary pressure
10 increased. Inflation in Canada (and the U.S.) reached levels in 2022 not seen since the early
11 1980s.

12 GDP is an important indicator of economic activity that signals demand for all inputs to the
13 economy, including capital. Figure 2 shows that the Canadian economy declined sharply in the
14 first and second quarters of 2020 with the spread of COVID-19. This initial downturn
15 represented the sharpest contraction in Canada's economy recorded over the past 60 years. The
16 Canadian economy ultimately shrank 5.4 percent in 2020, before recovering in 2021 as
17 restrictions were eased. Real GDP grew steadily in the first three quarters of 2022, at an
18 annualized rate between 2.3 percent and 3.5 percent, but was nearly unchanged in the fourth
19 quarter of 2022. GDP growth resumed in the first quarter of 2023 at an annualized rate of 3.1
20 percent.



1

Figure 2: Canadian Real GDP Growth¹⁶



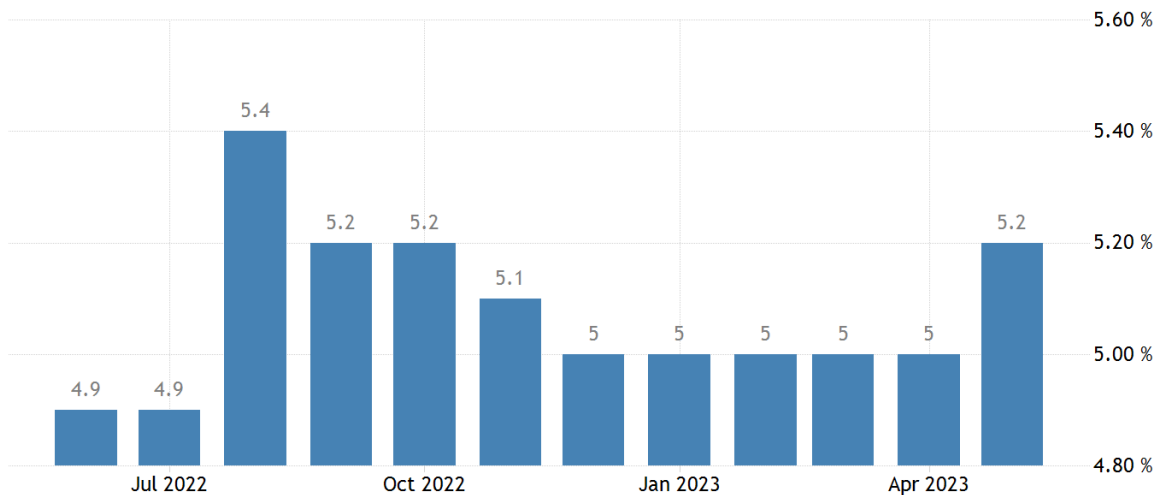
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2
3

4 The unemployment rate in Canada increased from 5.6 percent in February 2020 to 13.7 percent
5 in May 2020, which represented the highest level for unemployment in Canada over the period
6 from 1966-2020. The unemployment rate declined steadily for much of 2021 and, as shown in
7 Figure 3, was 5 percent from December 2022 through April 2023, before ticking up in May 2023.

8

Figure 3: Canadian Unemployment Rate¹⁷



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9

¹⁶ <https://tradingeconomics.com/canada/gdp-growth-annualized>

¹⁷ <https://tradingeconomics.com/canada/unemployment-rate>



1 As shown in Figure 4, consumer prices in Canada generally rose about 2.0 percent for much of
2 the past decade, but the inflation rate increased at a 30-year high of 4.8 percent in 2021 and at
3 an annual rate of 6.3 percent in 2022. This is below the peak of 8.1 percent in June 2022, but
4 remains near the highest rate in 40 years. Inflation has fallen in recent months (i.e., 4.4 percent
5 in April 2023) but remains well above the historical average of the past 30 years.

6 **Figure 4: Canadian Inflation Rate¹⁸**



7
8

9 **B. Economic Conditions and Outlook in Yukon**

10 The economy in Yukon has been relatively strong compared to much of Canada over the past
11 three years. According to the Government of Yukon's fiscal and economic outlook for 2023-2024,
12 the forecast is for continued economic growth over this period:

13 *The outlook for the Yukon's economy remains positive. A strong labour market is leading*
14 *to job growth and low unemployment. Tourism is coming back to the territory and the*
15 *construction sector is busy. Inflation remains higher than anticipated but is expected to*
16 *moderate with the stabilization of energy prices, improvements to global supply chains*
17 *and an increase in interest rates that is beginning to absorb excess demand in the*
18 *Canadian economy.*¹⁹

¹⁸ <https://tradingeconomics.com/canada/inflation-cpi>

¹⁹ Government of Yukon, Fiscal and Economic Outlook, March 2023, at 23.



1 GDP growth in the Yukon was 3.1 percent in 2022 and is projected at 5.4 percent in 2023, 3.7
2 percent in 2024, and to average 3.7 percent from 2025-2027. Unemployment is expected to be
3 approximately 5.0 percent through 2025 as the labor market remains tight but is helped by
4 continued immigration to the Yukon. Population in the territory is projected to increase at an
5 average annual rate of 2.1 percent through 2027. Consumer inflation in Whitehorse was 6.8
6 percent in 2022, but is expected to decline to 3.8 percent in 2023 and 2.5 percent in 2024, as
7 higher interest rates slow demand for goods.²⁰

8 Figure 5 compares Yukon to Canada on a number of key macroeconomic indicators from 2022
9 through 2025. On most key indicators, Yukon is projected to be somewhat stronger than Canada
10 overall for the next two to three years, suggesting that demand for electricity should be
11 reasonably strong over this period.

12 **Figure 5: Key Economic Indicators²¹**

Economic Indicator	Yukon 2022	Yukon 2023F	Yukon 2024F	Yukon 2025F
Real GDP Growth	3.1%	5.4%	3.7%	3.0%
Population Growth	1.8%	2.1%	2.2%	2.1%
Unemployment Rate	3.7%	5.0%	5.0%	5.1%
Retail Sales	6.8%	5.8%	6.3%	6.3%
Consumer Prices	6.8%	3.8%	2.5%	2.0%
	Canada 2022	Canada 2023F	Canada 2024F	Canada 2025F
Real GDP Growth	3.4%	0.8%	0.4%	
Population Growth (labour force)	1.5%	2.0%	0.9%	
Unemployment Rate	5.3%	5.5%	6.4%	
Retail Sales (consumer expenditures)	4.8%	1.7X%	0.0%	
Consumer Prices	6.8%	3.7%	2.1%	

13
14 Key industries in the Yukon include mining, real estate and rental, construction, healthcare and
15 social assistance, retail trade, educational services, and the government sector. Figure 6 below

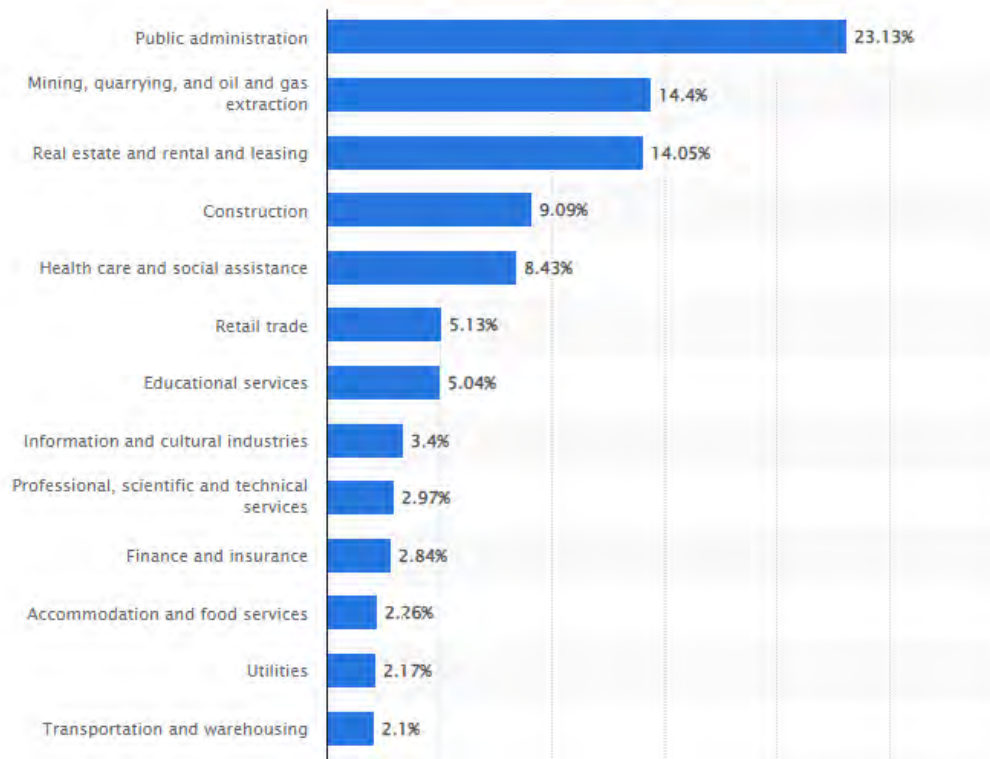
²⁰ Consumer inflation data is only available for Whitehorse, not for the Yukon in its entirety.

²¹ For Yukon, data are as reported by the Department of Economic Development for the Yukon Government, March 2023 Fiscal and Economic Outlook; see Appendix Key Economic Indicators, at 35. For Canada, economic indicators are from TD Economics Quarterly Economic Forecast, March 15, 2023, at 5.



1 shows the contribution of key industries to Yukon GDP in 2021, the most recent year for which
2 data is available.²²

3 **Figure 6: Yukon GDP by Industry, 2021**



4
5
6 Companies in the mining and mineral production industry are large industrial customers that are
7 not served by AEY. To the extent restrictions are placed on the mining sector due to
8 decarbonization policies in Canada and the Yukon, this will have a downstream effect on AEY's
9 customers and increases the risk that AEY's electricity demand will be reduced. As discussed
10 later in the report, this reduction in demand is partly offset by the move to electrify buildings in
11 the territory and the increased demand for electric vehicles. While electrification will lead to
12 higher sales for AEY, this growth creates its own issues related to policies that have not yet been
13 articulated. In addition, growth in electricity sales in the Yukon will require AEY to make
14 additional capital investments in order to serve this higher demand, and the Company's return
15 must be sufficient to attract the capital required to finance these investments. In summary, the

²² Statista, Distribution of gross domestic product of Yukon, Canada in 2021, by industry.



1 uncertainty related to future demand for power increases the business risk of all electric utilities,
2 particularly for a very small company such as AEY.

3 **C. Central Bank Policy**

4 In response to inflation being higher than its target range of 1-3 percent (consumer prices
5 increased by 6.3 percent in 2022), the Bank of Canada (“BOC”) raised the overnight rate on
6 multiple occasions from 0.25 percent in March 2022 to 4.75 percent as of June 2023. The BOC
7 indicated in April 2023 that it continued to assess whether monetary policy was sufficiently
8 restrictive to relieve price pressures and remained prepared to raise the policy rate further if
9 needed to return inflation to the 2 percent target. In June 2023, the BOC noted that excess
10 demand continued to place upward pressure on prices and again raised the overnight target rate
11 by 25 basis points to 4.75 percent. The BOC explained:

12 *CPI inflation ticked up in April to 4.4%, the first increase in 10 months, with prices for a*
13 *broad range of goods and services coming in higher than expected. Goods price inflation*
14 *increased, despite lower energy costs. Services price inflation remained elevated,*
15 *reflecting strong demand and a tight labour market. The Bank continues to expect CPI*
16 *inflation to ease to around 3% in the summer, as lower energy prices feed through and*
17 *last year’s large price gains fall out of the yearly data. However, with three-month*
18 *measures of core inflation running in the 3½-4% range for several months and excess*
19 *demand persisting, concerns have increased that CPI inflation could get stuck materially*
20 *above the 2% target.²³*

21 In its April 2023 Monetary Policy Report, the BOC indicated that “goods price inflation is declining
22 in most advanced economies,” reflecting improvements in supply chains, lower energy prices,
23 and slower demand for goods due to past interest rate increases. The BOC observed that “service
24 price inflation, however, continues to be elevated and is projected to decline more slowly” due to
25 strong demand for services and tight labour markets. In the U.S., the Federal Reserve Board has
26 followed a similar path, tightening the federal funds rate target to a level of 5.00 to 5.25 percent
27 in May 2023 as compared with 0.00 to 0.25 percent in March 2022.

²³ Bank of Canada, Press Release issued June 7, 2023.



1 **IV. RISK ASSESSMENT**

2 Concentric generally examines risk from two primary perspectives:

- 3 1) Business risk: For a regulated utility, business risk encompasses both operational
4 risk (e.g., customers served, size of service territory, weather/climate,
5 volume/demand risk, economic conditions, etc.) and regulatory risk (e.g.,
6 environmental policies on decarbonization, opportunity for timely recovery of
7 prudently incurred costs). Business risk results from variability in cash flows and
8 earnings that impact the ability of the utility to recover its costs including the fair
9 return on, and of, its capital in a timely manner. The assessment of business risk
10 should be forward-looking, and is based on investors' perceived risk and investor
11 expectations.
- 12 2) Financial risk: Financial risk primarily relates to the risk associated with the way
13 in which a company has financed its business, as evidenced by the relative
14 percentages of debt and equity in the capital structure. To the extent a company
15 is more highly leveraged, it requires higher net income to cover its fixed interest
16 obligations, which must be paid before there is any net income for shareholders.

17 Taken together, business risk and financial risk are the primary elements of investment risk that
18 investors consider when establishing their return requirements.

19 The Board has consistently determined that an equity ratio of 40 percent is reasonable for AEY.
20 Taking into account AEY's 40 percent equity ratio, Concentric's risk analysis is focused primarily
21 on an assessment of the relative business risk of AEY to the BCUC benchmark and other selected
22 electric and gas distribution utilities in Canada.

23 **A. Analysis of AEY's Business Risk Compared to Other Distribution Utilities**

24 AEY is primarily an electric distribution utility serving approximately 20,600 residential and
25 commercial customers in 19 communities across Yukon. In 2022, the Company had an electric
26 rate base of approximately \$109.4 million.

27 Concentric compared the business risk of AEY to that of FEI, the BCUC's benchmark utility, as well
28 as to other investor-owned electric and gas distribution companies in Canada, including:



- 1) FortisBC Electric;
- 2) Newfoundland Power Inc.;
- 3) Maritime Electric Company Limited;
- 4) ATCO Electric Distribution; and
- 5) Pacific Northern Gas – West.

The results of those comparisons are discussed in this section of the report and summarized in Exhibit JPT-2.

The companies in the comparison group meet the following criteria: 1) smaller operating utilities that provide distribution service in British Columbia (in the case of FortisBC Electric and PNG-West); 2) smaller operating utilities that provide electric distribution service and own limited generation assets (in the case of Newfoundland Power and Maritime Electric); and 3) smaller electric distribution utility and affiliate of ATCO Electric (in the case of ATCO Electric Distribution).²⁴

The following investor-owned electric utilities and gas distribution companies were not included in the comparator group: 1) Nova Scotia Power, due to its larger size compared to AEY and its ownership of significant regulated generation assets; and 2) Enbridge Gas Distribution and ATCO Gas due to the fact that they are gas distribution utilities and are much larger than AEY.

Based on my risk analysis, I conclude that AEY has higher business risk than FEI and these other investor-owned electric and gas distribution companies in Canada with the exception of PNG-

²⁴ Northland Utilities Ltd. (“NUL”) was excluded due to the substantially smaller size of these companies. NUL is also a subsidiary of ATCO Electric Ltd., with two operating utilities: Northland Utilities (NWT) Ltd. (“NWT”) and Northland Utilities (NUY) Ltd. (“NUY”). NWT currently provides electrical service to approximately 2,700 customers and operates five diesel power plants, in addition to receiving energy from the Taltson Hydro System. Approximately 83 percent of NWT’s total required power supply is purchased from Northwest Territories Power Corporation (“NTPC”), a crown corporation. NWT currently has an application before the Public Utilities Board to dispose of its operations in Hay River and establish rates for its remaining approximately 700 customers. Within its application, NWT has proposed a return on equity 125 basis points above Alberta’s 2023 approved 8.50 percent benchmark (9.75 percent) and a common equity ratio of 42 percent. NUY acquired the Yellowknife electrical distribution system in 1993 from Centra Power and distributes electricity to approximately 7,600 residential customers and 1,300 commercial customers. All supply on the Yellowknife distribution system is purchased from the NTPC. NUY’s return on equity and capital structure were established as part of the 2011-2013 Negotiated Settlement Agreement. The authorized ROE is 9.30 percent (or 30 basis points above the then-approved Alberta benchmark ROE of 9.0 percent) and the common equity ratio is 43.5 percent.

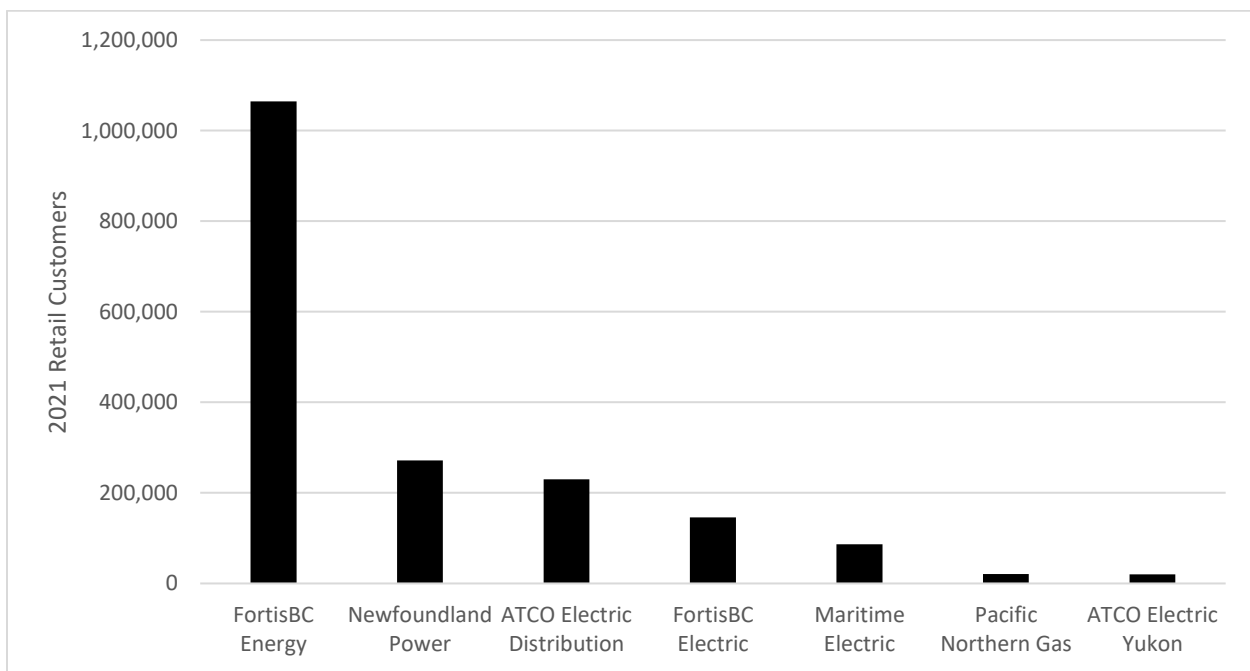


1 West. In particular, as discussed in the following section, the risk factor that most distinguishes
2 AEY from FEI and most other investor-owned electric and gas distribution utilities in Canada is
3 its very small size.

4 **1. Small Size**

5 Figure 7 and Figure 8 show that AEY is smaller than any of these investor-owned electric and gas
6 distribution utilities, both in terms of retail customers served and regulated rate base.

7 **Figure 7: Comparison of 2021 Retail Electric Customers**

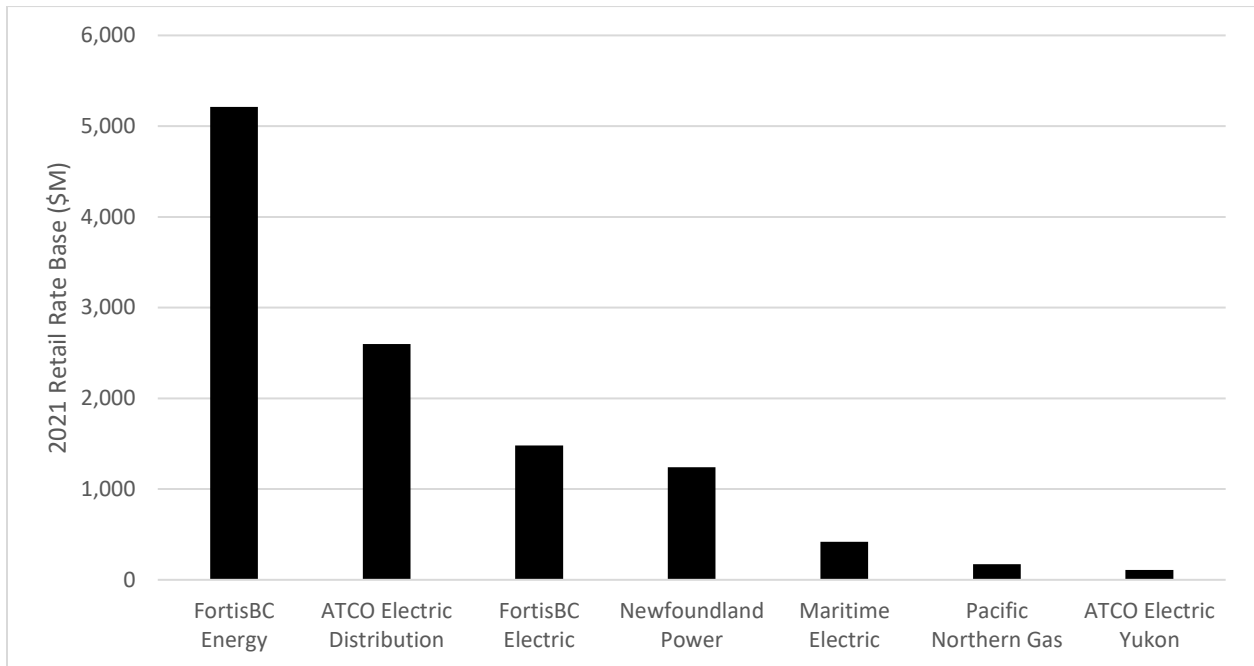


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Figure 8: Comparison of 2021 Rate Base



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3 Size is an important consideration for investors in setting their return requirements. According
4 to Morningstar, investors in smaller companies typically require a higher return because returns
5 for smaller companies are more unpredictable. Morningstar explains:

6 *Most criticisms of the use of the size premium do not address the underlying reasons for*
7 *its existence. Small-cap stocks are still considered riskier investments than large-cap*
8 *stocks. Investors require an additional reward, in the form of additional return, to take*
9 *on the added risk of an investment in small cap stocks. It is unlikely that in the future*
10 *investors will require no compensation for taking on this additional risk.²⁵*

11 In addition to contributing to higher investment risk, the small size of AEY magnifies the risk
12 associated with other factors. For example, adverse economic conditions in the territory could
13 result in the loss of a large customer or reduced demand for electricity. Under those
14 circumstances, the small size of AEY means that the Company's fixed costs are spread across a
15 very small customer and revenue base, making it more likely that AEY would be unable to earn
16 its authorized ROE. Moreover, the small size of AEY limits the Company's financial flexibility
17 when it comes to raising capital on a stand-alone basis. AEY's small size also magnifies the risk

²⁵ Morningstar, 2015 Ibbotson SBBI Classic Yearbook, at 113.



1 associated with severe weather conditions because AEY serves very remote locations, making it
2 more difficult to respond in the event of a service disruption.

3 To estimate the magnitude of the size premium, I used data from Kroll (formerly Duff and Phelps)
4 that divides companies into deciles based on market capitalization. As shown in Exhibit JPT-3,
5 the implied market capitalization of AEY results in a size premium of 4.80 percent, while the
6 implied market capitalization for FEI (the benchmark utility) results in a 0.89 percent size
7 premium. In other words, the size premium for AEY is approximately 390 basis points higher
8 than that for FEI, indicating that equity investors would require a return approximately 3.9
9 percent higher for AEY than for FEI. This analysis shows that my recommended risk premium of
10 75 basis points for AEY is quite conservative given the very small size of the Company, not even
11 taking into consideration other business risks that are magnified by that small size.

12 In addition to small size, Concentric's assessment of business risk also considered the following
13 factors:

- 14 1) Generation risk;
- 15 2) Fuel and purchased power cost risk;
- 16 3) Volume/demand risk;
- 17 4) Regulatory environment; and
- 18 5) Competition from alternative fuels.

