

GRAYSON MANAGEMENT AUDIT ACTION PLAN BY RECOMMENDATION STATUS UPDATE – 11/15/2022

Overview

Pursuant to PSC Case 2018-00272, a management audit was order by the Kentucky Public Service Commission for Grayson RECC. Case 2019-00101 was opened to handle the proceedings of the audit. Vantage Energy Consulting was selected to conduct the audit. Through data requests, interviews, on-site visits, and other communications, Vantage formulated a report which was submitted on February 4th, 2020. Three overall conclusions/suggestions were formulated along with 20 recommendations. An action plan was developed by Grayson and approved by Vantage and the Kentucky PSC to address these recommendations.

Subsequently, an Operational Capacity and Infrastructure audit was ordered and completed by The Liberty Consulting Group through Case No. 2020-00018. An action plan was developed by Grayson and approved by Liberty and the Kentucky PSC.

The Financial and Operational audits were consolidated into one record, PSC Case No. 2020-00018.

Overall Conclusions and Recommendations

Grayson has continued to address all recommendations by Vantage and The Liberty Group. Common themes of financial planning, strategic planning, board governance, operation and maintenance activities, overtime and reliability filter through each of the recommendations and action plans. As integration of activities to address the recommendations continue, several recommendations will reference each other to avoid duplication.

A majority of the plans have been fully implemented and are now in a monitor and make adjustments as necessary while using the data provided to assist in the decision making process of the company.

Financial Metrics²

Year	System Value	US Total			State Grouping			Major Current Power Supplier		
		Median	NBR	Rank	Median	NBR	Rank	Median	NBR	Rank
RATIO 6 --- TIER										
2017	-0.57	2.57	813	808	1.97	22	22	2.35	16	16
2018	1.90	2.80	814	706	2.74	22	18	2.79	16	15
2019	2.70	2.64	816	395	2.43	22	7	2.58	16	7
2020	3.37	2.80	815	264	2.81	22	8	2.84	16	6
2021	6.29	2.95	812	106	2.92	22	2	3.02	16	2
RATIO 7 --- TIER (2 OF 3 YEAR HIGH AVERAGE)										
2017	3.14	2.77	813	309	2.69	22	8	3.12	16	8
2018	2.34	2.87	814	601	2.68	22	16	2.86	16	14
2019	2.30	2.90	816	623	2.58	22	17	2.66	16	14
2020	3.04	2.98	815	393	3.05	22	12	3.15	16	10
2021	4.83	3.10	812	155	2.86	22	3	3.20	16	3
RATIO 8 --- OTIER										
2017	-1.23	1.94	813	806	1.39	22	22	1.39	16	16
2018	0.92	2.17	814	796	1.70	22	21	1.70	16	15
2019	1.85	2.03	816	487	1.39	22	5	1.39	16	3
2020	2.78	2.24	815	251	1.89	22	4	1.89	16	2
2021	4.84	2.17	812	98	1.85	22	1	1.71	16	1
RATIO 9 --- OTIER (2 OF 3 YEAR HIGH AVERAGE)										
2017	1.61	2.07	813	625	1.48	22	11	1.45	16	8
2018	1.06	2.23	814	800	1.67	22	19	1.53	16	13
2019	1.39	2.24	816	773	1.63	22	17	1.55	16	13
2020	2.31	2.35	815	425	1.92	22	7	1.92	16	4
2021	3.81	2.36	812	158	1.90	22	3	1.90	16	2
RATIO 10 --- MODIFIED DSC (MDSC)										
2017	0.72	1.82	813	811	1.59	22	22	1.46	16	16
2018	1.40	1.92	814	744	1.74	22	20	1.68	16	14
2019	1.89	1.91	816	420	1.82	22	7	1.82	16	4
2020	1.96	1.96	815	407	1.85	22	10	1.82	16	7
2021	2.33	1.95	812	251	1.96	22	6	1.87	16	5

Grayson continues to see significant improvement in their TIER, OTIER, and Modified DSC since the audit in 2018. As a focal point in many of the recommendations, Grayson feels that through the actions taken so far, benefits from the changes have resulted in better financial management and shown through the metrics above.