19 Each of these factors is discussed in the following section of the report.

20 **2. Generation Risk**

21 AEY purchases approximately 92 percent of its electricity supply from YEC, a crown corporation,
22 while the remaining 8 percent comes from Company-owned hydro (2.6%) and diesel (5.6%)
23 generation facilities. AEY is very similar in this regard to Newfoundland Power, which purchases
24 approximately 93 percent of its electricity supply from Newfoundland and Labrador Hydro, a
25 crown corporation, while generating the remaining 7 percent through company-owned
26 facilities.²⁶ Likewise, Maritime Electric purchases approximately 80 percent of its electricity
27 supply from New Brunswick Power, which is provincially-owned, and an additional 19 percent
28 comes from provincially-owned on-island wind generation facilities on Prince Edward Island.

²⁶ Source: Newfoundland Power 2021 MD&A.



1 FBC purchases approximately 55 percent of its electricity supply and generates the other 45
2 percent of its supply requirements through company-owned hydro facilities. The two gas
3 distributors in the comparator group (FEI and PNG-West) do not own electric generation assets.
4 Companies that own electric generation facilities are generally considered riskier by credit rating
5 agencies than companies that are primarily transmission and distribution utilities, or than gas
6 distribution companies.

7 AEY's generation risk is equivalent to that of Newfoundland Power and Maritime Electric in that
8 all three companies purchase more than 90 percent of their electricity supply from government
9 owned facilities, but lower than FBC which derives 45 percent of its electricity supply from
10 company-owned hydro facilities.

11 **3. Fuel and Purchased Power Cost Risk**

12 As part of its 2016-2017 General Rate Application, the Board approved two deferral accounts for
13 AEY to recover differences between forecasted and actual fuel prices (not volume) and purchased
14 power costs (not volume). By comparison, variances in fuel and purchased power costs for
15 Newfoundland Power are recovered on a monthly basis through a revenue stabilization account.
16 Under this mechanism, Newfoundland Power's risk of recovery of supply costs is effectively
17 limited to +/- \$755,000 under the company's Rate Stabilization Account. Both FBC and Maritime
18 Electric have an annual fuel and purchased power cost recovery mechanism. The Alberta electric
19 utilities, including ATCO Electric, are not responsible for the generation or retail transmission
20 function, and therefore have no risk related to fuel or purchased power costs. Among gas
21 distributors, FEI and PNG-West both have quarterly purchased gas adjustment mechanisms that
22 allow them to pass through the commodity cost to customers.

23 With the exception of Newfoundland Power, which has slightly more risk associated with
24 recovery of variations in fuel or purchased power costs, AEY and the other Canadian electric and
25 gas distribution companies in the comparator group are not at risk for recovery of fuel and
26 purchased power costs. AEY, like Newfoundland Power, is dependent on a single source of
27 electric supply, creating greater supply chain risk than utilities such as FBC, Maritime Electric or
28 the Alberta utilities that rely on a more diverse mix of generation and/or market sources.



1 **4. Volume/Demand Risk**

2 AEY does not have regulatory protection against changes in volume/demand due to weather
3 conditions or DSM and energy efficiency programs. By comparison, all but one of the electric and
4 gas distribution companies in the proxy group has some form of revenue protection against
5 volumetric risk. FEI, FBC, and PNG-West have full revenue decoupling, which allows the
6 companies to effectively break the link between revenues and volume/demand and to recover
7 their revenue requirement through a true-up account. In addition, Newfoundland Power and
8 Maritime Electric have weather normalization clauses that help to stabilize their revenues under
9 abnormal weather conditions. ATCO Electric operates under a PBR plan that adjusts revenues
10 annually based on inflation less a productivity factor; however, the PBR plan for ATCO Electric
11 does not include protection against changes in volume/demand. On this basis, AEY has higher
12 volume/demand risk than the other electric and gas distribution companies in the proxy group
13 with the exception of ATCO Electric, which is comparable to AEY in this respect.

14 Weather-related variance accounts are common among Canadian distribution companies that
15 provide space heating to a significant share of their customers. This applies not only to gas
16 distributors such as FEI and PNG-West, but also to electric distributors such as Newfoundland
17 Power and Maritime Electric, both of which have significant market share of electric space
18 heating customers. In Yukon, electric space heating has become much more common in new
19 residential housing developments in recent years. In 2021, approximately 21.7 percent of Yukon
20 households used electricity as their principal heating fuel, and the number of households that
21 used electricity as its primary heating source increased 7.9 percent year-over-year.²⁷ My
22 understanding is that this increase in electric space heating has made it more challenging for AEY
23 to accurately forecast its sales, especially among residential customers, because demand is more
24 dependent on weather conditions. As shown in Figure 9, AEY's residential and commercial
25 weather-normalized use per customer has fluctuated by up to 3 percent from year-to-year since
26 2013 (not counting the almost 7 percent decline in commercial use per customer in 2020 during
27 the COVID-19 pandemic).

²⁷ Yukon Bureau of Statistics, Yukon Energy Facts 2021, at 1 and 8.

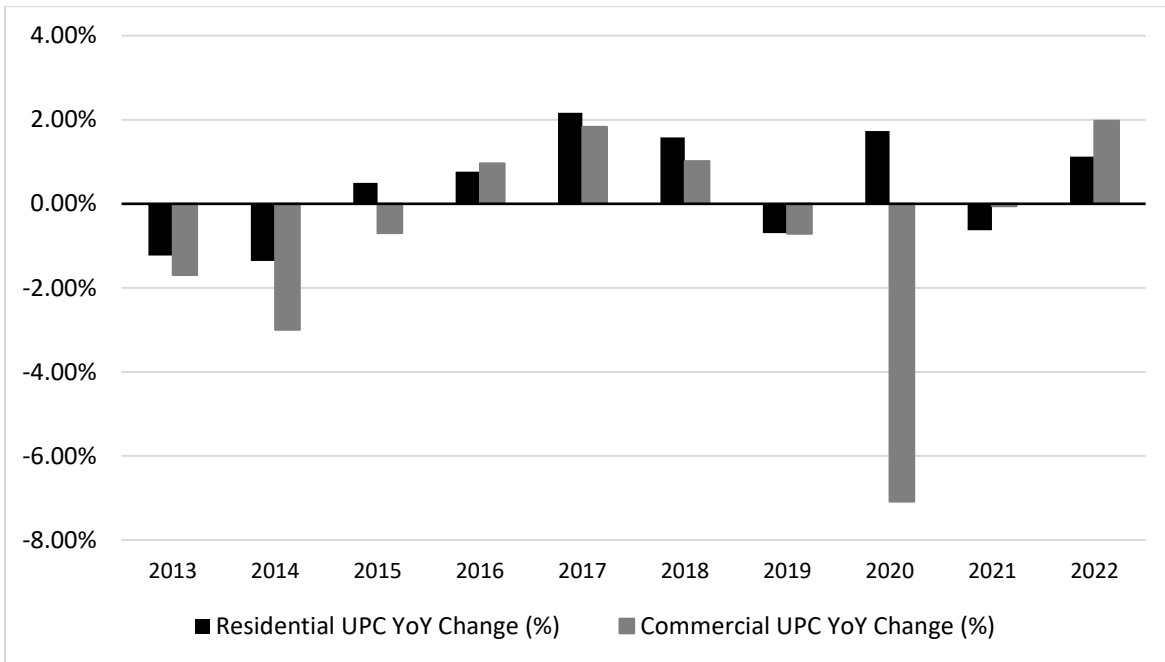


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Figure 9: Variability in Use Per Customer

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Residential and Commercial: Year to Year Percent Change²⁸



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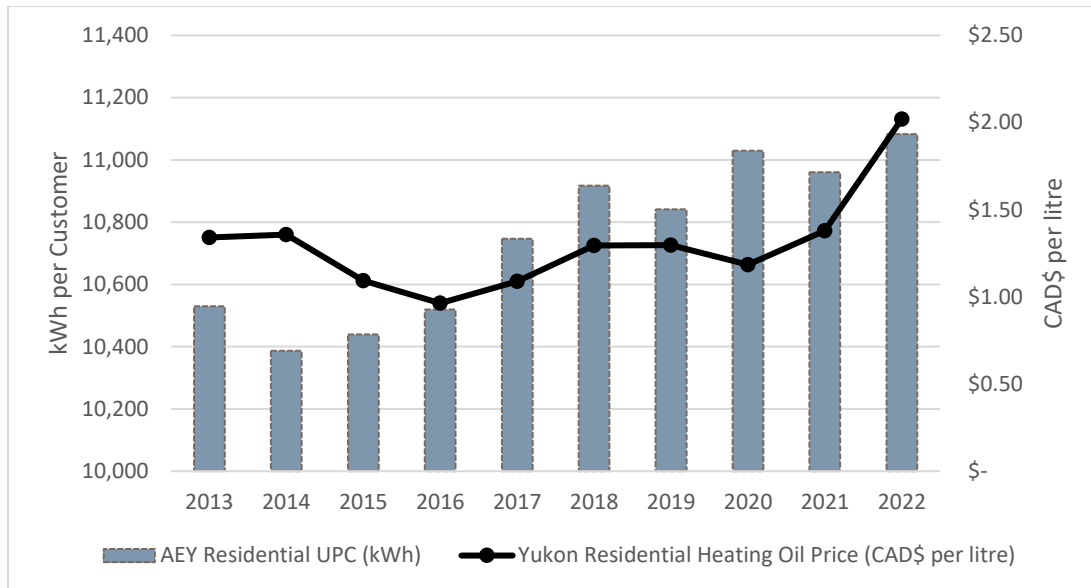
The Company believes that the increased variability in residential use per customer is due in part to customers responding to changes in prices for alternative fuels. For example, when heating oil and propane prices are high, customers are more likely to switch to electricity for space heating. When heating oil and propane prices are lower, customers are less likely to switch to electricity for space heating. Figure 10 below shows that residential use per customer has increased since 2016 as heating oil prices have approximately doubled.

²⁸ Source: AEY, Weather Normalized.



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Figure 10: Use Per Customer vs Heating Oil Price²⁹



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The fact that AEY does not have a variance account for changes in demand due to abnormal weather conditions or DSM/energy efficiency programs makes the Company more risky than other electric and gas distribution companies, with the exception of ATCO Electric. In addition, as discussed in more detail in the section on governmental policies, the Yukon provincial government has been pursuing a policy that encourages electrification, which presents both growth opportunities and challenges for AEY as it manages new loads.

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5. Regulatory Environment

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AEY recovers its costs under traditional cost of service regulation. Like most Canadian regulated utilities, the Company uses a forecasted test year and earns a return on an average rate base. Among the electric and gas distribution companies in the proxy group, Newfoundland Power, Maritime Electric and PNG-West are under cost of service regulation, while FEI, FBC, and ATCO Electric operate under performance-based or incentive regulation plans. Traditional cost of service regulation is generally considered less risky than incentive regulation by credit rating agencies, although the degree of risk depends on the length of the incentive regulation plan and

²⁹ Yukon Bureau of Statistics, Community Statistics, and data provided by Company.



1 the ability for the utility to adjust certain costs during the term of the plan. All of the companies
2 in the comparator group use a forecasted test year and an average or mid-year rate base.

3 In summary, AEY operates in a regulatory environment that generally supports cost recovery and
4 allows the Company to earn its authorized ROE in most years. In addition, AEY has somewhat
5 higher than average regulatory risk than the comparator companies because it does not have a
6 variance account for weather-related volume/demand risk.

7 **6. Competition from Alternative Fuels**

8 As discussed in the section above on volume/demand risk, AEY's residential customers tend to
9 switch between various fuels for electric space heating depending on the relative price of those
10 fuels.³⁰ In particular, when the price of heating oil and propane is higher, more AEY residential
11 customers rely on electricity for their space heating. When heating oil and propane prices
12 decline, AEY's customers are less likely to convert to electric space heating. In addition, wood
13 pellet stoves are another source of competition for space heating in the Yukon. Newfoundland
14 Power and Maritime Electric also face competition from heating oil for the space heating needs
15 of residential customers. FEI, a gas distributor, faces competition from electric heat among
16 residential customers in British Columbia, and ATCO Electric faces significant competition from
17 natural gas for space heating in Alberta. PNG-West also faces competition from alternative fuels
18 such as propane and heating oil.

19 In summary, AEY's residential customers respond to price signals as the relative cost of heating
20 with electricity changes. However, this risk is difficult to quantify and likely does not have a
21 material effect on the risk profile of AEY. It does, however, make it more difficult for AEY to
22 accurately forecast sales, which in turn increases the variability in AEY's cash flows and earnings.

23 **7. Conclusions on Business Risk Relative to Other Distribution Utilities**

24 My conclusion is that AEY has relatively greater business risk than the other electric and gas
25 distribution utilities in the proxy group with the exception of PNG-West. The most important risk
26 factor for AEY is its very small size, which tends to amplify other business risks. As shown in
27 Exhibit JPT-2, AEY is substantially smaller than the vast majority of the peer group companies
28 both in terms of retail customers served and regulated rate base. Investors require a higher

³⁰ Source: AEY.



1 return from smaller companies to offset the higher business and financial risks. Other factors
2 contributing to this higher risk profile include AEY's dependence on a single supplier and its
3 exposure to volume/demand risk.

4 **B. Change in Business Risk since 2016 for AEY**

5 In addition to considering AEY's relative business risks compared to other Canadian electric and
6 gas distribution companies, Concentric also evaluated whether there have been any changes in
7 AEY's business risk since 2016 that would materially impact the Company's risk profile as
8 compared to the time when the Board determined that a risk premium of 25 basis points above
9 the benchmark utility in British Columbia was reasonable and appropriate.

10 **1. Severe Weather-Related and Climate Risk**

11 One of the most important operating risks for AEY is weather-related service disruptions. AEY's
12 service territory is characterized by severe cold and high winds in the winter and hot
13 temperatures in the summer. The need to address supply disruptions caused by severe weather
14 conditions involves unanticipated and potentially volatile capital and operating costs. In addition
15 to the risk caused by the small size of AEY, which has limited resources to respond to service
16 disruptions and outages, the Company provides service in very remote locations across a large
17 service territory. AEY's capital structure and authorized ROE must be sufficient to provide the
18 Company with the financial flexibility necessary to respond to unforeseen capital and operating
19 costs to restore electric service promptly to customers. While this risk has not materially
20 changed since 2016, the frequency of severe weather events such as storms and wildfires has
21 generally increased in the past decade, and credit rating agencies such as S&P have commented
22 that climate change is challenging the utility industry's traditional risk management
23 assumptions.³¹ It is very important that AEY has the financial flexibility to respond to these
24 events as they arise.

25 **2. Power Supply Risk**

26 AEY purchases approximately 92 percent of its power supply from Yukon Energy Corporation,
27 while generating the remaining 8 percent using company-owned hydro-electric and diesel plants.
28 The price of AEY's electricity supply has increased by approximately 47 percent (from

³¹ S&P Global Ratings, "Can U.S. Utilities Weather the Storm," November 8, 2018.



1 \$0.099/kWh to \$0.146/kWh) since 2016. AEY has traditionally been allowed to recover
2 differences between forecasted and actual fuel prices (not volume), as well as differences in
3 purchased power costs (not volume) through two deferral accounts. AEY is requesting that the
4 purchased power deferral account and the fuel deferral account be renewed as part of this GRA
5 filing. Assuming that the deferral accounts are renewed by the Board, AEY's power supply risk
6 would not change in any material way since 2016. If the deferral accounts for purchased power
7 and fuel prices are not approved, this would have a material impact on AEY's risk profile as
8 compared to 2016. All the other electric and gas distribution companies in the proxy group have
9 cost recovery mechanisms that allow for adjustments due to variations in forecasted and actual
10 fuel and purchased power costs, so those companies are not subject to material risk for fuel or
11 purchased power costs. Without such deferral accounts, AEY would have materially higher risk
12 associated with recovery of purchased power costs and fuel prices than the distribution
13 companies in the comparator group.

14 **3. Competition from Alternative Fuels**

15 The use of alternative fuels such as wood pellets, fuel oil, and propane varies in the Yukon among
16 residential customers depending on the relative price of electricity and these other fuel sources
17 for space heating purposes. As a result of fuel switching, residential demand forecasting has
18 become more challenging for AEY over the past decade. As the residential load has become less
19 predictable for AEY, the variability in the Company's sales increases the probability that AEY's
20 revenues will not be sufficient to recover its costs and earn its authorized ROE. Several factors
21 have contributed to higher variability in AEY's demand, including more new housing
22 developments installing electric space heating (which makes demand more dependent on
23 weather conditions), and implementation of DSM and energy efficiency programs. As discussed
24 below, the electrification of the economy and the move toward decarbonization of certain
25 industries also create uncertainty related to future demand for electricity.

26 **4. Governmental Policies**

27 In recent years, the Yukon provincial government has pursued decarbonization policies,
28 including implementation of federal carbon taxes, electrification of buildings, and other energy
29 policies that would result in increased demand for clean energy sources. For example, at the time
30 of the 2016-17 GRA, the Yukon provincial government was pursuing a policy that encouraged



1 micro generation. In October 2015, new legislation was passed that required AEY to provide a
2 Standard Offer Price to independent power producers by October 2016. For AEY, this new
3 requirement had the greatest impact in the community of Watson Lake, which represents
4 approximately 10 percent of AEY's total sales. The move toward micro generation has the
5 potential to increase the risk associated with customers using less electricity from AEY and
6 increasing self-generation through use of solar panels. In 2018, the Yukon government published
7 an update to the 2015 IPP legislation, which included details on IPP targets, which were that 10
8 percent of new electrical demand was to be achieved via IPPs, and at least 50 percent of IPP
9 projects would be via First Nation ownership. Eligible IPP projects were defined to be those
10 powered by local renewable sources, which included wind, hydro, geothermal, biomass, and
11 solar. Standard responsibilities for AEY and Yukon Energy Corporation were also detailed.³²

12 Several local communities have signed up for the IPP program under which the community builds
13 and owns solar or wind equipment and AEY owns batteries, storage and interconnection
14 facilities. This program generally reduces the demand for energy from AEY, although there is
15 some risk around the availability of solar and wind power. In addition, the move toward
16 electrification in the territory requires AEY to make significant capital investments over the next
17 five years. Specifically, AEY is projecting capital expenditures from 2023-2027 of \$130.2 million,
18 which represents more than 119 percent of the Company's 2021 rate base of \$109.2 million. The
19 magnitude of AEY's capital spending program highlights the importance of the Company having
20 an authorized return that allows it to compete for and attract capital on reasonable terms and
21 conditions under a variety of economic and financial market conditions.

22 These environmental policies also increase distributed generation risk for AEY. Wind and solar
23 generation are more intermittent sources of power, and therefore are less reliable than more
24 traditional fossil fuel generation. Further, these distributed generation resources will be owned
25 by the local communities under the IPP rather than by AEY. In addition, demand for electricity is
26 expected to increase for uses such as electric vehicles, making it more challenging for AEY to
27 accurately forecast demand growth and the timing of when these changes will occur. At the same
28 time, restrictions on the mining sector due to decarbonization are also expected to affect demand
29 for power in the Yukon, and this may have a downstream impact on AEY's customers' demand

³² Yukon's Independent Power Production Policy, updated October 2018.



1 for electricity. In summary, with so many crosscurrents due to the energy transition, the
2 challenge is for utilities such as AEY to manage through this period of uncertainty while
3 continuing to meet their obligation to provide reliable service to customers.

4 **5. Conclusions on Changes in Business Risk since 2016**

5 AEY's business risk is somewhat higher than in 2016 when the Board determined that a risk
6 premium of 25 basis points above the benchmark utility in British Columbia was reasonable. The
7 most important changes have been: 1) the uncertainty and unpredictability associated with the
8 federal government's decarbonization policies, how those will be implemented in Yukon, and
9 how that may affect AEY's generation facilities; and 2) the electrification movement in the Yukon,
10 which causes increased demand for power and requires AEY to make substantial capital
11 investments in order to serve that higher demand, which means that AEY's authorized return
12 must be set at a level that enables the Company to attract capital to finance these investments.



1 **V. COMPARISON TO OTHER BENCHMARKS**

2 As another point of comparison, Concentric also considered the authorized ROE and equity ratio
3 for transmission and distribution utilities in the U.S. from January 2022 through March 2023.
4 During that period, the average authorized ROE for T&D utilities in the U.S. was 9.56 percent, and
5 the approved common equity ratio was 51.55 percent.³³ The vast majority of these companies
6 are substantially larger than AEY. In my experience, the business and operating risks for U.S.
7 electric utilities are similar to those in Canada. Similarly, the cost recovery provisions and
8 regulatory regimes in the U.S. and Canada are comparable. As such, my conclusion is that the U.S.
9 utilities have lower business risk than AEY, due primarily to the extremely small size of AEY. The
10 average authorized ROE of 9.56 percent would imply a risk premium approximately 80 basis
11 points above the current benchmark utility in British Columbia, while the approved common
12 equity ratio in the U.S. is almost 10 percent higher than AEY’s deemed equity ratio of 40 percent.

13 I also considered the authorized return for Alaska Electric Light and Power (“AEL&P”), a small
14 integrated electric utility that has many of the same risk characteristics as AEY. AEL&P provides
15 electric distribution service to approximately 18,000 residential and commercial customers in
16 Juneau, Alaska. AEL&P generates 100 percent of its baseload power supply through five
17 company-owned hydroelectric plants. AEL&P has an authorized ROE of 11.95 percent on 58.18
18 percent common equity, both of which are significantly higher than AEY, based on a settlement
19 agreement that was approved by the Alaska commission in November 2017.³⁴

³³ Regulatory Research Associates, Rate Case History, January 1, 2022 through March 31, 2023.

³⁴ AEL&P has a pending electric rate case in which the company is requesting an authorized ROE of 13.45 percent and a common equity ratio of 60.10 percent.



1 **VI. RISK ANALYSIS CONCLUSIONS**

2 Based on the results of the business risk analyses discussed throughout this report, Concentric
3 concludes that the business risk of AEY is:

- 4 • Higher than that of FortisBC Energy, Inc., the benchmark utility in British
5 Columbia, which has a currently authorized ROE of 8.75 percent on 38.5
6 percent common equity.
- 7 • Higher than that of other Canadian electric and gas distribution utilities with
8 the exception of PNG-West.
- 9 • Increased since 2016 when the Board determined that a risk premium of 25
10 basis points above the benchmark utility in British Columbia was reasonable.
11 Federal and territorial government policies on decarbonization, the
12 electrification movement in Yukon, and the energy transition are increasing
13 demand for clean energy in the territory. This requires AEY to make
14 significant capital investments over the next five years, while also creating
15 some uncertainty around demand due to the new IPP policy for community
16 owned wind and solar projects.
- 17 • Similar to that of Maritime Electric, which derives more than 99 percent of
18 its electricity supply from purchased power from government owned
19 generation, but which serves four times more retail customers. Maritime
20 Electric has an authorized ROE of 9.35 percent on 40 percent common equity.
- 21 • Similar in many respects to that of Newfoundland Power, except that AEY is
22 substantially smaller in terms of both customers served and rate base.
23 Newfoundland Power has an ROE of 8.50 percent on 45 percent common
24 equity.
- 25 • Lower than that of PNG-West, which is similar in size but faces more risk than
26 AEY due to the loss of a major customer that caused throughput to decline.
27 PNG-West has an authorized ROE of 9.50 percent (or 75 basis points above
28 the BC benchmark) and a 46.5 percent common equity ratio, which also
29 accounts for the company's higher business risk.



1 Based on the foregoing, I conclude that an ROE risk premium between 40 and 100 basis points is
2 appropriate for AEY in relation to the benchmark utility, FortisBC Energy. This range is
3 consistent with the current risk premium for FortisBC Electric on the lower end and considers
4 the small size premium data on the upper end. From within that range, a risk premium for AEY
5 of 75 basis points is reasonable, if not conservative.

**ATCO Electric Yukon
Reserve for Injuries and Damages Claim
Fish Lake Unit 2 Bearing Failure
Date of Incident: July 2016**

Description of Asset Damaged:

The Michell bearing of Unit 2 at the Fish Lake Hydro Facility suffered failure resulting in repair of thrust pad assemblies and journal bearings.

Incident Summary:

The unit damage was caused by an unplanned grid interruption and failure of the water brake and closure devices to stop the equipment, thereby resulting in an overspeed condition. The incident appeared to be an instantaneous event, and damage was discovered upon inspection. The Michell bearing suffered damage and as a result the thrust collar on the runner shaft, all tilting-pads, and the journal bearings were no longer viable. The water brake casting was found to be cracked, and slip rings damaged.

Damaged components were removed and repaired or re-furbished in a machine shop and reinstalled. Investigation of the unit identified other components requiring repairs which will be included in future capital programs.

Incident Costs:

The incident is fully insurable, ATCO Electric Yukon has included the \$100,000 deductible in its RID account related to this event.