² 2021 KRTA Report - CFC

Total Cost of Electric Service per consumer¹

Year	System Value	US Total			State Grouping			Major Current Power Supplier		
		Median	NBR	Rank	Median	NBR	Rank	Median	NBR	Rank
RATIO 107 --- TOTAL COST OF ELECTRIC SERVICE PER CONSUMER (\$)										
2017	2,099.60	2,200.65	813	452	1,987.28	22	8	1,865.41	16	4
2018	2,065.80	2,294.79	814	532	2,052.02	22	11	1,990.16	16	6
2019	1,982.40	2,277.56	816	577	1,969.51	22	11	1,923.75	16	6
2020	1,897.56	2,204.46	815	595	1,847.73	22	10	1,795.82	16	5
2021	1,981.85	2,254.57	812	583	2,012.06	22	14	1,985.89	16	9

While the total cost of electric service did increase in 2021, it was similar to the inflation rate of 4%.

Blended Interest Rate²

Year	System Value	US Total			State Grouping			Major Current Power Supplier		
		Median	NBR	Rank	Median	NBR	Rank	Median	NBR	Rank
RATIO 23 --- BLENDED INTEREST RATE (%)										
2017	2.40	3.96	807	781	3.24	22	17	3.10	16	11
2018	2.69	3.98	808	775	3.49	22	19	3.37	16	13
2019	2.94	3.98	809	762	3.70	22	19	3.55	16	13
2020	1.79	3.69	807	801	3.06	22	21	2.99	16	15
2021	1.36	3.40	806	800	2.71	22	21	2.59	16	15

Blended interest rate continued to fall for 2021, assisting to help offset the inflation pressures from operating expenses. 2022 interest rates could have a negative impact on future numbers as Grayson has begun to see an increase in variable rates.

Recommendation Updates

Grayson continues to move forward to achieve each of the goals of the recommendations. A majority of the plans have been implemented. Moving forward, a large portion will be analyzing results from operational activities, focusing on areas that can be approved or alterations made to as efficient of results as possible. Each recommendation below contains a status update in regards to achievements realized in addressing the recommendations based on the selected implementation plan. While some recommendations may have been achieved in a slightly different matter than was first envisioned, it does not affect the commitment towards each of these recommendations by Grayson.

Supporting documents have been attached to each recommendation as appropriate. In follow up to several inquiries in the Kentucky PSC's response to our first status update, unless otherwise communicated in this report as a policy, all changes implemented did not fall within a policy, therefore was not added to our policy manual.

GRAYSON MANAGEMENT AUDIT ACTION PLAN BY RECOMMENDATION 03/24/20

The following are the actual action plans for each recommendation made.

RECOMMENDATION – II-R1

II-R1 **Develop or purchase a financial model that provides detailed and actionable information on Grayson’s financial picture. (Priority: Medium)**

In order to manage its business and prevent recurring financial difficulties it is crucial that Grayson develop the tools and processes to enable visibility into and management of their finances.

Currently, Grayson is exploring a financial model, which is provided by National Rural Utilities Cooperative Finance Corporation (“CFC”). This model is certainly a step forward but does not provide the monthly management information that is necessary to manage Grayson’s finances.

Grayson needs to develop a financial model that tracks all expenses on a monthly basis and ties directly to the CFC, and can provide the basis for at least a four-year plan. This model does not need to be elaborate or expensive. The model could be developed in-house.

UTILITY RESPONSE

A. Discussion of Recommendation

Grayson understands that clear and relevant data is necessary for the Grayson BOD to make informed decisions that affect the financials and financial state of the cooperative. The more information the directors have and how their decisions affect the financial status of the cooperative in the short and long term, the more likely those decisions made will benefit the financial status of the company for the near future and ensure financial and strategic obligations are met.

B. Improvement Proposed by Cooperative

An increase understanding of how decisions made by the Board of Directors affect the financial status of the cooperative should be a direct improvement of implementing the

steps listed in this recommendation. Increased awareness of the long-term effects on strategic and financial goals for the extended future should also be realized.

IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Complete Date
II R-1	Management and Accounting staff meet to discuss relevant information that should be included in reporting to board.	Current	April 2020
	Meet with staff of other cooperatives to discuss information and tools used to communicate financial information to their management and staff	Current	Ongoing
	Develop an overview of current and new information to be presented to BOD at monthly/quarterly/yearly meetings.	April 2020	May 2020
	Present information to the Board for their review	May 2020	June 2020
	Assemble a team to develop and implement model that incorporates all relevant information. (Utilizing CFC models plus any additional developed models to assure that the revised model and inputs meet the requirements in this recommendation)	Current	August 2020
	Refine models as needed. Share with KPSC Staff to assure it meets the intent of this recommendation.	Current	Ongoing
	Utilize models and outputs to communicate financial standing of cooperative and the effects of decisions made by the Grayson BOD.	August 2020	Ongoing

Status Update

Since the last progress report, Grayson has continued utilizing reports discussed as well as a focus to look at budget reports on a more frequent basis. The Board receives a report each month detailing income and expenses by account and any variance from budgeted numbers. Discussion follows with any significant variances and an explanation or suggested corrective action.