SECTION 9: CAPITAL ADDITIONS

9.1 Overview

1. The capital expenditures and additions included in this Application are outlined in Schedule 9.1 and are as follows:

**Table 9.1: Capital Expenditures and Additions
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Capital Expenditures	14,784	10,527	9,491	13,529	13,001	15,147	18,914	31,234	25,073
Capital Additions to Rate Base	12,079	8,393	11,159	9,982	11,893	11,014	15,857	34,734	31,780
Contributions	(1,241)	(2,204)	(3,212)	(5,969)	(4,220)	(5,250)	(2,529)	(10,119)	(16,431)
Net additions	10,838	6,189	7,947	4,013	7,673	5,764	13,328	24,615	15,349

2. In this Section, AEY is seeking Board approval of the 2016 to 2022 actuals on a final basis and approval of its forecasts for 2023 and 2024 additions. Overall, the 2016 and 2017 actuals were below the approved additions mainly due to the timing of a number of projects which were completed in subsequent years.

3. Since the last GRA there has been significant load growth in the Yukon (approximately 40 percent increase since 2014), as a result of the rapidly increasing population. This growth has led to the need for AEY’s capital program to keep up with the demand, as can be seen in the steadily increasing capital expenditures. This increase was not only required to maintain safe and reliable service but also to strengthen and grow the power system as the demand continues to rise.

4. There was a large uptick in 2022 in Net Capital Additions because of the growth and the ability to complete more projects coming out of the pandemic. In addition, there were several multiyear projects that capitalized in 2022 (ex. Watson Lake Unit six (6) replacement and Paint Mountain). The Net Capital Additions peaks in 2023, as a result of a new substation (\$2.4 million) and the CIS project (\$8.4 million) going into service. Once the net capital additions are normalized for the CIS project, the total 2023 net capital

additions are comparable to 2024, which is based on the expected continued growth in the area.

5. To support this capital spend, AEY has provided Business Cases related to capital expenditures as follows: Business Cases are provided for 2016-2017 where variances from actual to approved were both greater than 100 percent and greater than \$100,000; Business Cases are provided for capital expenditures in 2018-2022 that exceeded \$100,000; Business Cases are provided for projects planned to be undertaken in 2023-2024 where capital expenditures are forecast to be \$500,000 or greater; and Business Cases are provided for significant upcoming projects where certain un-capitalized costs are forecast in the Test Period but capitalized expenditures are forecast subsequent to the Test Period. A listing of the Business Cases can be found in Section 9.9.

6. The capital expenditures summarized in Schedule 9.1 are broken down into the following categories:

9.2 Generation

Table 9.2: Capital Expenditures - Generation (\$000)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Capital Expenditures	6,944	963	2,147	2,635	3,597	3,050	1,178	3,273	3,352

7. Generation assets are continually monitored through power plant inspections and monitoring. Components are repaired or replaced due to unacceptable performance, discontinuation by manufacturer, in accordance with manufacturer specifications, on planned replacement intervals or at the end of their useful life. The reliability and integrity of the power generation system is a key consideration when critical replacement decisions are being contemplated. Other considerations include load growth on a power plant and/or specific generation units, premature failure, safety requirements, and environmental regulations which can dictate the need for additional generation assets to be put in place. Additionally, AEY considers that the integration of renewables and the

impact on the automation/control of the isolated generation facilities will trigger capital expenditures over the Test Period. An estimate is developed by determining what generating units are due for replacement and other upgrades or replacements required to the generating facilities. Where possible, forecast costs take into account the following: preliminary engineering and design work, historical costs of comparable projects and any results of a tender process.

9.3 New Extensions

**Table 9.3: Capital Expenditures – New Extensions
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Capital Expenditures	2,365	2,997	3,990	5,176	3,636	4,428	4,714	5,885	5,215
IPP Cap Ex	-	-	-	-	-	185	1,394	1,115	0
Total New Extensions	2,365	2,997	3,990	5,176	3,636	4,613	6,108	7,000	5,215

8. Customer requests for a new service typically require extensions of the distribution system. AEY develops its new extension capital forecast based on discussions with the Yukon Government, the City of Whitehorse and First Nation Government's. AEY also holds a seat on the Development Review Committee with the City of Whitehorse that puts AEY in contact with Developers and Engineering Firms which informs the new extension forecast. AEY assesses the ability of the existing infrastructure to accommodate the proposed growth taking into account the specific service requirements of the customer. An estimate is developed for the facilities required for each of the new extensions and inserted into the annual forecast. In addition, AEY considers historical customer additions to account for walk-in customers that are expected to require service.

9.4 Distribution Improvements

**Table 9.4: Capital Expenditures – Distribution Improvements
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Capital Expenditures	4,516	3,921	2,318	2,634	1,658	3,180	2,028	5,195	9,081

9. Distribution improvement projects generally fall into four major categories:
- (i) System Performance Projects – are required to maintain system performance at an acceptable level. This category includes system protection, voltage, current and line clearance projects;
 - (ii) Life Extension Projects – are required to increase the operating life of the distribution system. This category includes electrical equipment refurbishments or upgrades, voltage conversions and reconductor projects;
 - (iii) System Replacement Projects – are required to replace distribution system facilities on a planned basis when they have reached the end of their useful life. This includes replacement of distribution poles, ground systems, as well as overhead and underground system equipment replacements; and
 - (iv) Forced Projects – are required to correct unplanned system failures and upgrades due to other projects in the area or a new development.
10. In addition to the above, AEY tracks distribution system performance on an ongoing basis and the performance is reviewed when preparing the capital forecast. Additionally, AEY reviews unplanned outages that may be attributed to system deficiencies and implements corrective action. Costs for distribution improvements are forecast based on preliminary engineering design work and take into consideration historical project costs for comparable projects.

9.5 Street and Sentinel Lights

**Table 9.5: Capital Expenditures – Street and Sentinel Lights
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Capital Expenditures	407	936	553	785	1,627	1,055	1,099	2,563	1,042

11. Expenditures are required to provide new street and sentinel lighting in AEY’s service area. Streetlights that require replacement due to poor condition assessment are included in this category. A condition assessment is based on performance of streetlights, deficiencies or substandard conditions and the general physical condition. Inspection of the general physical condition includes the base and metal structure for deterioration, rust, broken bolts and damage. New installations or requests from customers and developers are also included. The forecast is determined based on known areas of development in the communities, as well as a review of historic replacement requirements.

9.6 Meters

**Table 9.6: Capital Expenditures – Meters
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Capital Expenditures	105	88	32	67	127	75	98	235	410

12. Capital meter additions include new meters installations that are required to replace end of life meters as identified by Measurement Canada. This category also includes the installation of new meters required to accommodate load growth associated with customer requests for service. These expenditures allow AEY to meet its obligation to provide metered service connections. The capital meter additions are forecasted based on known areas of development and expected connection requests.

9.7 General Property and Equipment

Table 9.7: Capital Expenditures – General Property and Equipment (\$000)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Capital Expenditures	374	1,150	303	962	883	1,621	4,753	5,547	3,263

13. This portion of the capital forecast provides for replacement of equipment and for the purchase of new equipment required to support AEY’s operations. These include tools, office furniture, office computer equipment and software communication equipment, transportation equipment, lands and buildings. Estimates are developed by determining what the needs are for upgrade, purchase or replacement of general property and equipment and developing a forecast based on historical and market prices.

9.8 Capital Project Delivery

14. AEY has a project process in place for the identification, planning and execution of its capital projects. The general project process is followed for Generation, New Extensions, Distribution Improvements, Street Lights and General Property and Equipment projects.

15. At the initiation of a new project, either requested by a new customer or required for system improvement, the general scope of the project is identified, and the appropriate internal employees are engaged. As the general scope of a project is further defined, a more detailed review is completed that identifies the needs of the new customer or the deficiency in the power system that needs to be addressed. The engineering department will establish the total scope of the effort, define the project objectives, develop a cost estimate, projected schedule, and the resources required to successfully complete the project.

16. Where appropriate, Business Cases and/or engineering studies are also completed to ensure the most reasonable alternative is selected and that the solution meets both the needs of the system and the customer.

17. The Operations department will review the current power system in consideration of the new project with the key consideration being the safe integration of the project into the power system. If it's a new customer extension project, a review of substation(s) and feeder loading as well as the condition of existing electrical equipment will be completed.

18. As the project proceeds, regular reporting by construction crews, warehouse personnel and engineering assistants keep the project lead informed of the overall schedule and emerging issues that can affect scope, schedule, or costs so that mitigation strategies can be developed to minimize their impact.

9.9 Business Cases

19. Capital expenditures from the last Test Period of 2016-2017 where the variance of the actual to approved expenditures in the Business Case is both greater than 100 percent and greater than \$100,000 are included in revised Business Cases #01- #03.

Business Cases for Years 2016-2017

McIntyre Subdivision Rebuild	Business Case #01
Replace Ditch No. 1 Spillway	Business Case #02
400 Amp Regulators in Logan Substation	Business Case #03

20. For 2018-2022, Business Cases are provided for all capital projects with expenditures over \$100,000. Refer to Business Cases #04 – #21.

Business Cases for Years 2018-2022

S17 HLC Breaker Replacement	Business Case #04
Extend Three Phase on Hotsprings Road	Business Case #05
Partial Reconductor on Mayo Road	Business Case #06
Replace Watson Lake Generating Units	Business Case #07
Watson Lake Unit 4 – Installation of Remote Electronic Modular Control Panel	Business Case #08
Upgrade Regulators at Laberge Substation	Business Case #09
Service Complex Boiler Replacement	Business Case #10

McIntyre Subdivision Contingency Loop	Business Case #11
Annual Right-of-Way (ROW) Widening	Business Case #12
Fleet Replacement	Business Case #13
Satellite Radios	Business Case #14
Line Moves in Highway ROW	Business Case #15
Dual Rated Transformer Upgrade	Business Case #16
Install 35kV Regulators on Carcross Road	Business Case #17
New Services Overhead and Underground	Business Case #18
My Account for Online Customer Access	Business Case #19
Streetlights Hart Crescent	Business Case #20
Swift River Unit 2 Replacement	Business Case #21

21. A listing of the forecast capital expenditures for 2023-2024 is provided in Attachments 9.1 and 9.2, which include a project description for those projects greater than \$100,000. Full Business Cases for the following major Capital Projects (\$500,000 or greater) are included in Business Cases #22 - #38:

Business Cases for Test Period Projects 2023-2024

ATCO CIS Replacement	Business Case #22
Genset Major Overhauls	Business Case #23
Asset Management Program	Business Case #24
Mayo Road and Whistle Bend	Business Case #25
Annual Right-of-Way (ROW) Widening	Business Case #26
Fleet Replacement 2023	Business Case #27
Fleet Replacement 2024	Business Case #28
Old Crow Voltage Improvement	Business Case #29
6L19 Voltage Improvement	Business Case #30
Whistle Bend Subdivision	Business Case #31
Fish Lake 1 Roof Replacement	Business Case #32
Louise Lake Auxiliary Structure Replacement	Business Case #33
Yukon Government Robert Campbell Streetlights	Business Case #34
ArcticPharm IPP	Business Case #35

Haeckel Hill Customer Connection	Business Case #36
Kluane Wind Turbine	Business Case #37
Beaver Creek PV Project	Business Case #38

22. AEY is providing an additional set of Business Cases for capital projects which will not result in capitalized costs during the Test Period, but which are forecast to result in certain un-capitalized costs during the Test Period [or in the years 2016 to 2022] as well as large capital expenditures subsequent to the Test Period. AEY has included these Business Cases in the Application even though costs incurred during the Test Period will not be capitalized, in an effort to be transparent and to notify the Board and other stakeholders regarding larger upcoming capital expenditures. For the purposes of this Application, AEY is seeking Board approval for the un-capitalized costs forecast during the Test Period that are associated with these projects. Any capital expenditures forecast to occur subsequent to the Test Period will remain subject to the Board's review and oversight in a future GRA proceeding.

Business Cases with Significant Capital Expenditures Outside of the 2023-2024 Test Period

Fish Lake 2 Power Station Design	Business Case #39
Condition Assessment and Option Analysis for Generating Plants	Business Case #40
Old Crow Plant Rebuild	Business Case #41

SECTION 10: INCOME TAX

10.1 Overview

1. The income tax expenses included in this Application are outlined in Schedule 10.1 and are as follows:

**Table 10.1: Income Tax
(\$000)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Income Tax Expense	(90)	194	802	1,057	972	1,062	795	(2,357)	1,134

2. AEY continues to use the flow through method in calculating the income tax expense. Under the flow through method, AEY calculates the income tax expense based on taxable income, which is minimized by claiming the maximum of all available deductions including Capital Cost Allowance (CCA). AEY also does not book deferred taxes under this methodology.

3. The increase in income tax expense between 2018 and 2019 is mainly due to lower tax deductions for capitalized purchase power in 2019. The decrease in income tax expense between 2019 and 2020 is mainly due to higher tax deductions in capitalized inventory handling costs. The increase in income tax expense between 2020 and 2021 is mainly due to declining CCA deductions. The decrease in income tax expense between 2021 and 2022 is mainly due to higher CIS replacement running costs in 2022. The decrease in income tax expense between 2022 and 2023 is mainly due to higher CCA deductions as a result of the completion of the CIS replacement project. The increases in income tax expense between 2023 and 2024 are mainly due to lower CCA deductions as a result of CIS replacement project costs fully deducted in 2023.

SECTION 11: PRIOR BOARD DIRECTIONS

11.1 Summary

1. This Section provides a response, or a reference to a response in this Application, to the applicable Board Directions from Board Order 2017-01, Appendix A, dated April 27, 2017.

Direction No. 6, Reference: Paragraph 123

The Board does not accept AEY’s submissions that, when considering trends, the total level of O&M costs should be considered or that the review should be limited to those areas with cost variance at the account level. Because of this, the Board believes that a review should be undertaken at the function level for variances in trends, as an inter-relationship between accounts within a function may exist. These inter-relationships may result in misleading trends. Further, at the function level, each function is independent; unless a link is specifically demonstrated, the cost causation in one function does not necessarily lead to cost causation in another function. As a result, the Board directs AEY in its compliance filing and in future GRAs to provide a labour schedule showing total labour costs as well as a breakdown of those labour costs into capital and each of the O&M and A&G functions. This labour schedule is to be provided for each of the test years and the three years prior to the test period. The prior periods will show a labour comparison between forecast and actual.

AEY Response:

Please refer to Schedule 5.2 of the O&M detailed breakdown by activity

Capital labour breakout

**Table 11.1: O&M vs Capital Labour Breakout
(\$000)**

	2020	2021	2022	2023	2024
	Actual			Test Period	
O&M	6,037	6,724	6,483	7,111	7,297
Capital	2,642	2,751	2,835	3,779	3,920
Total	8,679	9,475	9,318	10,890	11,217

Direction No. 7, Reference: Paragraph 124

The Board notes that AEY bases its forecast on historical information, taking into account variance explanations from prior forecasts, and then adds to or reduces the historical amounts based on known upcoming events in the forecast period. However, the Board is concerned about the trends displayed by CW's evidence and finds Attachment 1 to CW-YECL-14 helpful. As noted above, CW evidence is a starting point for further investigation of variance explanations. The Board directs AEY to provide a schedule in future GRAs similar to Attachment 1 to CW-YECL-14, showing labour, fringe and other, comparing actual to approved or forecast levels. The Board also directs that the variance explanations provided in Schedule 5.2 be provided at the labour, fringe and other levels for all future GRAs.

AEY Response:

Please refer to Schedule 5.2. Note that as AEY uses standard labour rates there is no breakout of fringe as it is embedded in the rates.

Direction No. 13, Reference: Paragraph 172

However, the Board observes that Schedule 7-4, relied on by AEY to support its amortization of accumulated reserve differences amount, disclosed certain negative net salvage percentage information that prompted the clarifications described earlier in this section. The Board considers it would be a simple matter for AEY to have revised Schedule 7-4 to be consistent with the approvals stemming from Board Order 2014-06 and doing so would have avoided unnecessary confusion as to whether the reserve difference amounts complied with Board directions. The Board directs AEY in its future applications, to ensure all supporting schedules filed are consistent with and reflective of Board Orders.

AEY Response:

All supporting schedules are consistent with and reflective of Board Orders.

Direction No. 16, Reference: Paragraph 278

Considering the above and AEY's submission that it files KPI reports on an annual basis, the Board directs AEY to file on the record of its next GRA, the KPI reports that have been filed with the Board after the record closed in this proceeding. The Board further directs AEY, in its next GRA, to include with the list of improvement projects the reasons for the system deficiency — supported by the KPI filings — that form the basis of the project and the resulting costs. Moreover, AEY is directed to provide a sample report referred to in the quotation above in its next GRA, and to point out and clarify the project expectations — i.e. the expected system

performance improvement(s) — that AEY expects will be affirmed by future KPI filings.

AEY Response:

To ensure safe and reliable service AEY addresses issues that are identified in the system through Distribution Improvements before they result in outage. As the KPI's in the annual filing (provided in Attachment 11.1) retroactively track issues/outages that have already occurred and not the prevention of these issues there are only a few projects that meet this tracking criteria. The majority of AEY's focus on the System Performance projects in Distribution Improvements are aimed to prevent future outages.

AEY has provided a listing in Attachment 11.2 which breaks down, by project, the System Performance projects into two categories, "Preventative" and "Corrective". For the Preventative projects AEY has included the driver which led to the system improvement work being required and for the Corrective AEY included the KPI's pre and post improvement.

In addition, for the years 2018-2022 AEY has provided Business Cases for projects with expenditures over \$100,000 and for 2023-2024 projects with expenditures over \$500,000 which describes in further detail the drivers and need for these improvements.

Please refer to Attachment 11.3 for sample outage reports for December 2022 and January 2023

Direction No. 20, Reference: Paragraph 384

The Board accepts AEY's test period forecast costs because this is an ongoing replacement project. However, because the scope of the project has not been finalized, AEY is directed to provide an updated business case in its next GRA.

AEY Response:

Please refer to Business Case #01: McIntyre Subdivision Rebuild.

Direction No. 21, Reference: Paragraph 385

If AEY's proposal for alternative 2 (a hybrid system) is explored and is to be implemented, the Board directs AEY to include in its updated business case any revised forecast costs and cost savings.

AEY Response:

Please refer to Business Case #01: McIntyre Subdivision Rebuild.



May 1, 2023

Ms. Deana Lemke
Executive Assistant
Yukon Utilities Board
P.O. Box 31728
Whitehorse, Yukon Y1A 6L3

Attention: Ms. Lemke
Executive Assistant

**Re: ATCO Electric Yukon (AEY)
2022 Key Performance Indicators**

Please find attached the 2022 Key performance Indicators for ATCO Electric Yukon.

If you have any questions, please contact me at tony.martino@atco.com.

Yours truly,

Tony Martino
Senior Manager, Regulatory



Report to the Yukon Utilities Board

2022

Key Performance Indicators

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**ATCO Electric Yukon
2022 Generation Performance**

Updated by Accounting Updated by Accounting

Plant	2022	CUL Number	Unit Size (kW)	Engine Hours	Actual Generation (kWh)	Total Available Generation (kWh)	Unit Availability	Capacity Factor	Operating Factor
Beaver Creek	Unit #1	CUL585	285	4,311	674,152	1,228,721	89.7%	54.9%	49.2%
	Unit #2	CUL547	365	2,807	619,438	1,024,592	62.2%	60.5%	32.0%
	Unit #3	CUL354	400	1,898	455,810	759,280	73.3%	60.0%	21.7%
Carmacks	Unit #1	CUL310	1,600	34	20,390	53,600	98.9%	38.0%	0.4%
Destruction Bay	Unit #1	CUL467	600	689	207,671	413,460	80.5%	50.2%	7.9%
	Unit #2	CUL592	400	4,004	932,041	1,601,440	92.6%	58.2%	45.7%
	Unit #3	CUL584	312	3,793	763,170	1,183,416	75.5%	64.5%	43.3%
Haines Junction	Unit #1	CUL416	1,750	66	70,419	115,325	98.9%	61.1%	0.8%
Old Crow	Unit #1	CUL414	600	3,093	1,005,446	1,855,800	86.4%	54.2%	35.3%
	Unit #2	CUL355	400	1,843	454,624	737,240	95.2%	61.7%	21.0%
	Unit #3	CUL591	680	1,542	635,255	1,048,492	90.2%	60.6%	17.6%
	Unit #4	CUL586	450	1,510	422,196	679,275	61.3%	62.2%	17.2%
Pelly Crossing	Unit #1	CUL375	275	8	10	2,310	98.9%	0.4%	0.1%
	Unit #2	CUL470	600	168	480	100,860	98.9%	0.5%	1.9%
	Unit #3	CUL405	300	70	60	20,970	98.9%	0.3%	0.8%
Ross River	Unit #1	CUL265	1,000	183	95,061	182,600	98.9%	52.1%	2.1%
Stewart Crossing	Unit #3	CUL186	150	21	1,347	3,135	98.9%	43.0%	0.2%
Teslin	Unit #1	CUL376	1,500	102	62,223	152,700	98.9%	40.7%	1.2%
Watson Lake	Unit #1	CUL609	1,050	564	346,800	592,200	82.9%	58.6%	6.4%
	Unit #2	CUL595	895	4,876	3,244,800	4,364,020	98.3%	74.4%	55.7%
	Unit #3	CUL601	1,245	2,910	2,558,400	3,622,950	94.6%	70.6%	33.2%
	Unit #4	CUL545	1,450	5,357	376,890	7,767,650	67.7%	4.9%	61.2%
	Unit #5	CUL466	750	958	496,800	718,500	36.2%	69.1%	10.9%
	Unit #6	CUL612	1,050	4,284	2,937,600	4,498,200	78.0%	65.3%	48.9%
Swift River	Unit #1	CUL596	100	7,762	203,836	776,200	91.9%	26.3%	88.6%
	Unit #2	CUL611	105	475	14,894	49,875	60.5%	29.9%	5.4%
Fish Lake	Unit #1	CUL542	815	8,539	6,665,616	6,959,081	98.4%	95.8%	97.5%
	Unit #2	CUL108	597	6,623	2,931,720	3,953,633	78.6%	74.2%	75.6%

The following factors were measured

Unit Size:	This is the generator capacity in kW.
Engine Hours:	This is the number of hours the generator was on-line.
Actual Generation:	This is the amount of real power (energy) that the generating unit produced for the year in kW.h
Total Available Generation:	This is the amount of real power (energy) that the generating unit could have produced based on the hours the generator was on-line during the year.
Unit Availability:	This is defined as the number of hours the generator is available for production divided by the hours in the period. This factor is displayed in percentile and is useful in monitoring the overall reliability of the machine without regard to whether it was available when it was most needed.
Capacity Factor:	This is defined as the actual energy produced divided by the amount of energy the unit had the potential to produce for the year. Displayed as a percentile, it is useful as an indication of the utilization of the generator especially in terms of providing energy (kW.h).
Operating Factor:	This is defined as the hours the generator was on-line divided by the total hours in the year. Displayed as a percentile, this factor is useful in monitoring how much the machine was used without regard to its defined benefit such as energy production (kW.h) or capacity factor.

**ATCO Electric Yukon
Summary of Customers, Energy Sales and Revenue**

Line No.	Description	Actual 2013	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Actual 2020	Actual 2021	Actual 2022
1	Residential										
2	Customers (average during year)	14,194	14,409	14,631	14,858	15,114	15,430	15,775	16,155	16,567	17,025
3	Sales in MWh	148,780	147,133	148,605	151,351	165,654	167,596	166,455	185,235	188,526	187,135
4	MWh sales per customer	10.5	10.2	10.2	10.2	11.0	10.9	10.6	11.5	11.38	10.99
5	Revenue (\$000s)	21,070	20,629	20,839	21,452	23,262	23,491	23,506	25,960	26,443	26,316
6	Cents per KWh	14.16	14.01	14.02	14.17	14.04	14.02	14.12	14.01	14.03	14.06
7	Commercial										
8	Customers (average during year)	2,918	2,938	2,988	3,000	3,036	3,095	3,145	3,178	3,219	3,272
9	Sales in MWh	159,322	154,709	155,346	157,662	165,924	168,285	168,680	163,933	166,022	167,662
10	MWh sales per customer	54.6	52.7	52.0	52.6	54.6	54.4	53.6	51.6	51.57	51.24
11	Revenue (\$000s)	27,305	25,509	25,534	25,798	27,102	27,353	27,589	27,110	27,170	27,500
12	Cents per KWh	16.51	16.49	16.44	16.36	16.33	16.25	16.36	16.54	16.37	16.40
13	Street lights										
14	Sales in MWh	3,719	3,765	3,886	3,923	3,942	3,951	3,876	3,889	3,937	3,884
15	Revenue (\$000s)	961	962	992	997	1,009	1,021	1,014	1,037	1,079	1,079
16	Cents per KWh	25.84	25.54	25.52	25.42	25.59	25.85	26.17	26.66	27.41	27.78
17	Sentinel lights										
18	Sales in MWh	551	544	519	496	495	486	480	452	452	456
19	Revenue (\$000s)	145	142	138	133	132	130	128	121	122	126
20	Cents per KWh	26.33	26.05	26.58	26.71	26.66	26.76	26.59	26.84	27.10	27.51
21	Total Company - Retail - Primary										
22	Customers	17,112	17,347	17,619	17,858	18,150	18,525	18,919	19,334	19,786	20,298
23	Sales in MWh	312,372	306,272	308,356	313,432	336,016	340,318	339,491	353,508	358,937	359,138
24	Revenue (\$000s)	48,481	47,241	47,503	48,380	51,504	51,995	52,237	54,228	54,814	55,020
25	Cents/KWh	15.52	15.42	15.41	15.44	15.33	15.28	15.39	15.34	15.27	15.32
26	Secondary Sales										
27	Customers (average during year)	1	2	3	3	5	5	5	5	10	9
28	Sales in MWh	3,959	5,415	7,030	4,835	8,385	258	1	479	4,430	3,439
29	MWh sales per customer	1,979.5	2,707.5	2,812.0	1,511.0	1,705.4	51.6	0.1	97.5	458	382
30	Revenue (\$000s)	336	474	532	296	553	21	0	34	361	401
31	Cents per KWh	8.49	8.75	7.57	6.13	6.59	7.99	8.37	7.07	8.15	11.65
32	Wholesale Sales										
33	Customers (average during year)	2	2	2	2	2	2	2	2	2	2
34	Sales in MWh	361	494	430	548	584	636	693	704	487	420
35	MWh sales per customer	180.7	247.0	215.0	273.8	292.1	317.9	346.3	351.9	243.41	210.03
36	Revenue (\$000s)	30	41	36	45	48	53	57	58	40	35
37	Cents per KWh	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30
38	Total Company										
39	Customers	17,116	17,351	17,624	17,863	18,157	18,532	18,926	19,341	19,798	20,309
40	Sales in MWh	316,692	312,181	315,816	318,815	344,985	341,212	340,184	354,691	363,853	362,997
41	Revenue (\$000s)	48,847	47,756	48,071	48,722	52,106	52,068	52,295	54,320	55,216	55,455
42	Cents/KWh	15.42	15.30	15.22	15.28	15.10	15.26	15.37	15.31	15.18	15.28
43	Retail Revenues	48,847	47,756	48,071	48,722	52,106	52,068	52,295	54,320	55,216	55,455
44	YEC Revenue Shortfall (Rider J + Rider R1)	5,829	6,259	5,266	5,273	6,487	8,680	8,920	17,028	19,529	21,921
	Rider R	1,634	3,672	4,139	3,792	5,349	5,363	5,259	5,759	6,115	6,269
45	TOTAL REVENUES	56,310	57,687	57,476	57,787	63,942	66,111	66,474	77,107	80,860	83,645

Reliability Performance

ATCO Electric Yukon tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

CAIDI refers to the Customer Average Interruption Duration Index. This index is defined as the customer average interruption duration for customers interrupted during the year. CAIDI is calculated by taking the total customer hours of interruptions divided by total customer interruptions.

IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

ATCO Electric Yukon's 2022 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	5.420	2.460
SAIDI	6.170	3.580
CAIDI	1.140	1.450
IOR	99.93%	99.96%

Health, Safety and Environment Performance

ATCO Electric Yukon's 2022 Health, Safety and the Environment Performance measures as follows:

Worker Lost Time Frequency	0
Worker Lost Time Severity	0
Contractor Lost Time Incidents	0
Preventable Vehicle Incident Frequency	1
Number of Reportable Releases	0

Financial Performance

The table below notes a number of highlights from ATCO Electric Yukon's 2022 Approved 2016-2017 Compliance Filing as well as a number of other 2022 Financial Performance indicators.

Regulated Return on Equity (ROE)	11.95%
Net Rate Base (\$000's)	\$114,453
Average Inventory (\$000's)	\$3,102
Capital Additions (\$000's)	\$15,857
Customers per Employee	308
Sales (MW.h) per Employee	5,500
Total labour expense per Customer	\$362
Ave. Consumption per Res. Customer (MW.h)	10.99
Ave. Consumption per Comm. Customer (MW.h)	51.24

ATCO Electric

YUKON

April 29, 2022

Ms. Deana Lemke
Executive Assistant
Yukon utilities Board
P.O. Box 31728
Whitehorse, Yukon Y1A 6L3

Dear Ms. Lemke:

Re: ATCO Electric Yukon 2021 Key Performance Indicators

Please find attached the 2021 Key performance Indicators for ATCO Electric Yukon.

If you have any questions, please contact the undersigned at (867) 633-7080.

Yours truly,



Bill Cullen PLT
Manager
ATCO Electric Yukon

Encl.



Report to the Yukon Utilities Board

2021

Key Performance Indicators

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**ATCO Electric Yukon
2021 Generation Performance**

Plant	2021	CUL Number	Unit Size (kW)	Engine Hours	Actual Generation (kWh)	Total Available Generation (kWh)	Unit Availability	Capacity Factor	Operating Factor
Beaver Creek	Unit #1	CUL585	285	2,969	439,701	846,279	62.1%	52.6%	33.9%
	Unit #2	CUL547	365	4,375	904,625	1,596,875	90.1%	57.2%	49.9%
	Unit #3	CUL354	400	1,704	474,175	681,600	46.7%	70.4%	19.5%
Carmacks	Unit #1	CUL310	1,600	120	61,125	192,000	98.9%	32.2%	1.4%
Destruction Bay	Unit #1	CUL467	600	617	126,689	369,900	96.4%	34.6%	7.0%
	Unit #2	CUL592	400	5,747	1,315,972	2,298,920	74.3%	57.9%	65.6%
	Unit #3	CUL584	312	3,028	513,381	944,736	61.7%	55.0%	34.6%
Haines Junction	Unit #1	CUL416	1,750	7	6,264	12,250	96.2%	61.4%	0.1%
Old Crow	Unit #1	CUL414	600	3,356	1,149,910	2,013,600	97.1%	57.7%	38.3%
	Unit #2	CUL355	400	3,111	730,701	1,244,400	62.3%	59.4%	35.5%
	Unit #3	CUL591	680	496	211,370	337,287	15.4%	63.4%	5.7%
	Unit #4	CUL586	450	2,696	718,314	1,213,110	83.8%	59.8%	30.8%
Pelly Crossing	Unit #1	CUL375	275	21	20	5,638	98.9%	0.4%	0.2%
	Unit #2	CUL470	600	163	460	97,860	98.9%	0.5%	1.9%
	Unit #3	CUL405	300	159	210	47,580	98.9%	0.4%	1.8%
Ross River	Unit #1	CUL265	1,000	47	13,133	47,000	98.9%	28.9%	0.5%
Stewart Crossing	Unit #3	CUL186	150	1	0	150	98.9%	6.7%	0.0%
Teslin	Unit #1	CUL376	1,500	63	27,525	94,500	98.9%	29.4%	0.7%
Watson Lake	Unit #1	CUL609	1,050	4,091	2,692,800	4,295,550	72.1%	63.3%	46.7%
	Unit #2	CUL595	895	3,976	2,611,200	3,558,520	96.5%	74.2%	45.4%
	Unit #3	CUL601	1,350	5,665	4,768,000	7,647,750	97.9%	63.0%	64.7%
	Unit #4	CUL545	1,450	2,513	2,623,200	3,643,850	32.1%	72.7%	28.7%
	Unit #5	CUL466	650	270	132,000	175,500	99.0%	76.0%	3.1%
	Unit #6	CUL423	800	3,579	2,256,000	2,863,200	47.6%	79.6%	40.9%
Swift River	Unit #1	CUL596	100	2,251	62,545	225,100	99.6%	27.8%	25.7%
	Unit #2	CUL544	88	6,520	167,962	573,760	98.8%	29.3%	74.4%
Fish Lake	Unit #1	CUL542	815	8,646	6,496,316	7,046,490	99.1%	92.5%	98.7%
	Unit #2	CUL108	600	7,975	3,028,440	4,785,150	93.7%	63.3%	91.0%

The following factors were measured

Unit Size:	This is the generator capacity in kW.
Engine Hours:	This is the number of hours the generator was on-line.
Actual Generation:	This is the amount of real power (energy) that the generating unit produced for the year in kW.h
Total Available Generation:	This is the amount of real power (energy) that the generating unit could have produced based on the hours the generator was on-line during the year.
Unit Availability:	This is defined as the number of hours the generator is available for production divided by the hours in the period. This factor is displayed in percentile and is useful in monitoring the overall reliability of the machine without regard to whether it was available when it was most needed.
Capacity Factor:	This is defined as the actual energy produced divided by the amount of energy the unit had the potential to produce for the year. Displayed as a percentile, it is useful as an indication of the utilization of the generator especially in terms of providing energy (kW.h).
Operating Factor:	This is defined as the hours the generator was on-line divided by the total hours in the year. Displayed as a percentile, this factor is useful in monitoring how much the machine was used without regard to its defined benefit such as energy production (kW.h) or capacity factor.

ATCO Electric Yukon
Summary of Customers, Energy Sales and Revenue

Line No.	Description	Actual 2013	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Actual 2020	Actual 2021
1	Residential									
2	Customers (average during year)	14,194	14,409	14,631	14,858	15,114	15,430	15,775	16,155	16,567
3	Sales in MWh	148,780	147,133	148,605	151,351	165,654	167,596	166,455	185,235	188,526
4	MWh sales per customer	10.5	10.2	10.2	10.2	11.0	10.9	10.6	11.5	11.38
5	Revenue (\$000s)	21,070	20,629	20,839	21,452	23,262	23,491	23,506	25,960	26,443
6	Cents per KWh	14.16	14.01	14.02	14.17	14.04	14.02	14.12	14.01	14.03
7	Commercial									
8	Customers (average during year)	2,918	2,938	2,988	3,000	3,036	3,095	3,145	3,178	3,219
9	Sales in MWh	159,322	154,709	155,346	157,662	165,924	168,285	168,680	163,933	166,022
10	MWh sales per customer	54.6	52.7	52.0	52.6	54.6	54.4	53.6	51.6	51.57
11	Revenue (\$000s)	27,305	25,509	25,534	25,798	27,102	27,353	27,589	27,110	27,170
12	Cents per KWh	16.51	16.49	16.44	16.36	16.33	16.25	16.36	16.54	16.37
13	Street lights									
14	Sales in MWh	3,719	3,765	3,886	3,923	3,942	3,951	3,876	3,889	3,937
15	Revenue (\$000s)	961	962	992	997	1,009	1,021	1,014	1,037	1,079
16	Cents per KWh	25.84	25.54	25.52	25.42	25.59	25.85	26.17	26.66	27.41
17	Sentinel lights									
18	Sales in MWh	551	544	519	496	495	486	480	452	452
19	Revenue (\$000s)	145	142	138	133	132	130	128	121	122
20	Cents per KWh	26.33	26.05	26.58	26.71	26.66	26.76	26.59	26.84	27.10
21	Old Crow Solar									
22	Sales in MWh									(211)
23	Revenue (\$000s)									(143)
24	Cents per kWh									67.98
21	Total Company - Retail - Primary									
22	Customers	17,112	17,347	17,619	17,858	18,150	18,525	18,919	19,334	19,786
23	Sales in MWh	312,372	306,272	308,356	313,432	336,016	340,318	339,491	353,508	358,726
24	Revenue (\$000s)	48,481	47,241	47,503	48,380	51,504	51,995	52,237	54,228	54,671
25	Cents/KWh	15.52	15.42	15.41	15.44	15.33	15.28	15.39	15.34	15.24
26	Secondary Sales									
27	Customers (average during year)	1	2	3	3	5	5	5	5	10
28	Sales in MWh	3,959	5,415	7,030	4,835	8,385	258	1	479	4,430
29	MWh sales per customer	1,979.5	2,707.5	2,812.0	1,511.0	1,705.4	51.6	0.1	97.5	458
30	Revenue (\$000s)	336	474	532	296	553	21	0	34	361
31	Cents per KWh	8.49	8.75	7.57	6.13	6.59	7.99	8.37	7.07	8.15
32	Wholesale Sales									
33	Customers (average during year)	2	2	2	2	2	2	2	2	2
34	Sales in MWh	361	494	430	548	584	636	693	704	487
35	MWh sales per customer	180.7	247.0	215.0	273.8	292.1	317.9	346.3	351.9	243.41
36	Revenue (\$000s)	30	41	36	45	48	53	57	58	40
37	Cents per KWh	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30
38	Total Company									
39	Customers	17,116	17,351	17,624	17,863	18,157	18,532	18,926	19,341	19,798
40	Sales in MWh	316,692	312,181	315,816	318,815	344,985	341,212	340,184	354,691	363,643
41	Revenue (\$000s)	48,847	47,756	48,071	48,722	52,106	52,068	52,295	54,320	55,073
42	Cents/KWh	15.42	15.30	15.22	15.28	15.10	15.26	15.37	15.31	15.14
43	Retail Revenues	48,847	47,756	48,071	48,722	52,106	52,068	52,295	54,320	55,073
44	YEC Revenue Shortfall (Rider J + Rider R1)	5,829	6,259	5,266	5,273	6,487	8,680	8,920	17,028	19,529
	Rider R	1,634	3,672	4,139	3,792	5,349	5,363	5,259	5,759	6,115
45	TOTAL REVENUES	56,310	57,687	57,476	57,787	63,942	66,111	66,474	77,107	80,717

Reliability Performance

ATCO Electric Yukon tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

CAIDI refers to the Customer Average Interruption Duration Index. This index is defined as the customer average interruption duration for customers interrupted during the year. CAIDI is calculated by taking the total customer hours of interruptions divided by total customer interruptions.

IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

ATCO Electric Yukon’s 2021 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	1.970	1.300
SAIDI	2.810	2.090
CAIDI	1.430	1.610
IOR	99.97%	99.98%

Health, Safety and Environment Performance

ATCO Electric Yukon's 2021 Health, Safety and the Environment Performance measures as follows:

Worker Lost Time Frequency	0
Worker Lost Time Severity	0
Contractor Lost Time Incidents	0
Preventable Vehicle Incident Frequency	0
Number of Reportable Releases	3

Financial Performance

The table below notes a number of highlights from ATCO Electric Yukon's 2021 Approved 2016-2017 Compliance Filing as well as a number of other 2021 Financial Performance indicators.

Regulated Return on Equity (ROE)	12.06%
Net Rate Base (\$000's)	\$109,463
Average Inventory (\$000's)	\$2,584
Capital Additions (\$000's)	\$10,558
Customers per Employee	309
Sales (MW.h) per Employee	5,685
Total labour expense per Customer	\$359
Ave. Consumption per Res. Customer (MW.h)	11.38
Ave. Consumption per Comm. Customer (MW.h)	51.57

ATCO Electric

YUKON

April 23, 2021

Ms. Deana Lemke
Executive Assistant
Yukon utilities Board
P.O. Box 31728
Whitehorse, Yukon Y1A 6L3

Dear Ms. Lemke:

Re: ATCO Electric Yukon 2020 Key Performance Indicators

Please find attached the 2020 Key performance Indicators for ATCO Electric Yukon.

If you have any questions, please contact the undersigned at (867) 633-7080.

Yours truly,



Bill Cullen PLT
Manager
ATCO Electric Yukon

Encl.



Report to the Yukon Utilities Board

2020

Key Performance Indicators

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**ATCO Electric Yukon
2020 Generation Performance**

Plant	2020	CUL Number	Unit Size (kW)	Engine Hours	Actual Generation (kWh)	Total Available Generation (kWh)	Unit Availability	Capacity Factor	Operating Factor
Beaver Creek	Unit #1	CUL585	285	4,808	732,632	1,370,280	96.3%	55.5%	54.7%
	Unit #2	CUL547	365	2,540	585,104	927,100	95.3%	66.2%	28.9%
	Unit #3	CUL354	400	1,667	493,354	666,800	92.8%	79.7%	19.0%
Carmacks	Unit #1	CUL310	1,600	81	74,459	129,600	99.5%	57.8%	0.9%
Destruction Bay	Unit #1	CUL467	600	721	277,067	432,600	97.5%	65.7%	8.2%
	Unit #2	CUL592	400	3,494	1,037,205	1,397,600	96.7%	76.8%	39.8%
	Unit #3	CUL584	312	3,965	666,007	1,237,080	96.6%	55.7%	45.1%
Haines Junction	Unit #1	CUL416	1,750	178	106,836	311,500	99.7%	34.4%	2.0%
Old Crow	Unit #1	CUL414	600	2,745	1,005,120	1,647,000	92.8%	65.8%	31.3%
	Unit #2	CUL355	400	1,473	312,722	589,200	82.8%	64.1%	16.8%
	Unit #3	CUL591	680	1,078	412,941	733,040	99.6%	56.6%	12.3%
	Unit #4	CUL586	450	4,106	1,051,003	1,847,700	97.2%	58.5%	46.7%
Pelly Crossing	Unit #1	CUL375	275	9	10	2,475	94.0%	0.4%	0.1%
	Unit #2	CUL470	600	34	90	20,400	99.6%	0.4%	0.4%
	Unit #3	CUL405	300	32	40	9,600	85.3%	0.5%	0.4%
Ross River	Unit #1	CUL265	1,000	173	90,826	173,000	98.1%	53.5%	2.0%
Stewart Crossing	Unit #3	CUL186	150	47	498	7,050	92.3%	7.7%	0.5%
Teslin	Unit #1	CUL376	1,500	106	67,492	159,000	99.7%	42.6%	1.2%
Watson Lake	Unit #1	CUL422	800	4,187	2,624,400	3,349,600	82.9%	94.5%	47.7%
	Unit #2	CUL595	895	6,023	3,734,400	5,390,585	96.9%	71.5%	68.6%
	Unit #3	CUL601	1,350	4,430	3,408,000	5,980,500	99.2%	57.4%	50.4%
	Unit #4	CUL545	1,450	2,881	2,601,600	4,177,450	94.3%	66.0%	32.8%
	Unit #5	CUL466	650	1,680	820,800	1,092,000	93.4%	80.4%	19.1%
	Unit #6	CUL423	800	2,561	1,579,200	2,048,800	83.4%	92.4%	29.2%
Swift River	Unit #1	CUL596	100	7,373	203,599	737,300	97.3%	28.4%	83.9%
	Unit #2	CUL544	88	1,424	46,276	125,312	95.1%	38.8%	16.2%
Fish Lake	Unit #1	CUL542	815	8,639	5,033,664	7,040,581	99.3%	71.5%	98.3%
	Unit #2	CUL108	600	54	25,200	32,250	0.6%	78.1%	0.6%

The following factors were measured

Unit Size:	This is the generator capacity in kW.
Engine Hours:	This is the number of hours the generator was on-line.
Actual Generation:	This is the amount of real power (energy) that the generating unit produced for the year in kW.h
Total Available Generation:	This is the amount of real power (energy) that the generating unit could have produced based on the hours the generator was on-line during the year.
Unit Availability:	This is defined as the number of hours the generator is available for production divided by the hours in the period. This factor is displayed in percentile and is useful in monitoring the overall reliability of the machine without regard to whether it was available when it was most needed.
Capacity Factor:	This is defined as the actual energy produced divided by the amount of energy the unit had the potential to produce for the year. Displayed as a percentile, it is useful as an indication of the utilization of the generator especially in terms of providing energy (kW.h).
Operating Factor:	This is defined as the hours the generator was on-line divided by the total hours in the year. Displayed as a percentile, this factor is useful in monitoring how much the machine was used without regard to its defined benefit such as energy production (kW.h) or capacity factor.

**ATCO Electric Yukon
Summary of Customers, Energy Sales and Revenue**

Line No.	Description	Actual 2013	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Actual 2020
1	Residential								
2	Customers (average during year)	14,194	14,409	14,631	14,858	15,114	15,430	15,775	16,155
3	Sales in MWh	148,780	147,133	148,605	151,351	165,654	167,596	166,455	185,235
4	MWh sales per customer	10.5	10.2	10.2	10.2	11.0	10.9	10.6	11.5
5	Revenue (\$000s)	21,070	20,629	20,839	21,452	23,262	23,491	23,506	25,960
6	Cents per KWh	14.16	14.01	14.02	14.17	14.04	14.02	14.12	14.01
7	Commercial								
8	Customers (average during year)	2,918	2,938	2,988	3,000	3,036	3,095	3,145	3,178
9	Sales in MWh	159,322	154,709	155,346	157,662	165,924	168,285	168,680	163,933
10	MWh sales per customer	54.6	52.7	52.0	52.6	54.6	54.4	53.6	51.6
11	Revenue (\$000s)	27,305	25,509	25,534	25,798	27,102	27,353	27,589	27,110
12	Cents per KWh	16.51	16.49	16.44	16.36	16.33	16.25	16.36	16.54
13	Street lights								
14	Sales in MWh	3,719	3,765	3,886	3,923	3,942	3,951	3,876	3,889
15	Revenue (\$000s)	961	962	992	997	1,009	1,021	1,014	1,037
16	Cents per KWh	25.84	25.54	25.52	25.42	25.59	25.85	26.17	26.66
17	Sentinel lights								
18	Sales in MWh	551	544	519	496	495	486	480	452
19	Revenue (\$000s)	145	142	138	133	132	130	128	121
20	Cents per KWh	26.33	26.05	26.58	26.71	26.66	26.76	26.59	26.84
21	Total Company - Retail - Primary								
22	Customers	17,112	17,347	17,619	17,858	18,150	18,525	18,919	19,334
23	Sales in MWh	312,372	306,272	308,356	313,432	336,016	340,318	339,491	353,508
24	Revenue (\$000s)	48,481	47,241	47,503	48,380	51,504	51,995	52,237	54,228
25	Cents/KWh	15.52	15.42	15.41	15.44	15.33	15.28	15.39	15.34
26	Secondary Sales								
27	Customers (average during year)	1	2	3	3	5	5	5	5
28	Sales in MWh	3,959	5,415	7,030	4,835	8,385	258	1	479
29	MWh sales per customer	1,979.5	2,707.5	2,812.0	1,511.0	1,705.4	51.6	0.1	97.5
30	Revenue (\$000s)	336	474	532	296	553	21	0	34
31	Cents per KWh	8.49	8.75	7.57	6.13	6.59	7.99	8.37	7.07
32	Wholesale Sales								
33	Customers (average during year)	2	2	2	2	2	2	2	2
34	Sales in MWh	361	494	430	548	584	636	693	704
35	MWh sales per customer	180.7	247.0	215.0	273.8	292.1	317.9	346.3	351.9
36	Revenue (\$000s)	30	41	36	45	48	53	57	58
37	Cents per KWh	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30
38	Total Company								
39	Customers	17,116	17,351	17,624	17,863	18,157	18,532	18,926	19,341
40	Sales in MWh	316,692	312,181	315,816	318,815	344,985	341,212	340,184	354,691
41	Revenue (\$000s)	48,847	47,756	48,071	48,722	52,106	52,068	52,295	54,320
42	Cents/KWh	15.42	15.30	15.22	15.28	15.10	15.26	15.37	15.31
43	Retail Revenues	48,847	47,756	48,071	48,722	52,106	52,068	52,295	54,320
44	YEC Revenue Shortfall (Rider J + Rider R1)	5,829	6,259	5,266	5,273	6,487	8,680	8,920	17,028
	Rider R	1,634	3,672	4,139	3,792	5,349	5,363	5,259	5,759
45	TOTAL REVENUES	56,310	57,687	57,476	57,787	63,942	66,111	66,474	77,107

**ATCO Electric Yukon
Schedule of Energy Balances and Losses
(MW.h)**

Line No.	Description	Actual 2013	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Actual 2020
1	Sales and Losses								
2	Total energy sales - MWh	316,687	312,182	315,816	318,815	344,985	341,212	340,184	354,691
3	Losses and company used - MWh	20,191	19,880	19,019	17,535	18,871	19,919	18,265	19,854
4	Losses -%	6.4%	6.4%	6.0%	5.5%	5.5%	5.8%	5.4%	5.6%
5	Total generation and purchases (MWh)	<u>336,878</u>	<u>332,062</u>	<u>334,835</u>	<u>336,350</u>	<u>363,856</u>	<u>361,131</u>	<u>358,450</u>	<u>374,545</u>
6	Sources - MWh								
7	Hydro generation	3,687	10,247	9,180	8,051	7,103	5,458	4,964	5,059
8	Hydro grid standby diesel generation	3	66	41	44	91	111	185 **	346
9	Diesel generation	21,302	21,050	20,623	20,837	22,069	22,024	21,810 **	21,715
10	Purchases	<u>311,886</u>	<u>300,699</u>	<u>304,991</u>	<u>307,418</u>	<u>334,593</u>	<u>333,538</u>	<u>331,491</u>	<u>347,426</u>
11		<u>336,878</u>	<u>332,062</u>	<u>334,835</u>	<u>336,350</u>	<u>363,856</u>	<u>361,131</u>	<u>358,450</u>	<u>374,545</u>
12	Sources - %								
13	Hydro generation	1.1%	3.1%	2.8%	2.4%	2.0%	1.5%	1.4%	1.4%
14	Diesel generation	6.3%	6.3%	6.2%	6.2%	6.1%	6.1%	6.1%	5.8%
15	Purchases	<u>92.6%</u>	<u>90.6%</u>	<u>91.1%</u>	<u>91.4%</u>	<u>92.0%</u>	<u>92.4%</u>	<u>92.5%</u>	<u>92.8%</u>
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

** After further review, the 2019 hydro grid diesel generation and diesel generation MWh have been updated.

Reliability Performance

ATCO Electric Yukon tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

CAIDI refers to the Customer Average Interruption Duration Index. This index is defined as the customer average interruption duration for customers interrupted during the year. CAIDI is calculated by taking the total customer hours of interruptions divided by total customer interruptions.

IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

ATCO Electric Yukon's 2020 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	2.900	1.490
SAIDI	4.790	2.520
CAIDI	1.650	1.690
IOR	99.95%	99.97%

Health, Safety and Environment Performance

ATCO Electric Yukon's 2020 Health, Safety and the Environment Performance measures as follows:

Worker Lost Time Frequency	0
Worker Lost Time Severity	0
Contractor Lost Time Incidents	0
Preventable Vehicle Incident Frequency	1.16
Number of Reportable Releases	2

Financial Performance

The table below notes a number of highlights from ATCO Electric Yukon's 2020 Approved 2016-2017 Compliance Filing as well as a number of other 2020 Financial Performance indicators.

Regulated Return on Equity (ROE)	13.19%
Net Rate Base (\$000's)	\$107,486
Average Inventory (\$000's)	\$2,565
Capital Additions (\$000's)	\$11,893
Customers per Employee	302
Sales (MW.h) per Employee	5,546
Total labour expense per Customer	\$324
Ave. Consumption per Res. Customer (MW.h)	11.47
Ave. Consumption per Comm. Customer (MW.h)	51.58

ATCO Electric

YUKON

April 23, 2020

Ms. Deana Lemke
Executive Assistant
Yukon utilities Board
P.O. Box 31728
Whitehorse, Yukon Y1A 6L3

Dear Ms. Lemke:

Re: ATCO Electric Yukon 2019 Key Performance Indicators

Please find attached the 2019 Key performance Indicators for ATCO Electric Yukon.

If you have any questions, please contact the undersigned at (867) 633-7080.

Yours truly,



Bill Cullen PLT
Manager
ATCO Electric Yukon

Encl.



Report to the Yukon Utilities Board

2019

Key Performance Indicators

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1	Operational Performance
	Generation Performance
	Summary of Customers, Energy Sales & Revenue
	Summary of Energy Balance & Losses
	Reliability Performance
2	Health, Safety and Environmental Performance
3	Financial Performance

**ATCO Electric Yukon
2019 Generation Performance**

Plant	2019	CUL Number	Unit Size (kW)	Engine Hours	Actual Generation (kWh)	Total Available Generation (kWh)	Unit Availability	Capacity Factor	Operating Factor
Beaver Creek	Unit #1	CUL585	285	4,513	767,621	1,286,063	99.18%	59.69%	51.51%
	Unit #2	CUL547	365	2,300	552,969	839,391	96.84%	65.88%	26.25%
	Unit #3	CUL354	400	2,097	538,366	838,720	99.62%	64.19%	23.94%
Carmacks	Unit #1	CUL310	1,600	100	53,421	160,640	99.18%	33.26%	1.15%
Destruction Bay	Unit #1	CUL467	600	947	247,962	568,200	99.83%	43.64%	10.81%
	Unit #2	CUL592	400	3,982	1,015,896	1,592,840	95.43%	63.78%	45.46%
	Unit #3	CUL584	315	3,910	708,654	1,231,587	99.29%	57.54%	44.63%
Haines Junction	Unit #1	CUL416	1,750	162	102,330	284,200	100.00%	36.01%	1.85%
Old Crow	Unit #1	CUL414	600	3,379	1,180,903	2,027,400	99.38%	58.25%	38.57%
	Unit #2	CUL355	400	2,973	564,129	1,189,200	89.87%	47.44%	33.94%
	Unit #3	CUL591	680	251	79,367	170,680	99.95%	46.50%	2.87%
	Unit #4	CUL586	450	2,787	756,875	1,254,150	96.75%	60.35%	31.82%
Pelly Crossing	Unit #1	CUL375	275	3	0	825	100.00%	0.00%	0.03%
	Unit #2	CUL470	600	8	30	4,680	100.00%	0.64%	0.09%
	Unit #3	CUL405	300	9	20	2,790	92.32%	0.72%	0.11%
Ross River	Unit #1	CUL265	1,000	14	3,182	13,700	100.00%	23.23%	0.16%
Stewart Crossing	Unit #3	CUL186	150	6	183	855	100.00%	21.40%	0.07%
Teslin	Unit #1	CUL376	1,500	71	25,523	107,100	100.00%	23.83%	0.82%
Watson Lake	Unit #1	CUL422	800	3,522	2,382,000	2,817,600	99.36%	84.54%	40.21%
	Unit #2	CUL595	895	1,902	1,270,800	1,702,290	99.65%	74.65%	21.71%
	Unit #3	CUL352	1,000	3,045	2,508,000	3,045,000	68.76%	82.36%	34.76%
	Unit #4	CUL545	1,450	4,385	4,315,200	6,358,250	90.57%	67.87%	50.06%
	Unit #5	CUL466	650	5,314	2,529,600	3,454,100	96.29%	73.23%	60.66%
	Unit #6	CUL423	800	2,727	1,765,200	2,181,600	99.50%	80.91%	31.13%
Swift River	Unit #1	CUL596	100	2,285	79,055	228,500	97.67%	34.60%	26.08%
	Unit #2	CUL544	88	6,341	185,597	558,008	96.92%	33.26%	72.39%
Fish Lake	Unit #1	CUL542	815	8,624	4,963,518	7,028,356	99.45%	70.62%	98.44%
	Unit #2	CUL108	600	4	1,830	2,400	5.00%	76.25%	0.05%

The following factors were measured

Unit Size:	This is the generator capacity in kW.
Engine Hours:	This is the number of hours the generator was on-line.
Actual Generation:	This is the amount of real power (energy) that the generating unit produced for the year in kW.h
Total Available Generation:	This is the amount of real power (energy) that the generating unit could have produced based on the hours the generator was on-line during the year.
Unit Availability:	This is defined as the number of hours the generator is available for production divided by the hours in the period. This factor is displayed in percentile and is useful in monitoring the overall reliability of the machine without regard to whether it was available when it was most needed.
Capacity Factor:	This is defined as the actual energy produced divided by the amount of energy the unit had the potential to produce for the year. Displayed as a percentile, it is useful as an indication of the utilization of the generator especially in terms of providing energy (kW.h).
Operating Factor:	This is defined as the hours the generator was on-line divided by the total hours in the year. Displayed as a percentile, this factor is useful in monitoring how much the machine was used without regard to its defined benefit such as energy production (kW.h) or capacity factor.

ATCO Electric Yukon
Summary of Customers, Energy Sales and Revenue

Line No.	Description	Actual 2013	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018	Actual 2019
1	Residential							
2	Customers (average during year)	14,194	14,409	14,631	14,858	15,114	15,430	15,775
3	Sales in MWh	148,780	147,133	148,605	151,351	165,654	167,596	166,455
4	MWh sales per customer	10.5	10.2	10.2	10.2	11.0	10.9	10.6
5	Revenue (\$000s)	21,070	20,629	20,839	21,452	23,262	23,491	23,506
6	Cents per KWh	14.16	14.01	14.02	14.17	14.04	14.02	14.12
7	Commercial							
8	Customers (average during year)	2,918	2,938	2,988	3,000	3,036	3,095	3,145
9	Sales in MWh	159,322	154,709	155,346	157,662	165,924	168,285	168,680
10	MWh sales per customer	54.6	52.7	52.0	52.6	54.6	54.4	53.6
11	Revenue (\$000s)	27,305	25,509	25,534	25,798	27,102	27,353	27,589
12	Cents per KWh	16.51	16.49	16.44	16.36	16.33	16.25	16.36
13	Street lights							
14	Sales in MWh	3,719	3,765	3,886	3,923	3,942	3,951	3,876
15	Revenue (\$000s)	961	962	992	997	1,009	1,021	1,014
16	Cents per KWh	25.84	25.54	25.52	25.42	25.59	25.85	26.17
17	Sentinel lights							
18	Sales in MWh	551	544	519	496	495	486	480
19	Revenue (\$000s)	145	142	138	133	132	130	128
20	Cents per KWh	26.33	26.05	26.58	26.71	26.66	26.76	26.59
21	Total Company - Retail - Primary							
22	Customers	17,112	17,347	17,619	17,858	18,150	18,525	18,919
23	Sales in MWh	312,372	306,272	308,356	313,432	336,016	340,318	339,491
24	Revenue (\$000s)	48,481	47,241	47,503	48,380	51,504	51,995	52,237
25	Cents/KWh	15.52	15.42	15.41	15.44	15.33	15.28	15.39
26	Secondary Sales							
27	Customers (average during year)	1	2	3	3	5	5	5
28	Sales in MWh	3,959	5,415	7,030	4,835	8,385	258	1
29	MWh sales per customer	1,979.5	2,707.5	2,812.0	1,511.0	1,705.4	51.6	0.1
30	Revenue (\$000s)	336	474	532	296	553	21	0
31	Cents per KWh	8.49	8.75	7.57	6.13	6.59	7.99	8.37
32	Wholesale Sales							
33	Customers (average during year)	2	2	2	2	2	2	2
34	Sales in MWh	361	494	430	548	584	636	693
35	MWh sales per customer	180.7	247.0	215.0	273.8	292.1	317.9	346.3
36	Revenue (\$000s)	30	41	36	45	48	53	57
37	Cents per KWh	8.30	8.30	8.30	8.30	8.30	8.30	8.30
38	Total Company							
39	Customers	17,116	17,351	17,624	17,863	18,157	18,532	18,926
40	Sales in MWh	316,692	312,181	315,816	318,815	344,985	341,212	340,184
41	Revenue (\$000s)	48,847	47,756	48,071	48,722	52,106	52,068	52,295
42	Cents/KWh	15.42	15.30	15.22	15.28	15.10	15.26	15.37
43	Retail Revenues	48,847	47,756	48,071	48,722	52,106	52,068	52,295
44	YEC Revenue Shortfall (Rider J + Rider R1)	5,829	6,259	5,266	5,273	6,487	8,680	8,920
	Rider R	1,634	3,672	4,139	3,792	5,349	5,363	5,259
45	TOTAL REVENUES	56,310	57,687	57,476	57,787	63,942	66,111	66,474

Reliability Performance

ATCO Electric Yukon tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

CAIDI refers to the Customer Average Interruption Duration Index. This index is defined as the customer average interruption duration for customers interrupted during the year. CAIDI is calculated by taking the total customer hours of interruptions divided by total customer interruptions.

IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

ATCO Electric Yukon's 2019 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	3.81	2.222
SAIDI	6.726	3.807
CAIDI	1.765	1.713
IOR	99.9%	99.9%

Health, Safety and Environment Performance

ATCO Electric Yukon's 2019 Health, Safety and the Environment Performance measures as follows:

Worker Lost Time Frequency	0
Worker Lost Time Severity	0
Contractor Lost Time Incidents	0
Preventable Vehicle Incident Frequency	0
Number of Reportable Releases	3

Financial Performance

The table below notes a number of highlights from ATCO Electric Yukon's 2019 Approved 2016-2017 Compliance Filing as well as a number of other 2019 Financial Performance indicators.

Regulated Return on Equity (ROE)	13.01%
Net Rate Base (\$000's)	\$106,527
Average Inventory (\$000's)	\$2,458
Capital Additions (\$000's)	\$9,982
Customers per Employee	296
Sales (MW.h) per Employee	5,319
Total labour expense per Customer	\$334
Ave. Consumption per Res. Customer (MW.h)	10.55
Ave. Consumption per Comm. Customer (MW.h)	53.64

ATCO Electric

YUKON

April 30, 2019

Ms. Deana Lemke
Executive Assistant
Yukon Utilities Board
P.O. Box 31728
Whitehorse, Yukon Y1A 6L3

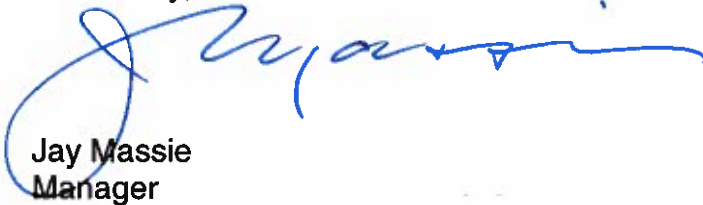
Dear Ms. Lemke:

Re: ATCO Electric Yukon 2018 Key Performance Indicators

Please find attached the 2018 Key Performance Indicators for ATCO Electric Yukon.

If you have any questions, please contact the undersigned at (867) 633-7080.

Yours truly,



Jay Massie
Manager

Encl.



Report to the Yukon Utilities Board

2018

Key Performance Indicators

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**ATCO Electric Yukon
2018 Generation Performance**

Plant	2018	CUL Number	Unit Size (kW)	Engine Hours	Actual Generation (kWh)	Total Available Generation (kWh)	Unit Availability	Capacity Factor	Operating Factor
Beaver Creek	Unit #1	CUL585	285	3,127	561,637	891,167	95.87%	63.02%	35.70%
	Unit #2	CUL547	365	3,798	869,740	1,386,270	75.00%	62.74%	43.36%
	Unit #3	CUL354	400	1,745	486,266	698,000	99.84%	69.67%	19.92%
Carmacks	Unit #1	CUL310	1,600	106	52,727	168,960	99.45%	31.21%	1.21%
Destruction Bay	Unit #1	CUL467	600	370	91,044	222,000	99.70%	41.01%	4.22%
	Unit #2	CUL592	400	5,707	1,359,444	2,282,680	95.63%	59.55%	65.14%
	Unit #3	CUL584	312	2,683	472,521	837,221	87.83%	56.44%	30.63%
Haines Junction	Unit #1	CUL416	1,750	32	21,877	56,000	99.41%	39.07%	0.37%
Old Crow	Unit #1	CUL414	600	2,223	779,935	1,333,800	99.60%	58.47%	25.38%
	Unit #2	CUL355	400	3,377	647,775	1,350,800	99.38%	47.95%	38.55%
	Unit #3	CUL591	680	775	100,579	526,728	99.85%	19.10%	8.84%
	Unit #4	CUL586	450	3,542	1,010,203	1,593,900	95.51%	63.38%	40.43%
Pelly Crossing	Unit #1	CUL375	275	4	90	1,018	96.50%	8.85%	0.04%
	Unit #2	CUL470	600	14	2,720	8,460	96.50%	32.15%	0.16%
	Unit #3	CUL405	300	7	450	2,130	96.50%	21.13%	0.08%
Ross River	Unit #1	CUL265	1,000	68	18,300	68,300	96.11%	26.79%	0.78%
Stewart Crossing	Unit #3	CUL186	150	197	6,834	29,550	100.00%	23.13%	2.25%
Teslin	Unit #1	CUL376	1,500	20	9,956	30,150	75.34%	33.02%	0.23%
Watson Lake	Unit #1	CUL422	800	4,700	3,112,800	3,760,000	99.58%	82.79%	53.65%
	Unit #2	CUL595	895	4,990	3,156,000	4,466,050	99.54%	70.67%	56.96%
	Unit #3	CUL352	1,000	2,079	1,687,200	2,079,000	99.81%	81.15%	23.73%
	Unit #4	CUL545	1,450	3,858	3,823,200	5,594,100	58.56%	68.34%	44.04%
	Unit #5	CUL466	650	3,504	1,640,400	2,277,600	99.68%	72.02%	40.00%
	Unit #6	CUL423	800	3,279	2,067,600	2,623,200	99.70%	78.82%	37.43%
Swift River	Unit #1	CUL596	100	3,833	139,274	383,300	99.65%	36.34%	43.76%
	Unit #2	CUL544	88	4,944	130,181	435,072	99.54%	29.92%	56.44%
Fish Lake	Unit #1	CUL542	815	8,645	5,364,042	7,045,471	99.95%	76.13%	98.68%
	Unit #2	CUL108	600	194	94,080	116,550	2.22%	80.72%	2.22%

The following factors were measured

Unit Size:	This is the generator capacity in kW.
Engine Hours:	This is the number of hours the generator was on-line.
Actual Generation:	This is the amount of real power (energy) that the generating unit produced for the year in kW.h
Total Available Generation:	This is the amount of real power (energy) that the generating unit could have produced based on the hours the generator was on-line during the year.
Unit Availability:	This is defined as the number of hours the generator is available for production divided by the hours in the period. This factor is displayed in percentile and is useful in monitoring the overall reliability of the machine without regard to whether it was available when it was most needed.
Capacity Factor:	This is defined as the actual energy produced divided by the amount of energy the unit had the potential to produce for the year. Displayed as a percentile, it is useful as an indication of the utilization of the generator especially in terms of providing energy (kW.h).
Operating Factor:	This is defined as the hours the generator was on-line divided by the total hours in the year. Displayed as a percentile, this factor is useful in monitoring how much the machine was used without regard to its defined benefit such as energy production (kW.h) or capacity factor.

ATCO Electric Yukon
Summary of Customers, Energy Sales and Revenue

Line No.	Description	Actual 2012	Actual 2013	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018
1	Residential							
2	Customers (average during year)	13,857	14,194	14,409	14,631	14,858	15,114	15,430
3	Sales in MWh	150,350	148,780	147,133	148,605	151,351	165,654	167,596
4	MWh sales per customer	10.9	10.5	10.2	10.2	10.2	11.0	10.9
5	Revenue (\$000s)	21,611	21,070	20,629	20,839	21,452	23,262	23,491
6	Cents per KWh	14.37	14.16	14.01	14.02	14.17	14.04	14.02
7	Commercial							
8	Customers (average during year)	2,841	2,918	2,938	2,988	3,000	3,036	3,095
9	Sales in MWh	159,562	159,322	154,709	155,346	157,662	165,924	168,285
10	MWh sales per customer	56.2	54.6	52.7	52.0	52.6	54.6	54.4
11	Revenue (\$000s)	26,583	27,305	25,509	25,534	25,798	27,102	27,353
12	Cents per KWh	16.66	16.51	16.49	16.44	16.36	16.33	16.25
13	Street lights							
14	Sales in MWh	3,771	3,719	3,765	3,886	3,923	3,942	3,951
15	Revenue (\$000s)	976	961	962	992	997	1,009	1,021
16	Cents per KWh	25.87	25.84	25.54	25.52	25.42	25.59	25.85
17	Sentinel lights							
18	Sales in MWh	560	551	544	519	496	495	486
19	Revenue (\$000s)	149	145	142	138	133	132	130
20	Cents per KWh	26.54	26.33	26.05	26.58	26.71	26.66	26.76
21	Total Company - Retail - Primary							
22	Customers	16,698	17,112	17,347	17,619	17,858	18,150	18,525
23	Sales in MWh	314,243	312,372	306,272	308,356	313,432	336,016	340,318
24	Revenue (\$000s)	49,319	48,481	47,241	47,503	48,380	51,504	51,995
25	Cents/KWh	15.52	15.52	15.42	15.41	15.44	15.33	15.28
26	Secondary Sales							
27	Customers (average during year)	15	1	2	3	3	5	5
28	Sales in MWh	1,993	3,959	5,415	7,030	4,835	8,385	258
29	MWh sales per customer	132.9	1,979.5	2,707.5	2,812.0	1,511.0	1,705.4	51.6
30	Revenue (\$000s)	164	336	474	532	296	553	21
31	Cents per KWh	8.23	8.49	8.75	7.57	6.13	6.59	7.99
32	Wholesale Sales							
33	Customers (average during year)	2	2	2	2	2	2	2
34	Sales in MWh	338	361	494	430	548	584	636
35	MWh sales per customer	169.0	180.7	247.0	215.0	273.8	292.1	317.9
36	Revenue (\$000s)	28	30	41	36	45	48	53
37	Cents per KWh	8.30	8.30	8.30	8.30	8.30	8.30	8.30
38	Total Company							
39	Customers	16,715	17,116	17,351	17,624	17,863	18,157	18,532
40	Sales in MWh	316,574	316,692	312,181	315,816	318,815	344,985	341,212
41	Revenue (\$000s)	49,511	48,847	47,756	48,071	48,722	52,106	52,068
42	Cents/KWh	15.47	15.42	15.30	15.22	15.28	15.10	15.26
43	Retail Revenues	49,511	48,847	47,756	48,071	48,722	52,106	52,068
44	YEC Revenue Shortfall (Rider J + Rider R1)	1,437	5,829	6,259	5,266	5,273	6,487	8,680
	Rider R		1,634	3,672	4,139	3,792	5,349	5,363
45	TOTAL REVENUES	50,948	56,310	57,687	57,476	57,787	63,942	66,111

Reliability Performance

ATCO Electric Yukon tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

CAIDI refers to the Customer Average Interruption Duration Index. This index is defined as the customer average interruption duration for customers interrupted during the year. CAIDI is calculated by taking the total customer hours of interruptions divided by total customer interruptions.

IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

ATCO Electric Yukon's 2018 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	2.846	2.253
SAIDI	4.742	4.263
CAIDI	1.67	1.892
IOR	99.946%	99.951%

Health, Safety and Environment Performance

ATCO Electric Yukon's 2018 Health, Safety and the Environment Performance measures as follows:

Worker Lost Time Frequency	0
Worker Lost Time Severity	0
Contractor Lost Time Incidents	0
Preventable Vehicle Incident Frequency	0
Number of Reportable Releases	1

Financial Performance

The table below notes a number of highlights from ATCO Electric Yukon's 2018 Approved 2016-2017 Compliance Filing as well as a number of other 2018 Financial Performance indicators.

Regulated Return on Equity (ROE)	12.64%
Net Rate Base (\$000's)	\$105,377
Average Inventory (\$000's)	\$2,386
Capital Additions (\$000's)	\$11,159
Customers per Employee	290
Sales (MW.h) per Employee	5,335
Total labour expense per Customer	\$341
Ave. Consumption per Res. Customer (MW.h)	10.86
Ave. Consumption per Comm. Customer (MW.h)	54.37

ATCO *Electric*

YUKON

April 30, 2018

Ms. Deana Lemke
Executive Assistant
Yukon Utilities Board
P.O. Box 31728
Whitehorse, Yukon Y1A 6L3

Dear Ms. Lemke:

Re: ATCO Electric Yukon Key Performance Indicators

Please find attached the 2017 Key Performance Indicators for ATCO Electric Yukon.

If you have any questions, please contact the undersigned at (867) 633-7080.

Yours sincerely,



Jay Massie
Manager

Encl.