Grayson has also been working to utilize a 10-year financial forecast on an annual basis to help facilitate discussion on budget and operational decision-making. Grayson has utilized CFC's KRTA ratios to generate discussion and provide feedback with comparisons to other cooperatives in their power supply group, state, and similar size.

Utilization of reports has led to additional discussion and questions that have been beneficial for meetings and aid in decision-making.

Next Steps:

Grayson will continue to utilize models and its outputs to facilitate all financial discussions, making modifications as needed.

Grayson feels this recommendation is complete with understanding all models and tools should be reviewed and updated as needed.

RECOMMENDATION – II-R2

II-R2 Identify a regulatory liaison and communicate to the KPSC. (Priority: Low)

Provide clarity as to the formal means of communicating between company and regulatory bodies. A single point of communication will enable management employees, BOD members and others to be able to reach out with questions to a single point.

A. Discussion of Recommendation

Grayson should select and establish a point of contact to communicate with the Kentucky Public Service Commission and all other relevant agencies.

B. Improvement Proposed by Cooperative

This would assist in reducing the likelihood of information not reaching the intended parties and increase the efficiency of information being passed between Grayson, the Kentucky PSC and relevant agencies.

C. Discussion of Cost/Benefit Analysis

There should be no cost associated with this recommendation. Reduce information not reaching intended parties. Improved communication and ability to discuss important issues that affect the cooperative and its members.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
II R-2	Select an employee to serve as point of contact with Kentucky PSC and other agencies.	March 2020	March 2020
	Communicate to Kentucky PSC and other agencies.	March 2020	April 2020

Status Update:

Complete

RECOMMENDATION – II-R3

II-R3 Improve process for evaluating and determining causes of outages.
(Priority: Medium)

Additional forensic or root cause analysis is warranted in evaluating outages. This evaluation is needed, because knowing the cause of outages is essential for setting budgets and establishing priorities.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson should improve their outage documentation and analysis. A more thorough investigation should be completed when the reason for an outage is not obvious.

B. Improvement Proposed by Cooperative

Outage information and documentation should improve. This would allow for analysis that is more thorough and the opportunity to improve operation efficiencies and a reduction in overtime.

C. Discussion of Cost/Benefit Analysis

Implementing the proposed actions in response to the recommendation should incur little to no cost. The benefit for the Cooperative and its members would include the opportunity for a reduction in outages, leading to a reduction in overtime and reduction in maintenance expenses.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommen- dation No.	Implementation Steps	Start Date	Completion Date
II R-3	Form a team to discuss the issue and best practices on reporting the information. Team Members should include: <ul style="list-style-type: none"> • Manager of Operations • Assistant Manager of Operations • Division Assistant of Operations 	April 2020	April 2020

	<ul style="list-style-type: none"> • Manager of Technical Services • GIS Technician • Maintenance leadman(men) 		
	Develop a plan that includes: <ul style="list-style-type: none"> • How information should be reported • What information should be reported • What to look for when cause is not apparent • Frequency and details of reporting • Other relevant information. 	April 2020	May 2020
	Conduct a safety meeting with employees discussing developed plan	May/June 2020	May/June 2020
	Set up periodic meetings to discuss reports from outage information and develop any necessary steps needed to address problem areas	June 2020	Ongoing
	Communicate plans, procedures, results, and changes to BOD, PSC, and EKPC as necessary.	June 2020	Ongoing

Status Update:

Animal Outages

Small animal outages continue to plague the system. An increased effort in ROW cutting as well as animal guards look to curb the problem. However, we feel that this is always going to be an issue due to the environment in which our territory serves. Efforts have been ramped up to install animal guards as quickly as possible in areas that show significant outages or are at risk.