Report to the Yukon Utilities Board

2017

Key Performance Indicators

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	Generation Performance
	Summary of Customers, Energy Sales & Revenue
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**ATCO Electric Yukon
2017 Generation Performance**

Plant	2017	CUL Number	Unit Size (kW)	Engine Hours	Actual Generation (kWh)	Total Available Generation (kWh)	Unit Availability	Capacity Factor	Operating Factor
Beaver Creek	Unit #1	CUL585	285	2,902	549,701	827,099	99.04%	66.46%	33.04%
	Unit #2	CUL547	365	5,293	1,199,411	1,931,945	98.06%	62.08%	60.26%
	Unit #3	CUL354	400	1,373	182,361	549,200	99.95%	33.20%	15.63%
Carmacks	Unit #1	CUL310	1,600	79	42,724	125,760	99.45%	33.97%	0.89%
Destruction Bay	Unit #1	CUL467	600	1,532	374,721	919,200	74.87%	40.77%	17.44%
	Unit #2	CUL592	400	4,239	911,248	1,695,640	98.26%	53.74%	48.26%
	Unit #3	CUL584	315	2,880	471,819	907,169	93.65%	52.01%	32.79%
Haines Junction	Unit #1	CUL416	1,750	16	9,226	28,700	99.41%	32.15%	0.19%
Old Crow	Unit #1	CUL414	600	2,772	936,828	1,663,200	94.04%	56.33%	31.56%
	Unit #2	CUL355	400	2,757	519,940	1,102,800	97.26%	47.15%	31.39%
	Unit #3	CUL591	680	95	26,480	64,600	99.12%	40.99%	1.08%
	Unit #4	CUL586	450	3,696	1,042,001	1,663,200	97.48%	62.65%	42.08%
Pelly Crossing	Unit #1	CUL375	275	8	660	2,090	96.16%	31.58%	0.09%
	Unit #2	CUL470	600	9	1,910	5,640	96.78%	33.87%	0.11%
	Unit #3	CUL405	300	65	5,360	19,410	100.00%	27.61%	0.74%
Ross River	Unit #1	CUL265	1,000	55	18,620	54,500	96.11%	34.17%	0.62%
Stewart Crossing	Unit #3	CUL186	150	35	505	5,220	100.00%	9.67%	0.40%
Teslin	Unit #1	CUL376	1,500	51	17,533	76,200	99.58%	23.01%	0.58%
Watson Lake	Unit #1	CUL422	800	5,563	3,511,200	4,450,400	94.31%	78.90%	63.33%
	Unit #2	CUL595	895	4,115	2,488,800	3,682,925	96.76%	67.58%	46.85%
	Unit #3	CUL352	1,000	1,460	1,176,000	1,460,000	95.90%	80.55%	16.62%
	Unit #4	CUL545	1,450	4,684	4,651,200	6,791,800	98.53%	68.48%	53.32%
	Unit #5	CUL466	650	4,318	2,020,800	2,806,700	91.62%	72.00%	49.16%
	Unit #6	CUL423	800	2,153	1,401,600	1,722,400	59.26%	81.37%	24.51%
Swift River	Unit #1 (Old)	CUL460	90	4,686	164,595	421,740	52.32%	39.03%	53.35%
	Unit #1 (New)	CUL596	100	1,168	53,739	116,800	43.01%	46.01%	13.30%
	Unit #2	CUL544	88	2,727	76,774	239,976	100.00%	31.99%	31.05%
Fish Lake	Unit #1	CUL542	815	7,678	5,930,480	6,257,163	88.20%	94.78%	87.40%
	Unit #2	CUL108	600	2,796	1,172,640	1,677,600	33.26%	69.90%	31.83%

The following factors were measured:

Unit Size:	This is the generator capacity in kW.
Engine Hours:	This is the number of hours the generator was on-line.
Actual Generation:	This is the amount of real power (energy) that the generating unit produced for the year in kW.h
Total Available Generation:	This is the amount of real power (energy) that the generating unit could have produced based on the hours the generator was on-line during the year.
Unit Availability:	This is defined as the number of hours the generator is available for production divided by the hours in the period. This factor is displayed in percentile and is useful in monitoring the overall reliability of the machine without regard to whether it was available when it was most needed.
Capacity Factor:	This is defined as the actual energy produced divided by the amount of energy the unit had the potential to produce for the year. Displayed as a percentile, it is useful as an indication of the utilization of the generator especially in terms of providing energy (kW.h).
Operating Factor:	This is defined as the hours the generator was on-line divided by the total hours in the year. Displayed as a percentile, this factor is useful in monitoring how much the machine was used without regard to its defined benefit such as energy production (kW.h) or capacity factor.

ATCO Electric Yukon
Summary of Customers, Energy Sales and Revenue

Line No.	Description	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Actual 2015	Actual 2016	Actual 2017
1	Residential							
2	Customers (average during year)	13,482	13,857	14,194	14,409	14,631	14,858	15,114
3	Sales in MWh	141,696	150,350	148,780	147,133	148,605	151,351	165,654
4	MWh sales per customer	10.5	10.9	10.5	10.2	10.2	10.2	11.0
5	Revenue (\$000s)	18,928	21,611	21,070	20,629	20,839	21,452	23,262
6	Cents per KWh	13.36	14.37	14.16	14.01	14.02	14.17	14.04
7	Commercial							
8	Customers (average during year)	2,774	2,841	2,918	2,938	2,988	3,000	3,036
9	Sales in MWh	150,591	159,562	159,322	154,709	155,346	157,662	165,924
10	MWh sales per customer	54.3	56.2	54.6	52.7	52.0	52.6	54.6
11	Revenue (\$000s)	23,374	26,583	27,305	25,509	25,534	25,798	27,102
12	Cents per KWh	15.52	16.66	16.51	16.49	16.44	16.36	16.33
13	Street lights							
14	Sales in MWh	3,598	3,771	3,719	3,765	3,886	3,923	3,942
15	Revenue (\$000s)	881	976	961	962	992	997	1,009
16	Cents per KWh	24.47	25.87	25.84	25.54	25.52	25.42	25.59
17	Sentinel lights							
18	Sales in MWh	581	560	551	544	519	496	495
19	Revenue (\$000s)	144	149	145	142	138	133	132
20	Cents per KWh	24.73	26.54	26.33	26.05	26.58	26.71	26.66
21	Total Company - Retail - Primary							
22	Customers	16,256	16,698	17,112	17,347	17,619	17,858	18,150
23	Sales in MWh	296,466	314,243	312,372	306,272	308,356	313,432	336,016
24	Revenue (\$000s)	43,327	49,319	48,481	47,241	47,503	48,380	51,504
25	Cents/KWh	14.62	15.52	15.52	15.42	15.41	15.44	15.33
26	Secondary Sales							
27	Customers (average during year)	15	15	1	2	3	3	5
28	Sales in MWh	552	1,993	3,959	5,415	7,030	4,835	8,385
29	MWh sales per customer	36.8	132.9	1,979.5	2,707.5	2,812.0	1,511.0	1,705.4
30	Revenue (\$000s)	41	164	336	474	532	296	553
31	Cents per KWh	7.43	8.23	8.49	8.75	7.57	6.13	6.59
32	Wholesale Sales							
33	Customers (average during year)	2	2	2	2	2	2	2
34	Sales in MWh	427	338	361	494	430	548	584
35	MWh sales per customer	213.5	169.0	180.7	247.0	215.0	273.8	292.1
36	Revenue (\$000s)	38	28	30	41	36	45	48
37	Cents per KWh	8.80	8.30	8.30	8.30	8.30	8.30	8.30
38	Total Company							
39	Customers	16,273	16,715	17,116	17,351	17,624	17,863	18,157
40	Sales in MWh	297,445	316,574	316,692	312,181	315,816	318,815	344,985
41	Revenue (\$000s)	43,406	49,511	48,847	47,756	48,071	48,722	52,106
42	Cents/KWh	14.59	15.47	15.42	15.30	15.22	15.28	15.10
43	Retail Revenues	43,406	49,511	48,847	47,756	48,071	48,722	52,106
44	YEC Revenue Shortfall (Rider J + Rider R1)	2,479	1,437	5,829	6,259	5,266	5,273	6,487
	Rider R			1,634	3,672	4,139	3,792	5,349
45	TOTAL REVENUES	45,885	50,948	56,310	57,687	57,476	57,787	63,942

Reliability Performance

ATCO Electric Yukon tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

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IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

ATCO Electric Yukon's 2017 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	5.48	1.465
SAIDI	10.1	4.456
CAIDI	1.84	3.042
IOR	99.885%	99.949%

Health, Safety and Environment Performance

ATCO Electric Yukon's 2017 Health, Safety and the Environment Performance measures as follows:

Worker Lost Time Frequency	4.17
Worker Lost Time Severity	18.78
Contractor Lost Time Incidents	1
Preventable Vehicle Incident Frequency	8.35
Number of Reportable Releases	1

Financial Performance

The table below notes a number of highlights from ATCO Electric Yukon's 2017 Approved 2016-2017 Compliance Filing as well as a number of other 2017 Financial Performance indicators.

Regulated Return on Equity (ROE)	12.73%
Net Rate Base (\$000's)	\$102,734
Average Inventory (\$000's)	\$2,215
Capital Additions (\$000's)	\$8,393
Customers per Employee	284
Sales (MW.h) per Employee	5,394
Total labour expense per Customer	\$322
Ave. Consumption per Res. Customer (MW.h)	10.96
Ave. Consumption per Comm. Customer (MW.h)	54.65

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

Direction No. 16, Reference: Paragraph 278

System Improvement Projects

	2018	2019	2020	2021	2022	2023	2024	Annual Program
System Performance - Preventative ⁽¹⁾	2	2	3	2	4	5	7	2
System Performance - Corrective ⁽²⁾	2	-	1	-	-	1	1	-
Life Extension	3	-	6	2	4	2	3	1
System Replacement	2	1	1	-	2	-	1	4
Customer Driven and/or Assigned	1	3	3	4	5	1	4	-

1 Preventative System Performance

Preventative system performance projects are determined based on operational drivers and address potential system imbalance, voltage or capacity issues before degradation of system or outages occur.

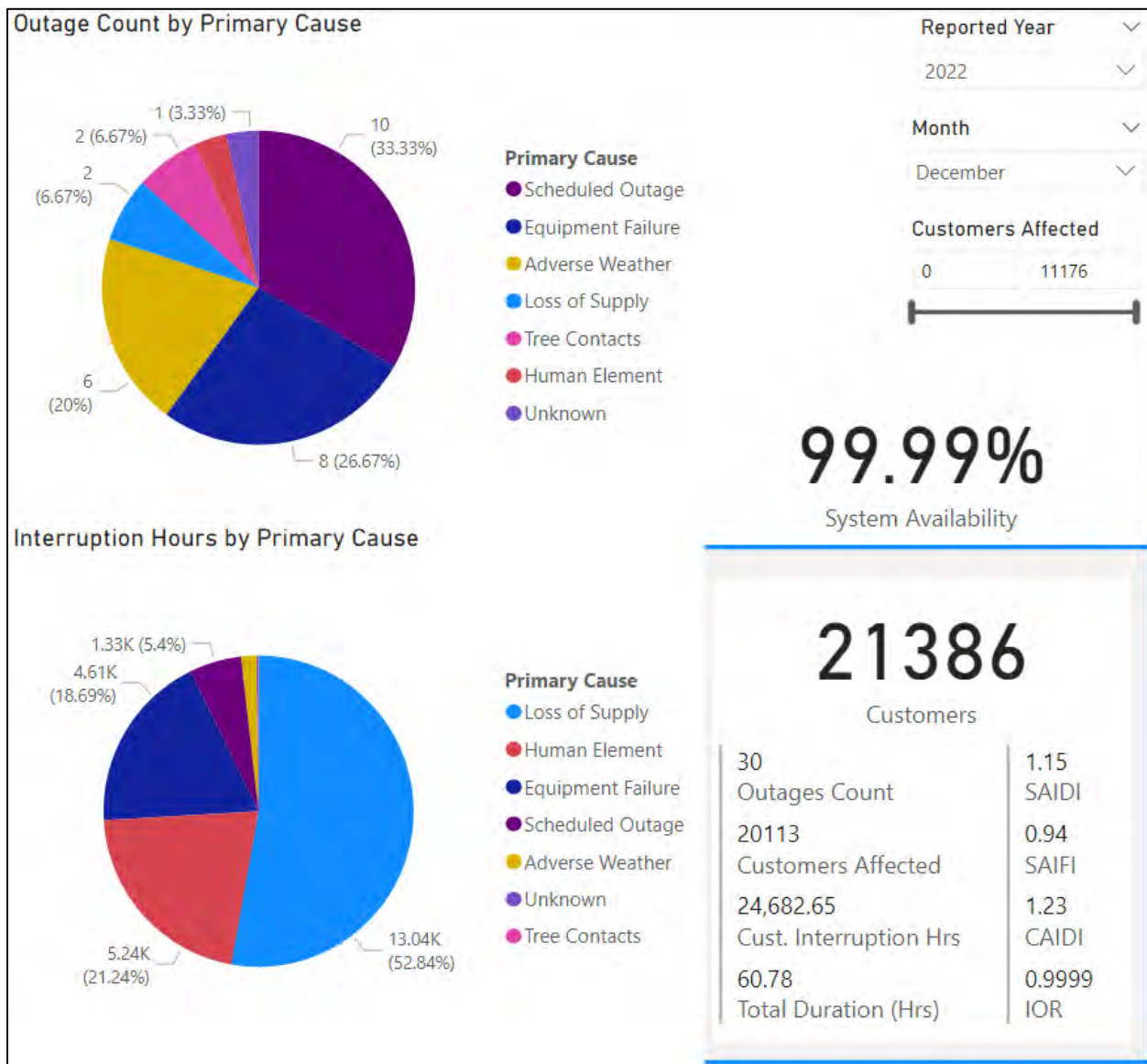
Project Name	I/S Year	Driver
Annual Right of Way Widening	Annual	Feeder-specific stats are used for ROW selection
General Clearance Upgrades/Fixes	Annual	Conductor clearance concerns, trespass issues
AEY 102 Lambert Encroachment	2022	Clearance issue
3 Phase Hotsprings Rd	2020	System balance
AEY Old Crow Volt Issues-Loop	2019	System voltage
AEY 25kV A.Hwy Hamilton Tie	2018	System alternative feed
Alaska Highway to Mcintyre Tie Stage 2	2019	System alternative feed
Teslin Substn Metering	2018	System power quality
AEY SCADA Swtch at Pinerdg	2022	Operational capability
Carcross Road Voltage Improvements	2020	System voltage
Riverdale Load Sectionalizing	2020	Operational capability
AEY Hamilton to Alaska Highway 25kV Tie	2021	System alternative feed
AEY New Subst Mayo Rd	2021	Capacity
AEY Voltage Issues Gold Road	2022	System voltage
New Substation Mayo Road	2023	Capacity
Reconductor Mayo Rd Mainline - Stage 3	2022	Protection and capacity
AEY Dogwood voltage improvement	2023	Voltage
AEY DWCI - New 12.5kV substation	2024	Capacity
AEY New Substation Whistle Bend - Leota	2024	Capacity
AEY SCADA Pineridge Switch	2023	Operational capability
AEY Voltage Improvement Destruction Bay	2023	Voltage
AEY Hillcrest Voltage Improvement	2023	Voltage
AEY Pelly Crossing Voltage Improvement	2024	Voltage
Power System Assessment - YEC and AEY	2024	Capacity
AEY 6L19 voltage improvement	2024	Voltage
AEY Carcross PQ monitoring	2024	System power quality
Old Crow voltage improvement - reconductor	2024	Voltage

2 Corrective System Performance

Corrective system performance projects address system performance issues.

Project Name	I/S Year	KPI	Post Improvement KPI
AEY CCC Rd Rebuild	2018	Outage count S6709 (2015-2018): 8	Outage Count S6709 (2019-2022): 0
AEY Wtsn Lk Vertical Strcts	2018	SAIFI (Watson Lake - 2017 System Wide): 5.25	SAIFI (Watson Lake - 2019 System Wide): 8.9
AEY Cowley Rd Rebuild SKH	2020	Outage count S6711 (2015-2018): 5	Outage Count S6711 (2019-2022): 0
AEY Choutla Long Span Rebuild	2023	SAIFI (5L600, all outages, 2021): 0.19	SAIFI (5L600, all outages, 2023 YTD): 0.00
Watson Lake 5L621 Upgrade	2024	SAIFI (Watson Lake - 2017 System Wide): 5.25	SAIFI (Watson Lake - 2019 System Wide): 8.9

Outage Summary – December 2022



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

Outage Summary - December 2022

Outage ID	Outage Type	Date/Time Reported	Final Restoration Time	Substation	Line	Service Area	Interrupting Device Number	Customers Affected	Fault Address/Location Description	Primary Cause	Primary Cause:Code	Secondary Cause
DIR-SP-1198	Multiple Devices	2022-12-31 17:35	2022-12-31 19:26	S150 Whitehorse	6L11	571 Whitehorse	S150-52-22	3,242	Yukon Energy Miles Canyon rd	Foreign Interference	900.000000000000	Other Foreign Interference
DIR-SP-1196	Single Device	2022-12-31 16:30	2022-12-31 19:25	18 Carmacks	5L605	575 Carmacks	S1320	5	Campbell highway	Adverse Weather	600.000000000000	Wet Snow
DIR-SP-1192	Single Device	2022-12-29 19:40	2022-12-29 21:26	303 Shipyards	4L311	571 Whitehorse	S4597	50	Alley Behind 202	Equipment Failure	500.000000000000	Mechanical Failure
DIR-SP-1193	Single Device	2022-12-29 19:40	2022-12-30 5:01	303 Shipyards	4L311	571 Whitehorse	S9946	97	Alley behind 202	Equipment Failure	500.000000000000	Mechanical Failure
DIR-SP-1194	Single Device	2022-12-29 19:40	2022-12-29 20:58	303 Shipyards	4L311	571 Whitehorse	S1011	297	Alley behind 202	Equipment Failure	500.000000000000	Mechanical Failure
DIR-SP-1195	Single Device	2022-12-29 19:40	2022-12-29 20:58	303 Shipyards	4L311	571 Whitehorse	S1240	150	Alley behind 202	Equipment Failure	500.000000000000	Mechanical Failure
DIR-SP-1191	Single Device	2022-12-29 10:55	2022-12-29 11:45	21 Laberge	5L645	571 Whitehorse	S3945	1	Vista NOrthwestel tower	Adverse Weather	600.000000000000	Wet Snow
DIR-SP-1187	Single Device	2022-12-21 18:54	2022-12-21 21:17	31 Watson Lake	5L621	573 Watson Lake	S7770	3		Adverse Weather	600.000000000000	Other Adverse Weather
DIR-SP-1188	Single Device	2022-12-21 17:13	2022-12-21 20:01	31 Watson Lake	5L621	573 Watson Lake	S2164	40		Adverse Weather	600.000000000000	Other Adverse Weather
DIR-SP-1190	Community Plant	2022-12-21 17:13	2022-12-21 17:15	31 Watson Lake	WL Plant	573 Watson Lake	WL Generation	993	103 Kilowatt Lane	Adverse Weather	600.000000000000	Other Adverse Weather
DIR-SP-1189	Community Plant	2022-12-21 16:38	2022-12-21 16:42	31 Watson Lake	WL Plant	573 Watson Lake	WL Generation	993	103 Kilowatt Lane	Adverse Weather	600.000000000000	Other Adverse Weather
DIR-SP-1186	Community Plant	2022-12-21 16:22	2022-12-21 16:33	31 Watson Lake	WL Plant	573 Watson Lake	WL Generation	993	103 Kilowatt lane	Adverse Weather	600.000000000000	Other Adverse Weather
DIR-SP-1184	Single Device	2022-12-21 2:08	2022-12-21 4:40	6 Porter Creek	4L304	571 Whitehorse	S5791	12	52-12th Ave	Equipment Failure	500.000000000000	Electrical Failure
DIR-SP-1183	Single Device	2022-12-20 20:15	2022-12-20 22:52	6 Porter Creek	4L303	571 Whitehorse	S9402	988	Holly street	Equipment Failure	500.000000000000	Mechanical Failure
DIR-SP-1185	Multiple Devices	2022-12-20 10:04	2022-12-20 17:40	304 Pelly Crossing	5L639	583 Pelly Crossing	PC-52-F1	193		Equipment Failure	500.000000000000	Electrical Failure
DIR-SP-1181	Multiple Devices	2022-12-19 16:32	2022-12-19 20:49	S164 Takhini Switching Station	6L17	571 Whitehorse	S164-52-7	2,845	S164 Takhini Switching Station	Human Element	800.000000000000	Other Human Element
DIR-SP-1182	Single Device	2022-12-16 16:50	2022-12-16 20:30	11 MacRae	5L631	571 Whitehorse	No S#	1	Pelly construction yard	Equipment Failure	500.000000000000	Electrical Failure
DIR-SP-1177	Single Device	2022-12-15 11:00	2022-12-15 11:30	Beaver Creek Plant	3L401	578 Beaver Creek	S6902	14	Mle1202 RV park Alaska Hwy	Tree Contacts	300.000000000000	Tree Growth/Untrimmed Tree
DIR-SP-1260	Single Device	2022-12-15 11:00	2022-12-15 11:45	Beaver Creek Plant	3L401	578 Beaver Creek	S6902	20	1202 RV park, mile1202 Beaver creek	Tree Contacts	300.000000000000	Broken Branch
DIR-SP-1178	Single Device	2022-12-14 12:00	2022-12-14 15:30	New Constabulary	5L615	592 Marsh Lake	No S#	100	Marsh Lake	Scheduled Outage	100.000000000000	
DIR-SP-1180	Single Device	2022-12-13 12:00	2022-12-13 14:00	6 Porter Creek	4L304	571 Whitehorse	No S#	20	Birch St.	Scheduled Outage	100.000000000000	
DIR-SP-1176	Single Device	2022-12-12 19:51	2022-12-12 21:12	21 Laberge	5L645	571 Whitehorse	S1165	20	Old Alaska highway turn off	Unknown	0	
DIR-SP-1179	Single Device	2022-12-10 12:00	2022-12-10 16:00	31 Watson Lake	5L619	590 Lower Post	No S#	110	Watson Lake NorthEast	Scheduled Outage	100.000000000000	
DIR-SP-1173	Single Device	2022-12-09 12:00	2022-12-09 13:10	31 Watson Lake	5L620	573 Watson Lake	S2163	114	Watson Lake	Scheduled Outage	100.000000000000	Construction

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

Outage Summary - December 2022

Outage ID	Outage Type	Date/Time Reported	Faulted Asset Position	Faulted Asset Type	Restoration Details	Comments	Abnormal System Configuration	Duration Manual
DIR-SP-1198	Multiple Devices	2022-12-31 17:35	Overhead	Substation Equipment	S150-52-22 (6L11) restored December 31, 2022 8:04 PM; S6839 (6L18) restored December 31, 2022 8:25 PM; S6840 (6L19) restored December 31, 2022 8:24 PM; S9241 (5L600) restored December 31, 2022 8:26 PM; S9242 (5L601) restored December 31, 2022 8:26 PM; S9567 (6L19) restored December 31, 2022 8:24 PM;	Mylar balloon got tangled up in the powerline, causing the outage.	FALSE	1.850
DIR-SP-1196	Single Device	2022-12-31 16:30	Overhead	Switching Devices		Heavy frost and wind, refused and it held	FALSE	2.917
DIR-SP-1192	Single Device	2022-12-29 19:40	Underground	Connecting Devices		Elbow failed in K mod S9946 causing outage.	FALSE	1.767
DIR-SP-1193	Single Device	2022-12-29 19:40	Underground	Connecting Devices		Elbow failed in K mod S9946 causing outage.	FALSE	9.350
DIR-SP-1194	Single Device	2022-12-29 19:40	Underground	Connecting Devices		Elbow failed in K mod S9946 causing outage.	FALSE	1.300
DIR-SP-1195	Single Device	2022-12-29 19:40	Underground	Connecting Devices		Elbow failed in K mod S9946 causing outage.	FALSE	1.300
DIR-SP-1191	Single Device	2022-12-29 10:55	Overhead	Switching Devices		Frost on line	FALSE	0.833
DIR-SP-1187	Single Device	2022-12-21 18:54	Overhead	Switching Devices		S7700 opened to sectionalize and minimize load pick up in the extreme cold	FALSE	2.383
DIR-SP-1188	Single Device	2022-12-21 17:13	Overhead	Switching Devices		S2164 sectionalized to search for potential fault. No fault found	FALSE	2.800
DIR-SP-1190	Community Plant	2022-12-21 17:13	Substation/Plant	Substation Equipment		Breaker S7242 opened. Frost and snow caused a fault on the line.	FALSE	0.033
DIR-SP-1189	Community Plant	2022-12-21 16:38	Substation/Plant	Substation Equipment		Breaker S7218 opened caused by frost and snow on the line.	FALSE	0.067
DIR-SP-1186	Community Plant	2022-12-21 16:22	Substation/Plant	Substation Equipment		Breaker S7218 opened. Frost and snow caused a fault on the line.	FALSE	0.183
DIR-SP-1184	Single Device	2022-12-21 2:08	Overhead	Connecting Devices		Connections burned off 50kva feeding open wire. When reenergized the load was 396 and 399 amps on the secondary	FALSE	2.533
DIR-SP-1183	Single Device	2022-12-20 20:15	Overhead	Conductors		Broken conductor, wire down on holly street	FALSE	2.617
DIR-SP-1185	Multiple Devices	2022-12-20 10:04	Substation/Plant	Protection Equipment		While returning Pelly Distribution back to the grid, two breakers failed to operate due to extreme cold	FALSE	2.167
DIR-SP-1181	Multiple Devices	2022-12-19 16:32	Substation/Plant		S3431 (4L308) restored December 19, 2022 6:51 PM; S3432 (5L646) restored December 19, 2022 9:49 PM; S3433 (5L647) restored December 19, 2022 9:02 PM; S3434 (5L645) restored December 19, 2022 6:21 PM; S3600 (5L645) restored December 19, 2022 6:50 PM; S8306 (5L628) restored December 19, 2022 6:41 PM;	Tripped on load. Pickup settings not adequately reviewed annually. Possibility growth could have been caught and setting adjusted. Action to annually review all feeder peaks and trip settings.	FALSE	4.283
DIR-SP-1182	Single Device	2022-12-16 16:50	Overhead	Transformer Equipment		Blown 10kva. Replaced with 25	FALSE	3.667
DIR-SP-1177	Single Device	2022-12-15 11:00	Overhead	Conductors			FALSE	0.500
DIR-SP-1260	Single Device	2022-12-15 11:00	Overhead	Line Hardware		Branch broken from tree and hung up in xmer pole switches	FALSE	0.750
DIR-SP-1178	Single Device	2022-12-14 12:00				See SSI-158: Outage required to set 5 new poles for communication clearance	FALSE	3.500
DIR-SP-1180	Single Device	2022-12-13 12:00				See SSI-162: Change out white tag pole	FALSE	2.000
DIR-SP-1176	Single Device	2022-12-12 19:51	Overhead	Switching Devices		Frost	FALSE	1.350
DIR-SP-1179	Single Device	2022-12-10 12:00				See SSI-161: install in line poles as per 108115	FALSE	4.000
DIR-SP-1173	Single Device	2022-12-09 12:00	Overhead	Switching Devices		Outage to set in-line	FALSE	1.167