Cause	2021		2022		% Diff
	Count	% of Total	Count	% of Total	
600 Small animal/bird	152	12.3%	220	19.0%	30.9%

Overall Outage Improvements

As can be seen from the table below, the number of outages for the year through August has increased across numerous cause codes. The amount of unknown cause outages nearly doubled during the same period. This concern was addressed midway throughout the year with a safety meeting reemphasizing the importance of thorough investigations in determining outage causes.

Discussion has also taken place in regards to the number of maintenance outages occurred. While we realize that there are circumstances where safety becomes a priority and an outage must take place, we hope that this number will decrease through hot line work options.

2021-2022 Comparisons	2022 (Jan-Aug)		2021 (Jan-Aug)	
	Count	% of Total	Count	% of Total
110 Maintenance	177	14.3%	123	10.6%
999 Cause unknown	106	8.6%	50	4.3%
500 Lightning	54	4.4%	51	4.4%
430 Tree failure from overhang or dead tree without ice/snow	51	4.1%	41	3.5%
300 Material or equipment fault/failure	54	4.4%	32	2.8%
420 Tree growth	45	3.6%	27	2.3%
770 Consumer's Problem	20	1.6%	15	1.3%
100 Construction	28	2.3%	13	1.1%
470 Borrower crew cuts tree	17	1.4%	11	0.9%
700 Customer-caused	7	0.6%	6	0.5%
440 Trees with ice/snow	55	4.4%	5	0.4%
320 Conductor sag or inadequate clearance	5	0.4%	3	0.3%
710 Motor vehicle	11	0.9%	2	0.2%
530 Flood	20	1.6%	1	0.1%
730 Fire	6	0.5%	1	0.1%

Next Steps:

- Continue to Monitor and address any significant changes in outage causes and address issues as proactively as possible.
- Grayson feels this recommendation is complete outside of day to day monitoring

RECOMMENDATION – II-R4

II-R4 Develop a formal procedure for the tracking and resolution of complaints. **(Priority: Medium)**

The process currently used by Grayson RECC is dependent on the experience of current personnel at the Cooperative. In this arrangement, there is always the concern that a change in personnel could change the process. In order to have an equitable and consistent treatment of complaints a formal procedure is needed. The function should be centralized in one area to assign tracking numbers and maintain the files, including all documentation associated with the resolution of the complaint. The procedure should identify the personnel that need to be involved in the resolution of the complaint. The procedure should also specify the time for resolution in order to ensure the timely resolution of the complaint. The procedure should specify how a complaint will ultimately be resolved if there is no clear resolution by the assigned department.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Implementing a formal procedure to consistently track complaints and resolutions is warranted. Most complaints are received from the KSPC in the form of an inquiry. Other complaints that are received will be treated with the same formal procedure.

B. Improvement Proposed by Cooperative

Tracking of all complaints will involve all employees but will be streamlined through staff and ultimately through the Member Services Supervisor.

1. Complaint forms are available to all employees to document any issues.
2. All complaints will be filed, numbered and entered into a database.
3. All materials, background information and any pertinent information will be filed together with the original complaint form.
4. Notes will be added to the complaint form as information is received.
5. When the complaint is deemed resolved it would be noted in the file along with the resolution of the complaint.
6. The complaint file will be located in the Member Services Department.

C. Discussion of Cost/Benefit Analysis

Cost to implement the plan in this recommendation would be minimal.

Benefits to this change in procedure would be the following:

1. Ease of reviewing information on an open or resolved complaint.
2. Having information concerning complaints and resolutions organized in a centralized location.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
II R-4	Select internal team to implement this procedure.	March 2020	March 2020
	Prepare a procedure for complaint tracking and resolution	March 2020	On-going
	Identify point of contact for implementing procedure.	March 2020	March 2020
	Communicate new procedure to BOD, Kentucky PSC and EKPC, as appropriate.	April 2020	April 2020

Status Update:

Complete

RECOMMENDATION – II-R5

II-R5 As the opportunities arise, Grayson should strive to include more diversity on its Board. (Priority: High)

Currently, the Board of Directors (“BOD”) consists of all white males. As opportunities arise, Grayson should encourage and actively support a more diverse Board but with the priority of ultimately engaging the most qualified individuals. The more diverse views will lead to better understanding of the views of all of its members.

A. Discussion of Recommendation

Grayson should encourage a more diverse Board; however, the focus should be on ensuring the most qualified individuals are representing the Members.

B. Improvement Proposed by Cooperative

Grayson intends to implement this recommendation fully permitted by Grayson’s Board Policies and Bylaws. Article IV of Grayson’s Bylaws sets forth the procedure for electing members to the Board of Directors. Any member meeting the qualifications under Article IV, Section 3 may make a written declaration of his/her intent to seek a seat on the Board of Directors. The qualifications are inclusive and do not disqualify any member based on a member’s gender, religion, race, color, creed, age, national origin, familial status or disability. Female members have declared an intent to seek a seat on the Board of Directors in the past. Those members did not receive sufficient votes. Grayson will examine its election process and determine ways to encourage diversity on the Board. The Directors will continue to seek ways to encourage diversity on its Board. The Board should be a representation of its membership.

Forming a Member Advisory Council has also been discussed as a way of increasing diversity. Because this council would be appointed and not elected, the

opportunities of increasing diversity and views outside of the Board would substantially increase.

C. Discussion of Cost/Benefit Analysis

Cost of implementing this recommendation would be limited to training for any new board member who would be elected. If a Member Advisory Council was formed, minimum costs could be associated with it. Without specific details on the council, calculating costs currently would not be feasible.

New ideas and experience would be the top potential benefits of diversity to the board through new/additional board members.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
II R-5	Discuss feasibility and details of potential Member Advisory Council	May 2020	July 2020
	Continually review policies/procedures/activities that would encourage diversity on Board	April 2020	Ongoing
	Continue to Provide training to all board members to increase knowledge base and differing points of view	April 2020	Ongoing

Status Update:

Member Advisory Council:

As presented to the Board, Grayson reached out to three different cooperatives regarding a Member Advisory Council. Two of the cooperatives no longer or did not

utilize a MAC. The third had used a MAC prior to Covid; however, the results from the council were mixed. Cost and time for planning along with a lack of participation were negatives that were communicated, which seemed to outweigh any benefits they received. While the board has not abandoned the idea of a member advisory council, the current feeling is that better opportunities may exist.

In a survey conducted by MRI Simmons and American MainStreet Publications and presented to the cooperative managers of Kentucky, it was stated that 88% of cooperative members prefer to receive their news and information from our monthly magazine Kentucky Living; compared to only 3% from Co-op Employees. 95% of those surveyed said they felt more informed about their electric co-op through information received in the magazine.

Based on this information, Grayson feels that it may be more beneficial to focus on the information we present in our magazine and social media and can reach a far more extensive group of members compared to having periodic member meetings.

Diversity

Grayson, however, has worked to achieve the goal of an increase in diversity on the Board. In January of 2022, Kayla Webb was appointed to fulfil the Greenup Co. Board seat vacated by the death of Eddie Martin. The addition of a woman to the board, along with her experiences in professions and industries within the communities should address the diversity issue on the board and instantly become an enhancement to board discussions and decision-making.

Training

All board members who have been on the board for greater than one year have achieved NRECA certification. Ms. Webb and Mr. Mabry, who joined the board in May of 2022 after membership election, are currently working towards achieving their certifications.

Next Steps:

Grayson feels this recommendation is complete.

RECOMMENDATION – II-R6

II-R6 Create a more transparent process of governance. (Priority: High)

There seems to be some pressure within rural cooperatives to have an understanding of the decision-making processes and the budgetary impact of those processes on the members of the cooperative. Grayson, with its significant focus on caring for its employees, should extend that to more fully engage all the members by having open board meetings so the membership can see how the Directors are responsible and accountable for the decisions they make. This process could inspire others to pursue membership on the Board and expand the diversity and experience of the Board members.

Vantage recommends that BOD meetings be open, except where confidential information, contracts or compensation are discussed.

A. Discussion of Recommendation

Allowing open meetings, allowing input from Members to Board of Directors and making key information from Board Meetings easily available to the public would allow for a greater transparency of the Board's governance. Increasing available information would allow the Members a better understanding of the decision making process and how these decisions affect the financials of the Cooperative. Transparency could also inspire others to pursue membership on the Board and expand the diversity and experience.

B. Improvement Proposed by Cooperative

Grayson already has measures in place that would increase the transparency of governance and provide important information to its members. Grayson has an open meeting policy, which allows members to attend Board meetings. Members may attend a meeting by completing a form identifying themselves and stating the reason, they wish to appear. The Board will permit attendance if the applicant is in fact a member and has a valid reason to appear. This policy is efficient and effective for the members. It permits Grayson's staff to contact the member in advance to address their concerns prior to the meeting. If staff resolves the concern, it saves the member time and expense of appearing before the Board. If the issue cannot be resolved, staff will inform the member of the next scheduled meeting.