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Outage ID	Outage Type	Date/Time Reported	Customer Interruption Hours Manual	Created	Major Event	Reported Year	Reported Month
DIR-SP-1198	Multiple Devices	2022-12-31 17:35	5,452.350	2023-01-03 9:29	FALSE	2022	12
DIR-SP-1196	Single Device	2022-12-31 16:30	14.583	2023-01-01 6:06	FALSE	2022	12
DIR-SP-1192	Single Device	2022-12-29 19:40	88.333	2022-12-30 6:14	FALSE	2022	12
DIR-SP-1193	Single Device	2022-12-29 19:40	906.950	2022-12-30 6:14	FALSE	2022	12
DIR-SP-1194	Single Device	2022-12-29 19:40	386.100	2022-12-30 6:14	FALSE	2022	12
DIR-SP-1195	Single Device	2022-12-29 19:40	195.000	2022-12-30 6:14	FALSE	2022	12
DIR-SP-1191	Single Device	2022-12-29 10:55	0.833	2022-12-29 12:02	FALSE	2022	12
DIR-SP-1187	Single Device	2022-12-21 18:54	7.150	2022-12-22 10:42	FALSE	2022	12
DIR-SP-1188	Single Device	2022-12-21 17:13	112.000	2022-12-22 10:42	FALSE	2022	12
DIR-SP-1190	Community Plant	2022-12-21 17:13	33.100	2022-12-22 10:42	FALSE	2022	12
DIR-SP-1189	Community Plant	2022-12-21 16:38	66.200	2022-12-22 10:42	FALSE	2022	12
DIR-SP-1186	Community Plant	2022-12-21 16:22	182.050	2022-12-22 10:42	FALSE	2022	12
DIR-SP-1184	Single Device	2022-12-21 2:08	30.400	2022-12-21 5:12	FALSE	2022	12
DIR-SP-1183	Single Device	2022-12-20 20:15	2,585.267	2022-12-20 23:47	FALSE	2022	12
DIR-SP-1185	Multiple Devices	2022-12-20 10:04	418.167	2022-12-21 9:17	FALSE	2022	12
DIR-SP-1181	Multiple Devices	2022-12-19 16:32	5,243.233	2022-12-20 11:36	FALSE	2022	12
DIR-SP-1182	Single Device	2022-12-16 16:50	3.667	2022-12-20 14:19	FALSE	2022	12
DIR-SP-1177	Single Device	2022-12-15 11:00	7.000	2022-12-16 15:01	FALSE	2022	12
DIR-SP-1260	Single Device	2022-12-15 11:00	15.000	2023-02-01 8:36	FALSE	2022	12
DIR-SP-1178	Single Device	2022-12-14 12:00	350.000	2022-12-17 9:00	FALSE	2022	12
DIR-SP-1180	Single Device	2022-12-13 12:00	40.000	2022-12-17 9:00	FALSE	2022	12
DIR-SP-1176	Single Device	2022-12-12 19:51	27.000	2022-12-13 6:58	FALSE	2022	12
DIR-SP-1179	Single Device	2022-12-10 12:00	440.000	2022-12-17 9:00	FALSE	2022	12
DIR-SP-1173	Single Device	2022-12-09 12:00	133.000	2022-12-09 15:36	FALSE	2022	12

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Outage Summary - December 2022

Outage ID	Outage Type	Date/Time Reported	Final Restoration Time	Substation	Line	Service Area	Interrupting Device Number	Customers Affected	Fault Address/Location Description	Primary Cause	Primary Cause:Code	Secondary Cause
DIR-SP-1175	Single Device	2022-12-09 12:00	2022-12-09 14:00	31 Watson Lake	5L620	573 Watson Lake	No S#	110	Alaska Hwy west of Watson to Junction 37	Scheduled Outage	100.000000000000	
DIR-SP-1172	Multiple Devices	2022-12-08 12:25	2022-12-08 14:23	S150 Whitehorse	6L17	571 Whitehorse	S150-52-22, S6838, S164-52-7	8,899	Whitehorse	Loss of Supply	200.000000000000	
DIR-SP-1174	Single Device	2022-12-07 11:30	2022-12-07 13:30	21 Laberge	5L645	571 Whitehorse	No S#	40	Jackfish bay/Lebarge	Scheduled Outage	100.000000000000	
DIR-SP-1171	Single Device	2022-12-04 14:31	2022-12-04 14:38	23 South McClintock	5L611	592 Marsh Lake	S9576	15	38 Bayview	Scheduled Outage	100.000000000000	Vegetation Management
DIR-SP-1166	Single Device	2022-12-02 12:00	2022-12-02 13:14	21 Laberge	5L645		S1165	15	Old Alaska Hwy	Scheduled Outage	100.000000000000	
DIR-SP-1169	Single Device	2022-12-02 12:00	2022-12-02 14:00	21 Laberge	5L645	571 Whitehorse	No S#	20	Whitehorse west	Scheduled Outage	100.000000000000	
DIR-SP-1167	Single Device	2022-12-01 16:00	2022-12-01 18:00	5 Services	4L315	571 Whitehorse	No S#	5	marwell	Scheduled Outage	100.000000000000	
DIR-SP-1170	Multiple Devices	2022-12-01 14:46	2022-12-01 15:41	17 McIntyre	6L16	571 Whitehorse	S6838	2,955	Mcintyre Sub	Loss of Supply	200.000000000000	Generation Inadvertent

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Outage Summary - December 2022

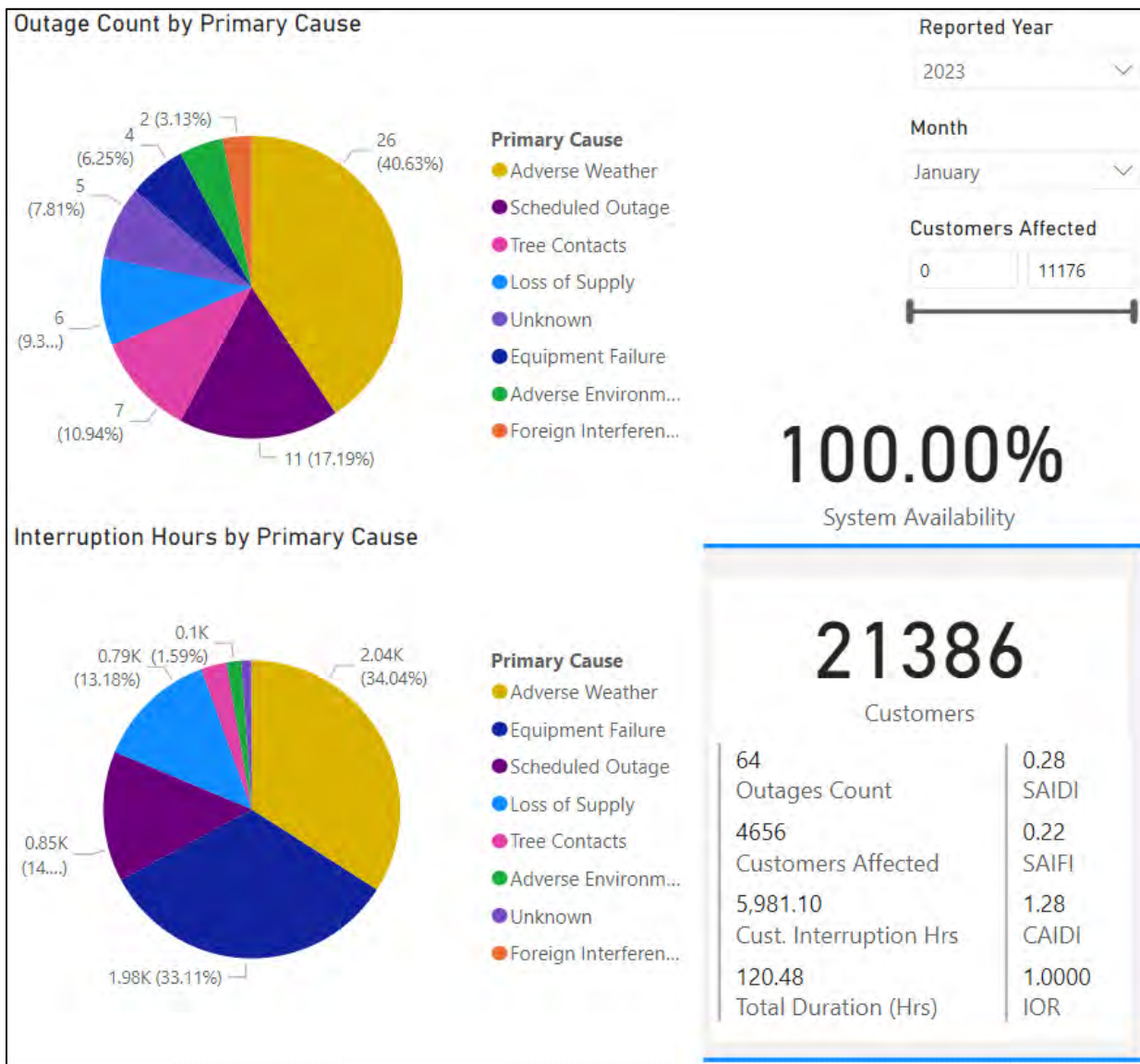
Outage ID	Outage Type	Date/Time Reported	Faulted Asset Position	Faulted Asset Type	Restoration Details	Comments	Abnormal System Configuration	Duration Manual
DIR-SP-1175	Single Device	2022-12-09 12:00				See SSI-160: Outage to install inline pole for project 1070349	FALSE	2.000
DIR-SP-1172	Multiple Devices	2022-12-08 12:25			S3431 (4L308) restored December 8, 2022 2:47 PM; S3432 (5L646) restored December 8, 2022 2:56 PM; S3433 (5L647) restored December 8, 2022 2:43 PM; S3434 (5L645) restored December 8, 2022 3:04 PM; S3600 (5L645) restored December 8, 2022 2:22 PM; S5953 (5L649) restored December 8, 2022 3:17 PM; S6839 (6L18) restored December 8, 2022 3:22 PM; S6840 (6L19) restored December 8, 2022 3:23 PM; S8306 (5L628) restored December 8, 2022 2:20 PM; S8354 (4L305) restored December 8, 2022 3:13 PM; S8358 (4L306) restored December 8, 2022 3:08 PM; S8471 (4L307) restored December 8, 2022 3:12 PM; S9402 (4L303) restored December 8, 2022 2:33 PM; S9403 (4L304) restored December 8, 2022 2:29 PM; S9833 (5L631) restored	Loss of Supply	FALSE	1.967
DIR-SP-1174	Single Device	2022-12-07 11:30				See SSI-159: connect new customer extensions	FALSE	2.000
DIR-SP-1171	Single Device	2022-12-04 14:31	Overhead			Took emergency outage to safely remove tree off primary	FALSE	0.117
DIR-SP-1166	Single Device	2022-12-02 12:00				Planned outage to set poles inline	FALSE	1.233
DIR-SP-1169	Single Device	2022-12-02 12:00				See SSI-157: Outage required to set 2 inline poles for communication clearance issue	FALSE	2.000
DIR-SP-1167	Single Device	2022-12-01 16:00				See SSI-154: set pole	FALSE	2.000
DIR-SP-1170	Multiple Devices	2022-12-01 14:46	Substation/Plant	Plant Equipment	S6838 (6L16) restored 12/1/2022 4:27 PM; S8354 (4L305) restored 12/1/2022 4:39 PM; S8358 (4L306) restored 12/1/2022 4:40 PM; S8471 (4L307) restored 12/1/2022 4:41 PM; S9402 (4L303) restored 12/1/2022 4:37 PM; S9403 (4L304) restored 12/1/2022 4:38 PM;	Loss of supply causing stage to trip.	FALSE	0.917

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Outage ID	Outage Type	Date/Time Reported	Customer Interruption Hours Manual	Created	Major Event	Reported Year	Reported Month
DIR-SP-1175	Single Device	2022-12-09 12:00	220.000	2022-12-10 9:00	FALSE	2022	12
DIR-SP-1172	Multiple Devices	2022-12-08 12:25	10,465.450	2022-12-09 7:41	FALSE	2022	12
DIR-SP-1174	Single Device	2022-12-07 11:30	80.000	2022-12-10 9:00	FALSE	2022	12
DIR-SP-1171	Single Device	2022-12-04 14:31	1.750	2022-12-05 8:40	FALSE	2022	12
DIR-SP-1166	Single Device	2022-12-02 12:00	18.500	2022-12-02 14:28	FALSE	2022	12
DIR-SP-1169	Single Device	2022-12-02 12:00	40.000	2022-12-03 9:00	FALSE	2022	12
DIR-SP-1167	Single Device	2022-12-01 16:00	10.000	2022-12-03 9:00	FALSE	2022	12
DIR-SP-1170	Multiple Devices	2022-12-01 14:46	2,576.500	2022-12-05 7:48	FALSE	2022	12

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Outage ID	Outage Type	Date/Time Reported	Final Restoration Time	Substation	Line	Service Area	Interrupting Device Number	Customers Affected	Fault Address/Location Description	Primary Cause	Primary Cause:Code	Secondary Cause
DIR-SP-1263	Single Device	2023-01-31 16:30	2023-01-31 20:30	6 Porter Creek	4L304	571 Whitehorse	No S#	40	Mcdonald Rd.	Scheduled Outage	100.000000000000	
DIR-SP-1257	Single Device	2023-01-31 13:09	2023-01-31 15:42	31 Watson Lake	5L621	573 Watson Lake	S6186	1		Foreign Interference	900.000000000000	Vehicle
DIR-SP-1258	Community Plant	2023-01-31 13:00	2023-01-31 13:10	Swift River Plant	SR Plant	584 Swift River	SR Generation	19	Swift River Plant	Scheduled Outage	100.000000000000	Maintenance
DIR-SP-1268	Single Device	2023-01-31 13:00	2023-01-31 13:30	Swift River Plant	SR Plant	584 Swift River	No S#	19	Swift River Townsite	Scheduled Outage	100.000000000000	
DIR-SP-1256	Single Device	2023-01-30 17:45	2023-01-30 18:43	21 Laberge	5L645	571 Whitehorse	S6392	1	6 springer road	Unknown	0	
DIR-SP-1253	Single Device	2023-01-26 16:53	2023-01-26 18:20	31 Watson Lake	5L621	573 Watson Lake	S7243	150	Watson Lake	Equipment Failure	500.000000000000	Mechanical Failure
DIR-SP-1262	Community Plant	2023-01-25 20:47	2023-01-25 20:55	Destruction Bay Plant	3L402	577 Destruction Bay	DB-52-F1	162	No fault	Loss of Supply	200.000000000000	Other Loss of Supply
DIR-SP-1254	Single Device	2023-01-25 19:25	2023-01-26 9:12	31 Watson Lake	5L621	573 Watson Lake	S8030	8		Tree Contacts	300.000000000000	Falling Tree
DIR-SP-1252	Single Device	2023-01-25 18:50	2023-01-25 19:05	31 Watson Lake	5L620	591 Upper Liard	S7240	40		Tree Contacts	300.000000000000	Falling Tree
DIR-SP-1250	Single Device	2023-01-25 14:42	2023-01-25 15:18	31 Watson Lake	5L621	573 Watson Lake	S7242	344	Watson Lake	Equipment Failure	500.000000000000	Extreme Wind
DIR-SP-1251	Single Device	2023-01-25 14:42	2023-01-25 17:15	31 Watson Lake	5L621	573 Watson Lake	S2164	60	Watson Lake	Equipment Failure	500.000000000000	Other Equipment Failure
DIR-SP-1261	Single Device	2023-01-25 6:45	2023-01-25 20:10	Destruction Bay Plant	5L623	577 Destruction Bay	S3070	116	G/S S1157	Equipment Failure	500.000000000000	Other Equipment Failure
DIR-SP-1255	Single Device	2023-01-23 12:00	2023-01-23 14:00	21 Laberge	5L645	571 Whitehorse	No S#	1	3 Mile rd Hot Springs	Scheduled Outage	100.000000000000	
DIR-SP-1249	Single Device	2023-01-23 7:35	2023-01-23 9:12	31 Watson Lake	5L620	591 Upper Liard	S8083	1		Tree Contacts	300.000000000000	Falling Tree
DIR-SP-1248	Single Device	2023-01-21 5:43	2023-01-21 7:10	11 MacRae	5L631	571 Whitehorse	S3877	2	57 Arctic drive	Unknown	0	
DIR-SP-1244	Single Device	2023-01-20 23:25	2023-01-21 1:47	23 South McClintock	5L611	592 Marsh Lake	S9569	200	McClintock Sub	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1245	Single Device	2023-01-20 22:23	2023-01-20 23:47	11 MacRae	5L631	571 Whitehorse	No S#	1	13 Buttercup	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1246	Single Device	2023-01-20 17:02	2023-01-20 18:50	301 Carcross	5L600	585 Tagish	S1253	8	Pennycook road	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1247	Single Device	2023-01-20 16:17	2023-01-20 19:15	18 Carmacks	5L606	575 Carmacks	S1233	20	S1233 across from gas station	Unknown	0	
DIR-SP-1239	Single Device	2023-01-20 12:30	2023-01-20 12:40	31 Watson Lake	5L620	573 Watson Lake	S8077	9		Tree Contacts	300.000000000000	Falling Tree
DIR-SP-1238	Single Device	2023-01-20 11:35	2023-01-20 13:10	11 MacRae	5L631	571 Whitehorse	S6569	7	89990 Alaska Hey S	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1235	Single Device	2023-01-20 9:00	2023-01-20 10:31	21 Laberge	5L645	571 Whitehorse	S2045	30	No fault planned outage	Scheduled Outage	100.000000000000	
DIR-SP-1241	Single Device	2023-01-20 9:00	2023-01-20 11:00	21 Laberge	5L645	571 Whitehorse	No S#	30	Boreal Rd.	Scheduled Outage	100.000000000000	
DIR-SP-1237	Single Device	2023-01-19 18:06	2023-01-19 18:38	S150 Whitehorse	6L19	592 Marsh Lake	S9567	385	Squanga Lake	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1234	Single Device	2023-01-19 15:45	2023-01-19 16:27	11 MacRae	5L631	571 Whitehorse	No S#	1	11 Butter cup place	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1236	Single Device	2023-01-19 15:05	2023-01-19 17:43	18 Carmacks	5L605	575 Carmacks	S1320	6	Unknown	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1233	Multiple Devices	2023-01-19 13:01	2023-01-19 14:18	S150 Whitehorse	6L18	571 Whitehorse	S6839	995	South Klondike Highway	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1240	Single Device	2023-01-19 11:30	2023-01-19 13:30	301 Carcross	5L600	585 Tagish	No S#	70	Choutla	Scheduled Outage	100.000000000000	
DIR-SP-1232	Single Device	2023-01-19 10:55	2023-01-19 11:15	11 MacRae	5L631	571 Whitehorse	S9886	1	237 Venus pl.	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1231	Single Device	2023-01-19 9:06	2023-01-19 10:26	30 Robinson	5L602	574 Carcross	No S#	2	Just before Rat lake	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1230	Single Device	2023-01-19 3:55	2023-01-19 5:10	23 South McClintock	5L611	592 Marsh Lake	S1129	1	129 McClintock valley rd	Adverse Environment	700.000000000000	Contamination (Dirt, Pollution, Other)
DIR-SP-1229	Single Device	2023-01-18 16:40	2023-01-18 17:40	21 Laberge	5L645	571 Whitehorse	S3945	2	Vista rd	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1224	Single Device	2023-01-18 10:00	2023-01-18 14:05	S253 Minto	5L644	595 Minto	S3585	1	Minto sub	Adverse Weather	600.000000000000	Ice/Icing

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Outage ID	Outage Type	Date/Time Reported	Faulted Asset Position	Faulted Asset Type	Restoration Details	Comments	Abnormal System Configuration	Duration Manual
DIR-SP-1263	Single Device	2023-01-31 16:30				See SSI-167: change out three poles, transfer services, add 50 kva xer	FALSE	4.000
DIR-SP-1257	Single Device	2023-01-31 13:09	Overhead			Skidsteer hit service pole breaking it a base casing leads to break secondary bushings and arc across transformer.	FALSE	2.550
DIR-SP-1258	Community Plant	2023-01-31 13:00	Substation/Plant	Plant Equipment		Transferred town load from Swift River plant to mobile genset, to accomodate repairs to Swift River plant units.	FALSE	0.167
DIR-SP-1268	Single Device	2023-01-31 13:00				See SSI-175: Transfer Swift River from plant to mobile genset	FALSE	0.500
DIR-SP-1256	Single Device	2023-01-30 17:45	Overhead	Switching Devices			FALSE	0.967
DIR-SP-1253	Single Device	2023-01-26 16:53	Overhead	Switching Devices		Outage caused by broken switch.	FALSE	1.450
DIR-SP-1262	Community Plant	2023-01-25 20:47	Overhead	Unknown		Outage caused by underspeed issue on Unit #2. Issue respolved.	FALSE	0.133
DIR-SP-1254	Single Device	2023-01-25 19:25	Overhead	Switching Devices		high winds caused tree to fall, conductor on ground due to failed sleeves and broken cross arm . Restoration delayed due to crew bwing houred out	FALSE	13.783
DIR-SP-1252	Single Device	2023-01-25 18:50	Overhead	Switching Devices		Tree contact as a result of heavy winds	FALSE	0.250
DIR-SP-1250	Single Device	2023-01-25 14:42	Overhead	Protection Equipment		Breaker outage caused by unfastened conductor. Broke loose in the wind.	FALSE	0.600
DIR-SP-1251	Single Device	2023-01-25 14:42	Overhead	Switching Devices		Sectionalized portion of line for repair on wire that came off insulator and faulted on cross arm	FALSE	0.000
DIR-SP-1261	Single Device	2023-01-25 6:45	Overhead	Switching Devices		Gang switch S1157 had burned open phase no fault. Outage to repair S3070.	FALSE	13.417
DIR-SP-1255	Single Device	2023-01-23 12:00				See SSI-170: Outage required to safely attach new tap at structure 881892	FALSE	2.000
DIR-SP-1249	Single Device	2023-01-23 7:35	Overhead	Switching Devices		Tree fell onto line as a result of snowstorm	FALSE	1.617
DIR-SP-1248	Single Device	2023-01-21 5:43	Overhead	Switching Devices		Likely frost	FALSE	1.450
DIR-SP-1244	Single Device	2023-01-20 23:25	Overhead	Unknown		High winds and frost. Re-energized sub (SMU 20E) and closed VTR to restore.	FALSE	2.367
DIR-SP-1245	Single Device	2023-01-20 22:23	Overhead	Conductors		Frost caused line fuse to open. refused	FALSE	1.400
DIR-SP-1246	Single Device	2023-01-20 17:02	Overhead	Switching Devices		Unplanned outage to 8 customers on Pennycook road looks like frost was the issue, nothing else found on patrol. Refused and reenergized	FALSE	1.800
DIR-SP-1247	Single Device	2023-01-20 16:17	Overhead	Switching Devices		Likely caused by frost	FALSE	2.967
DIR-SP-1239	Single Device	2023-01-20 12:30	Overhead			Tree over line with burn marks on it. Caused by severe snow/frost loading	FALSE	0.167
DIR-SP-1238	Single Device	2023-01-20 11:35	Overhead			Frost caused 7 amp fuse on tap to blow. Refused	FALSE	1.583
DIR-SP-1235	Single Device	2023-01-20 9:00	Overhead	Switching Devices		Planned outage to connect new customer extension	FALSE	1.517
DIR-SP-1241	Single Device	2023-01-20 9:00				See SSI-166: Connect new customer extension	FALSE	2.000
DIR-SP-1237	Single Device	2023-01-19 18:06	Overhead	Conductors	TN Generation started at 1/19/2023 7:06 PM	Breaker S9567 opened on over current B to C fault, Teslin generation picked up the Village load. Cleared alarms and closed breaker. Cause was a broken tree on the primary line.	FALSE	0.533
DIR-SP-1234	Single Device	2023-01-19 15:45	Overhead			Frost coming off line	FALSE	0.700
DIR-SP-1236	Single Device	2023-01-19 15:05	Overhead			Patrolled. Pounded all frost off lines and reenergized	FALSE	2.633
DIR-SP-1233	Multiple Devices	2023-01-19 13:01	Overhead	Switching Devices	S9241 (5L600) restored 1/19/2023 3:17 PM; S9242 (5L601) restored 1/19/2023 3:18 PM;	Frost on the primary line.	FALSE	1.283
DIR-SP-1240	Single Device	2023-01-19 11:30				See SSI-165: Connect new customer extension and change out OCR to sectionalizer	FALSE	2.000
DIR-SP-1232	Single Device	2023-01-19 10:55	Overhead	Switching Devices		Frost letting go	FALSE	0.333
DIR-SP-1231	Single Device	2023-01-19 9:06	Overhead	Switching Devices		Frost letting go	FALSE	1.333
DIR-SP-1230	Single Device	2023-01-19 3:55	Overhead	Protection Equipment		Frost on wire. One span cleared and caused outage. Cleared other span on tap before re-energizing	FALSE	1.250
DIR-SP-1229	Single Device	2023-01-18 16:40	Overhead	Switching Devices		Frost load shed	FALSE	1.000
DIR-SP-1224	Single Device	2023-01-18 10:00	Overhead	Switching Devices		Frost cleared lines causing phase to ground fault	FALSE	4.083