Board Briefs are published in *Kentucky Living* magazine and on social media. Grayson also hosts an annual meeting every May whereby members can meet Grayson’s staff, management, directors and attorney. Members from other stakeholders are present at the annual meeting.

Increasing the availability and broadcasting it to members through all of its communication avenues, would greatly increase a transparent environment of governance. Grayson intends to create more transparency by publishing Board Briefs on its website in addition to posting on social media and in *Kentucky Living*. Grayson will implement this recommendation by conducting Strategic Planning Session meetings open to the public. Strategic Planning Sessions would permit all members to attend and express opinions and make suggestions to the Directors. Such meetings are a more efficient way to create transparency. This policy will give members the opportunity to address the Board and management on issues most important rather than attending meetings where other topics may be given primary focus and priority.

C. Discussion of Cost/Benefit Analysis

Strategic planning sessions with members could have additional costs to the coop. Increasing communication across all channels currently being used should have no incremental costs.

As discussed above, the benefits of increased transparency could lead to increased participations and understanding from the membership, as well as the ability to benefit from new and diverse ideas.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
II R-6	Publicize through communication channels opportunities to review information from Co-Op	May 2020	Ongoing
	Publish Board Briefs Monthly	January 2020	Ongoing

	Periodic Strategic Planning and Discussion Meetings in rotating locations throughout service territory	Fall 2020	Ongoing
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Status Update:

Board Attendance

A requirement of how far in advanced a member must request to attend a board meeting is not specifically detailed in the policy, as Grayson's feels this can be subjective to the situation.

Grayson would want to ensure that enough time is given to the request to gather any information and be prepared to address any concerns. A positive and productive outcome would be the goal through these interactions.

Strategic Membership Meetings

Similarly to member advisory council discussions, Grayson and its board have not yet committed to strategic membership meetings. Concerned members frequently speak with their director or service man in their county with their concerns, which are relayed back to the staff and discussed at board meetings as necessary. As discussed in previous recommendation, focusing on the mediums that our members feel are most beneficial: Kentucky Living, electric bill notes and inserts, social media; may be the most beneficial and effective way to communicate with our membership.

RECOMMENDATION – II-R7

II-R7 Directors' fees and expenses should be carefully monitored and managed jointly by both the Board and Grayson management. (Priority: Medium)

Grayson's financial challenges are real, and the Board has an opportunity to serve as real leaders in the community and Cooperative by establishing pay guidelines for itself that model the reality of the economics of the service territory. At a minimum, they should consider re-instituting the original per diem and reducing the cash in lieu of health care to the \$3250/year that employees receive. Since the majority of the members have been on the board for many years and attendance at training sessions has long since diminished, the miscellaneous expenses should be scrutinized and substantive limitations put in place.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson Board has a fiscal responsibility to ensure that they take an initiative in controlling and maintaining expenses. This includes managing their own expenses and ensuring they are doing everything they can to control their costs and keep them to a minimum.

B. Improvement Proposed by Cooperative

Grayson Board will continue to monitor and analyze their costs to make certain that they are in line with industry standards. Board will review monthly and year to date expenses during monthly Board Meetings as well as travel and meeting requirements. Board will also discuss on an annual basis any changes that need to be made to expense policy.

C. Discussion of Cost/Benefit Analysis

Cost and Benefits would be dependent on any changes made to Board Policy on expenses and compensation. Any increase in board membership, training, and/or participation could lead to an increase in cost to the Cooperative.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
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II R-7	Continue to Monitor and Review Director Expenses on a Monthly Basis at Board Meeting	April 2020	Ongoing
	Discuss on an Annual Basis any changes necessary to Director Compensation and Expense Policy	November	December
	Continue to Report to Kentucky PSC Director Expenses through required yearly reports	December	March

Status Update:

Please see Exhibit A for copy of board minutes that reduce the number of board members from seven to six.

Please see Exhibit B for an updated Directors Compensation and Expense Policy – Change was made to the policy requiring directors to complete their initial board certification within 24 months. It was previously a recommendation.

At the August Board Meeting, the board was given a presentation regarding NRECA's National Directors Survey Results for 2022. Highlighted during the presentation was data regarding compensation. Among systems paying a monthly retainer and per meeting fee, the average retainer is \$815 and the average per meeting fee is \$317. This falls in line with current policy regarding Board Compensation at Grayson. No additional changes were made to compensation following the report. A review of the policy will again take place in 2023.