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

Outage Summary - January 2023

Outage ID	Outage Type	Date/Time Reported	Customer Interruption Hours Manual	Created	Major Event	Reported Year	Reported Month
DIR-SP-1263	Single Device	2023-01-31 16:30	160.000	2023-02-04 9:00	FALSE	2023	01
DIR-SP-1257	Single Device	2023-01-31 13:09	2.550	2023-01-31 16:16	FALSE	2023	1
DIR-SP-1258	Community Plant	2023-01-31 13:00	3.167	2023-02-01 6:36	FALSE	2023	1
DIR-SP-1268	Single Device	2023-01-31 13:00	9.500	2023-02-04 9:00	FALSE	2023	01
DIR-SP-1256	Single Device	2023-01-30 17:45	0.967	2023-01-31 6:57	FALSE	2023	1
DIR-SP-1253	Single Device	2023-01-26 16:53	217.500	2023-01-26 14:06	FALSE	2023	1
DIR-SP-1262	Community Plant	2023-01-25 20:47	21.600	2023-02-01 9:24	FALSE	2023	1
DIR-SP-1254	Single Device	2023-01-25 19:25	110.267	2023-01-26 14:10	FALSE	2023	1
DIR-SP-1252	Single Device	2023-01-25 18:50	10.000	2023-01-26 14:06	FALSE	2023	1
DIR-SP-1250	Single Device	2023-01-25 14:42	206.400	2023-01-26 13:59	FALSE	2023	1
DIR-SP-1251	Single Device	2023-01-25 14:42	0.000	2023-01-26 13:59	FALSE	2023	1
DIR-SP-1261	Single Device	2023-01-25 6:45	1,556.333	2023-02-01 9:09	FALSE	2023	1
DIR-SP-1255	Single Device	2023-01-23 12:00	2.000	2023-01-28 9:00	FALSE	2023	01
DIR-SP-1249	Single Device	2023-01-23 7:35	1.617	2023-01-23 15:48	FALSE	2023	1
DIR-SP-1248	Single Device	2023-01-21 5:43	2.900	2023-01-23 8:46	FALSE	2023	1
DIR-SP-1244	Single Device	2023-01-20 23:25	473.333	2023-01-21 13:28	FALSE	2023	1
DIR-SP-1245	Single Device	2023-01-20 22:23	1.400	2023-01-21 13:39	FALSE	2023	1
DIR-SP-1246	Single Device	2023-01-20 17:02	14.400	2023-01-23 8:09	FALSE	2023	1
DIR-SP-1247	Single Device	2023-01-20 16:17	59.333	2023-01-23 8:39	FALSE	2023	1
DIR-SP-1239	Single Device	2023-01-20 12:30	1.500	2023-01-20 16:03	FALSE	2023	1
DIR-SP-1238	Single Device	2023-01-20 11:35	11.083	2023-01-20 13:25	FALSE	2023	1
DIR-SP-1235	Single Device	2023-01-20 9:00	45.500	2023-01-20 10:40	FALSE	2023	1
DIR-SP-1241	Single Device	2023-01-20 9:00	60.000	2023-01-21 9:00	FALSE	2023	01
DIR-SP-1237	Single Device	2023-01-19 18:06	90.500	2023-01-20 10:51	FALSE	2023	1
DIR-SP-1234	Single Device	2023-01-19 15:45	0.700	2023-01-19 16:30	FALSE	2023	1
DIR-SP-1236	Single Device	2023-01-19 15:05	15.800	2023-01-20 10:50	FALSE	2023	1
DIR-SP-1233	Multiple Devices	2023-01-19 13:01	992.667	2023-01-19 14:23	FALSE	2023	1
DIR-SP-1240	Single Device	2023-01-19 11:30	140.000	2023-01-21 9:00	FALSE	2023	01
DIR-SP-1232	Single Device	2023-01-19 10:55	0.333	2023-01-19 13:42	FALSE	2023	1
DIR-SP-1231	Single Device	2023-01-19 9:06	2.667	2023-01-19 13:37	FALSE	2023	1
DIR-SP-1230	Single Device	2023-01-19 3:55	1.250	2023-01-19 5:43	FALSE	2023	1
DIR-SP-1229	Single Device	2023-01-18 16:40	2.000	2023-01-18 17:43	FALSE	2023	1
DIR-SP-1224	Single Device	2023-01-18 10:00	4.083	2023-01-18 15:14	FALSE	2023	1

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

Outage Summary - January 2023

Outage ID	Outage Type	Date/Time Reported	Final Restoration Time	Substation	Line	Service Area	Interrupting Device Number	Customers Affected	Fault Address/Location Description	Primary Cause	Primary Cause:Code	Secondary Cause
DIR-SP-1225	Community Plant	2023-01-18 7:59	2023-01-18 8:10	Old Crow Plant	OC Plant	579 Old Crow	OC Generation	210	Old Crow	Loss of Supply	200.000000000000	Other Loss of Supply
DIR-SP-1242	Single Device	2023-01-18 7:00	2023-01-18 8:00	21 Laberge	5L645	571 Whitehorse	No S#	1	Hotsprings	Scheduled Outage	100.000000000000	
DIR-SP-1222	Single Device	2023-01-18 6:45	2023-01-18 7:30	20 Haines Junction	5L610	572 Haines Junction	S1588	1	Lt 1054 Marshall creek subdivision	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1219	Single Device	2023-01-18 6:21	2023-01-18 7:05	30 Robinson	5L603	574 Carcross	No S#	4	Linville tap	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1217	Single Device	2023-01-17 20:21	2023-01-17 22:05	31 Watson Lake	5L619	590 Lower Post	S2989	90	Lower Post	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1216	Single Device	2023-01-17 19:13	2023-01-17 19:23	31 Watson Lake	5L621	573 Watson Lake	S7242	344	Watson Lake	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1243	Single Device	2023-01-17 18:10	2023-01-18 1:10	303 Shipyards	4L312	571 Whitehorse	No S#	1	whitehorse downtown	Scheduled Outage	100.000000000000	
DIR-SP-1213	Single Device	2023-01-17 16:00	2023-01-17 16:13	11 MacRae	5L631	571 Whitehorse	No S#	1	173 Venus place. Structure # 879829	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1227	Community Plant	2023-01-17 15:58	2023-01-17 16:13	Old Crow Plant	OC Plant	579 Old Crow	OC Generation	210	Old Crow	Loss of Supply	200.000000000000	Other Loss of Supply
DIR-SP-1214	Single Device	2023-01-17 15:15	2023-01-17 16:34	30 Robinson	5L603	574 Carcross	S6205	3	Cross country line	Adverse Environment	700.000000000000	Contamination (Dirt, Pollution, Other)
DIR-SP-1215	Single Device	2023-01-16 13:33	2023-01-16 16:30	18 Carmacks	5L606	575 Carmacks	S1233	0		Adverse Weather	600.000000000000	
DIR-SP-1221	Single Device	2023-01-16 12:00	2023-01-16 16:30	18 Carmacks	5L606	575 Carmacks	S1233	20	Top of Hill by dump	Adverse Environment	700.000000000000	
DIR-SP-1228	Community Plant	2023-01-16 9:12	2023-01-16 9:50	Old Crow Plant	OC Plant	579 Old Crow	OC Generation	210	Old Crow	Loss of Supply	200.000000000000	Other Loss of Supply
DIR-SP-1211	Single Device	2023-01-16 7:30	2023-01-16 7:55	11 MacRae	5L631	571 Whitehorse	S4352	1	1fraser road	Unknown	0	
DIR-SP-1218	Single Device	2023-01-16 7:00	2023-01-16 9:10	30 Robinson	5L603	574 Carcross	No S#	6	Linville tap	Adverse Weather	600.000000000000	
DIR-SP-1220	Single Device	2023-01-15 15:30	2023-01-15 15:45	11 MacRae	5L631	571 Whitehorse	S3880	1	125 Arctic Drive	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1210	Single Device	2023-01-14 17:30	2023-01-14 20:25	27 Teslin	5L614	576 Teslin	S7358	40	Center phase fuse down.	Adverse Weather	600.000000000000	Other Adverse Weather
DIR-SP-1212	Single Device	2023-01-14 17:22	2023-01-14 18:35	30 Robinson	5L603	574 Carcross	No S#	1	3 Narrow gauge trail	Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1209	Single Device	2023-01-14 14:25	2023-01-14 16:27	30 Robinson	5L603	574 Carcross	S2493	3	Tree on line at asset 881859 outage to remove	Tree Contacts	300.000000000000	Falling Tree
DIR-SP-1208	Single Device	2023-01-14 9:00	2023-01-14 13:00	31 Watson Lake	5L619	573 Watson Lake	S8046	1		Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1205	Single Device	2023-01-13 7:40	2023-01-13 8:40	21 Laberge	5L645	571 Whitehorse	S3910	2	North fork taxidermy	Foreign Interference	900.000000000000	Wildlife (Bird/Animal)
DIR-SP-1206	Single Device	2023-01-12 12:00	2023-01-12 13:50	New Constabulary	5L615	592 Marsh Lake	S3537	135	Judas creek subdivision	Scheduled Outage	100.000000000000	Construction
DIR-SP-1207	Single Device	2023-01-12 12:00	2023-01-12 14:30	New Constabulary	5L615	592 Marsh Lake	No S#	130	Judas Creek	Scheduled Outage	100.000000000000	
DIR-SP-1204	Single Device	2023-01-11 20:25	2023-01-11 21:15	arkell	5L630		S9580	8	Alaksa highway mainline tap off to condor road	Unknown	0	
DIR-SP-1203	Single Device	2023-01-11 7:33	2023-01-11 10:15	31 Watson Lake	5L619	573 Watson Lake	S8045	1		Adverse Weather	600.000000000000	Ice/Icing
DIR-SP-1223	Community Plant	2023-01-10 9:12	2023-01-10 9:50	Old Crow Plant	3L405	579 Old Crow	OC-52-F1B	100	Old Crow	Loss of Supply	200.000000000000	Other Loss of Supply
DIR-SP-1202	Single Device	2023-01-10 8:45	2023-01-10 8:45	30 Robinson	5L603	574 Carcross	Pole 22806	4	Perceval tap	Tree Contacts	300.000000000000	Tree Growth/Untrimmed Tree
DIR-SP-1226	Community Plant	2023-01-10 4:59	2023-01-10 7:16	Old Crow Plant	OC Plant	579 Old Crow	OC Generation	210	Old Crow	Loss of Supply	200.000000000000	Generation Inadvertent
DIR-SP-1200	Single Device	2023-01-06 13:57	2023-01-06 14:48	31 Watson Lake	5L620	591 Upper Liard	S7240	20	Upper Liard	Adverse Weather	600.000000000000	Wet Snow
DIR-SP-1201	Single Device	2023-01-06 9:00	2023-01-06 11:00	21 Laberge	5L645	571 Whitehorse	No S#	3	Parent Rd.	Scheduled Outage	100.000000000000	
DIR-SP-1259	Single Device	2023-01-02 18:23	2023-01-02 18:40	304 Pelly Crossing	5L639	583 Pelly Crossing	S2487	193	Unknown	Adverse Weather	600.000000000000	
DIR-SP-1197	Single Device	2023-01-02 7:30	2023-01-02 11:38	11 MacRae	5L631	571 Whitehorse	S9318	9	Dog pack trail area	Tree Contacts	300.000000000000	Falling Tree

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

Outage Summary - January 2023

Outage ID	Outage Type	Date/Time Reported	Faulted Asset Position	Faulted Asset Type	Restoration Details	Comments	Abnormal System Configuration	Duration Manual
DIR-SP-1225	Community Plant	2023-01-18 7:59	Substation/Plant	Plant Equipment		Overloaded generator current on one phase. Breaker settings adjusted to resolve the issue.	FALSE	0.183
DIR-SP-1242	Single Device	2023-01-18 7:00				See SSI-168: change out padmount xer	FALSE	1.000
DIR-SP-1222	Single Device	2023-01-18 6:45	Overhead	Switching Devices		Line shedding hoar frost	FALSE	0.750
DIR-SP-1219	Single Device	2023-01-18 6:21	Overhead			Frost coming off line, tripped fuse	FALSE	0.733
DIR-SP-1217	Single Device	2023-01-17 20:21	Overhead			Extreme ice loading on line cause line to neutral fault	FALSE	1.733
DIR-SP-1216	Single Device	2023-01-17 19:13	Overhead	Substation Equipment		Feeder outage. Severe ice loading on primary line.	FALSE	0.167
DIR-SP-1243	Single Device	2023-01-17 18:10				See SSI-169: Outage for Solvest to pull secondary cableds into our transformer	FALSE	7.000
DIR-SP-1213	Single Device	2023-01-17 16:00	Overhead			Frost coming off line	FALSE	0.217
DIR-SP-1227	Community Plant	2023-01-17 15:58	Substation/Plant	Plant Equipment		Glycol spill causing spill shutdown during unit 1 repairs. Issue resolved.	FALSE	0.250
DIR-SP-1214	Single Device	2023-01-17 15:15	Overhead	Switching Devices		Appears to have been frost build up letting go on a cross country section. Frost is mostly cleared now.	FALSE	1.317
DIR-SP-1215	Single Device	2023-01-16 13:33	Overhead	Switching Devices		Frost on line	FALSE	2.950
DIR-SP-1221	Single Device	2023-01-16 12:00	Overhead	Conductors		Suspected Frost	FALSE	4.500
DIR-SP-1228	Community Plant	2023-01-16 9:12	Substation/Plant	Plant Equipment		Load imbalance on A phase. The crew was dispatched to resolve. Imbalance has been corrected.	FALSE	0.633
DIR-SP-1211	Single Device	2023-01-16 7:30	Overhead	Switching Devices		Refused and it held	FALSE	0.417
DIR-SP-1218	Single Device	2023-01-16 7:00	Overhead	Conductors		Frost	FALSE	2.167
DIR-SP-1220	Single Device	2023-01-15 15:30	Overhead			Frost coming off line	FALSE	0.250
DIR-SP-1210	Single Device	2023-01-14 17:30	Overhead	Switching Devices		Center phase fuse down lots of frost on the line in places.no other issues found	FALSE	2.917
DIR-SP-1212	Single Device	2023-01-14 17:22	Overhead	Protection Equipment		Outage to 1 customer caused by heavy frost on the lines, cleared remaining frost and reenergized.	FALSE	1.217
DIR-SP-1209	Single Device	2023-01-14 14:25	Overhead	Unknown		Power still on tree was hung up on neutral took 10 minute outage to remove safely	FALSE	2.033
DIR-SP-1208	Single Device	2023-01-14 9:00	Overhead	Switching Devices		Line off since yesterday, customer reported today ice loading on line and ice loading on trees caused contact. Line cleared of ice	FALSE	4.000
DIR-SP-1205	Single Device	2023-01-13 7:40	Overhead	Switching Devices		Raven on top of x-mer	FALSE	1.000
DIR-SP-1206	Single Device	2023-01-12 12:00	Overhead	Support Structure		Planned outage to install 2 new poles for communication clearance issues and install new VTR .	FALSE	1.833
DIR-SP-1207	Single Device	2023-01-12 12:00				See SSI-164: Outage required to change out 2 structures for communication clearance issues.	FALSE	2.500
DIR-SP-1204	Single Device	2023-01-11 20:25					FALSE	
DIR-SP-1203	Single Device	2023-01-11 7:33	Overhead	Switching Devices		Center phase opened due to neutral contact from extreme line loading	FALSE	2.700
DIR-SP-1223	Community Plant	2023-01-10 9:12	Substation/Plant	Plant Equipment		Load imbalance on A phase.	FALSE	0.633
DIR-SP-1202	Single Device	2023-01-10 8:45	Overhead	Switching Devices		Frost build up lowered lines into overgrown trees in powerline right of way	FALSE	0.000
DIR-SP-1226	Community Plant	2023-01-10 4:59	Substation/Plant	Plant Equipment		Load imbalance on A Phase.	FALSE	2.283
DIR-SP-1200	Single Device	2023-01-06 13:57	Overhead	Switching Devices		Heavy snow and frost, cleared line then re fused.	FALSE	0.850
DIR-SP-1201	Single Device	2023-01-06 9:00				See SSI-163: change out pole	FALSE	2.000
DIR-SP-1259	Single Device	2023-01-02 18:23	Overhead			Adverse weather.	FALSE	0.283
DIR-SP-1197	Single Device	2023-01-02 7:30	Overhead	Switching Devices		2 trees on the line, primary line down.	FALSE	4.133

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

Outage Summary - January 2023

Outage ID	Outage Type	Date/Time Reported	Customer Interruption Hours Manual	Created	Major Event	Reported Year	Reported Month
DIR-SP-1225	Community Plant	2023-01-18 7:59	38.500	2023-01-18 15:14	FALSE	2023	1
DIR-SP-1242	Single Device	2023-01-18 7:00	1.000	2023-01-21 9:00	FALSE	2023	01
DIR-SP-1222	Single Device	2023-01-18 6:45	0.750	2023-01-18 7:55	FALSE	2023	1
DIR-SP-1219	Single Device	2023-01-18 6:21	2.933	2023-01-18 7:17	FALSE	2023	1
DIR-SP-1217	Single Device	2023-01-17 20:21	156.000	2023-01-17 22:25	FALSE	2023	1
DIR-SP-1216	Single Device	2023-01-17 19:13	57.333	2023-01-17 19:58	FALSE	2023	1
DIR-SP-1243	Single Device	2023-01-17 18:10	7.000	2023-01-21 9:00	FALSE	2023	01
DIR-SP-1213	Single Device	2023-01-17 16:00	0.217	2023-01-17 16:15	FALSE	2023	1
DIR-SP-1227	Community Plant	2023-01-17 15:58	52.500	2023-01-18 15:21	FALSE	2023	1
DIR-SP-1214	Single Device	2023-01-17 15:15	3.950	2023-01-17 18:01	FALSE	2023	1
DIR-SP-1215	Single Device	2023-01-16 13:33	0.000	2023-01-17 19:07	FALSE	2023	1
DIR-SP-1221	Single Device	2023-01-16 12:00	90.000	2023-01-18 7:27	FALSE	2023	1
DIR-SP-1228	Community Plant	2023-01-16 9:12	133.000	2023-01-18 15:25	FALSE	2023	1
DIR-SP-1211	Single Device	2023-01-16 7:30	0.417	2023-01-16 8:01	FALSE	2023	1
DIR-SP-1218	Single Device	2023-01-16 7:00	13.000	2023-01-18 7:11	FALSE	2023	1
DIR-SP-1220	Single Device	2023-01-15 15:30	0.250	2023-01-18 7:19	FALSE	2023	1
DIR-SP-1210	Single Device	2023-01-14 17:30	116.667	2023-01-15 12:02	FALSE	2023	1
DIR-SP-1212	Single Device	2023-01-14 17:22	1.217	2023-01-16 9:01	FALSE	2023	1
DIR-SP-1209	Single Device	2023-01-14 14:25	6.100	2023-01-14 16:48	FALSE	2023	1
DIR-SP-1208	Single Device	2023-01-14 9:00	4.000	2023-01-14 12:56	FALSE	2023	1
DIR-SP-1205	Single Device	2023-01-13 7:40	2.000	2023-01-13 8:46	FALSE	2023	1
DIR-SP-1206	Single Device	2023-01-12 12:00	247.500	2023-01-13 9:08	FALSE	2023	1
DIR-SP-1207	Single Device	2023-01-12 12:00	325.000	2023-01-14 9:00	FALSE	2023	01
DIR-SP-1204	Single Device	2023-01-11 20:25		2023-01-12 7:23	FALSE	2023	1
DIR-SP-1203	Single Device	2023-01-11 7:33	2.700	2023-01-11 15:38	FALSE	2023	1
DIR-SP-1223	Community Plant	2023-01-10 9:12	63.333	2023-01-18 15:05	FALSE	2023	1
DIR-SP-1202	Single Device	2023-01-10 8:45	0.000	2023-01-10 10:32	FALSE	2023	1
DIR-SP-1226	Community Plant	2023-01-10 4:59	479.500	2023-01-18 15:17	FALSE	2023	1
DIR-SP-1200	Single Device	2023-01-06 13:57	17.000	2023-01-06 15:00	FALSE	2023	1
DIR-SP-1201	Single Device	2023-01-06 9:00	6.000	2023-01-07 9:00	FALSE	2023	01
DIR-SP-1259	Single Device	2023-01-02 18:23	54.683	2023-02-01 8:08	FALSE	2023	1
DIR-SP-1197	Single Device	2023-01-02 7:30	37.200	2023-01-02 11:51	FALSE	2023	1

SECTION 12:

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SECTION 13: INTERIM REFUNDABLE RATE RIDER

13.1 Summary

1. AEY is requesting that the AEY Rate Adjustment Rider, Rider R, be decreased by 1.62 percent from the currently approved 8.30 percent. The resulting interim 6.68 percent Rider R will be applied to all AEY and YEC primary base revenues beginning August 1, 2023. A copy of the proposed 2023 interim rider schedule is provided in Attachment 13.1.

2. The derivation of the interim 2023 Rider R decrease, shown in Schedule 13.1,¹ is similar to AEY's previous Interim Refundable Rate Rider calculation, which was applied for in the 2016-2017 GRA and approved in Decision 2016-02. Due to the August 1, 2023, proposed effective date, AEY is, in effect, requesting approval to refund approximately 40 percent of the applied-for revenue requirement decrease for 2023.

3. In Appendix A of Board Order 2016-02, the Board found that: "...until the merits of the Application are determined, these interim refundable rates promote rate stability. The Board considers that granting half of the applied-for revenue requirement increase for 2016 results in interim rates that are just and reasonable to both the utility and consumers."²

4. For these reasons, AEY submits that the applied-for interim rate increase is appropriate and should be approved effective August 1, 2023, on an interim, refundable basis.

5. In addition, AEY is requesting that the AEY Rate Adjustment Rider, Rider R, be increased by 5.20 percent from the currently approved 8.30 percent, effective January 1, 2024. The resulting interim 13.50 percent Rider R will be applied to all AEY and YEC primary base revenues beginning January 1, 2024. A copy of the proposed 2024 Interim Rider Schedule is provided in Attachment 13.2.

¹ Schedule 13.1, lines 1-16.

² Board Order 2016-02.

6. The derivation of the interim 2024 Rider R increase, shown in Schedule 13.1,³ is similar to AEY's requested 2023 Interim Refundable Rate Rider calculation. Based on the expected timing of the Board Order and Compliance filing to AEY's 2023-2024 GRA, assuming a similar process as AEY's 2016-2017 GRA is followed for this Application, AEY estimates that updated Rider R rate adjustments, in the middle of 2024 will minimize future true-ups and promoting rate stability.

³ Schedule 13.1, lines 17-32.



THE YUKON ELECTRICAL COMPANY LIMITED
An **ATCO** Company

YUKON
ENERGY



Effective: 2023 08 01
Supersedes: 2018 01 01

RIDER R
YUKON ELECTRICAL RATE ADJUSTMENT RIDER

- AVAILABLE:** To all electric service throughout the Yukon Territory.
- APPLICABLE:** To all classes of service except Rate Schedule 32, Rate Schedule 42 and Rate Schedule 43.
- RATE:** All base rate revenue will be adjusted by the following rate:

6.68%
- NOTE:** Yukon Energy Corporation recoveries under this rider are to flow through to Yukon Electrical Company Limited.



THE YUKON ELECTRICAL COMPANY LIMITED
An **ATCO** Company

YUKON
ENERGY



Effective: 2024 01 01
Supersedes: 2023 08 01

RIDER R

YUKON ELECTRICAL RATE ADJUSTMENT RIDER

- AVAILABLE:** To all electric service throughout the Yukon Territory.
- APPLICABLE:** To all classes of service except Rate Schedule 32, Rate Schedule 42 and Rate Schedule 43.
- RATE:** All base rate revenue will be adjusted by the following rate:
- 13.50%
- NOTE:** Yukon Energy Corporation recoveries under this rider are to flow through to Yukon Electrical Company Limited.