Next Steps:

Outside of continuing an annual review, Grayson feels this recommendation is complete.

RECOMMENDATION – //R8

//R8 Increase involvement by the Board in the strategic planning process with a focus on actions that have an impact on TIER. (Priority: High)

The Strategic Planning section of this audit report discusses in detail a planning process focused primarily on Times Interest Earned Ratio (“TIER”). The Board’s involvement in that process could be accomplished by including an additional agenda item for the monthly Board meetings or preferably, a quarterly or six-month meeting devoted entirely to strategic planning. Specifically, the strategic planning sessions should focus on financial and operational goals and the detailed steps to accomplish those goals.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson agrees to increase involvement by the Board in the strategic planning process with a focus on actions that have an impact on TIER. In addition, a major focus area that Grayson will address is the development and implementation of a strategic plan. Within the strategic plan, financial and operational goals and objectives will be well defined along with specific and clear steps to achieve these outcomes.

B. Improvement Proposed by Cooperative

Defined financial, operational and strategic goals and objectives will give the Board of Directors and Management a guideline to the expectations and needed results in order to achieve the outcomes desired by the Cooperative. By having defined goals and objectives, decisions on what needs to be done and how to accomplish this will guide decision makers into the best decisions necessary for the Cooperative.

C. Discussion of Cost/Benefit Analysis

The cost in the development of a strategic plan would be minimal as CFC offers the service to its borrowing members free of charge. Benefits would be tied directly to the decisions made to achieve the defined goals and objectives contained in the strategic

plan. Increased efficiency, reduction of expenses, increase in margins are all possibilities in execution of a well-defined strategic plan.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
II R-8	Schedule a strategic planning session.	March 2020	March 2020 (Completed)
	Preliminary discussions on key issues and information that need to be included in the strategic plan. (Board of Directors, Management, Staff)	July 2020	September 2020
	Strategic Planning Session resulting in a formal Strategic Plan Document	September 2020	October 2020
	Implementation of Strategic Plan and periodic discussions with staff and board of progress	October 2020	Ongoing
	Communication with PSC of Strategic Plan and results of Implementation	October 2020	Ongoing

Status Update:

- Goals and Plans to achieve
 - Comprehensive HR Plan – We have not currently met our goal of completing a comprehensive HR plan. Outside assistance will be sought to develop this plan in 2023
 - Long Range Capital and Operations Plans
 - Technology – Please reference Recommendation V-R3 as well as Exhibit C.
 - Capital System/General Plant – Four year work plan was created and approved in 2020. The next plan is scheduled to be developed in 2024.
 - Communications –
 - In 2023, we will be working on developing a member communication packet in which we disclose all relevant and important information to new members upon signing up for service, including: phone numbers, deposit information, bill information and how to pay, and other relevant information.

- We continue to heavily rely on KEC statewide association and EKPC and their communication teams to assist in promoting messages that are important to our members. This has become extremely beneficial as it ensures a consistent message is communicated to all members who are affected by similar situations.
- Financial Plan – A draft financial plan, Exhibit D, was presented and discussed to the Board and is on the agenda to approve at the November 2022 Board meeting.
- Safety Plan – In addition to current safety protocols required, on an annual basis, as part of our RESAP program, Grayson completes a safety improvement plan, focusing on three areas of safety that we would like to improve. Grayson has also adopted best practice documentation, created by statewide association and their safety committee, to assist in promoting safe work environment

Next Steps

- Finalize all goals and plans from initial Strategic Plan
- Utilize the strategic plan as a tool in the operations and planning of Grayson RECC and all decisions made.
- Continue to review and modify, as necessary, the strategic goals set forth and discuss on a periodic basis at future board meetings.

RECOMMENDATION – II-R9

II-R9 The Board of Directors should take the lead in meaningful cost savings measures, to assure Grayson’s members have affordable electricity now and in the future. (Priority: Medium)

The Board, with input from management, should be the driver in streamlining Grayson’s operations and reducing costs to make it competitive. This is an experienced BOD and it has adequate current and historical information needed to make meaningful changes. The Board should work with the management team to move forward with bold plans that reduce costs and assure financial stability.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

The Board and Management must work together to understand and realize that cost saving measures are essential to the success of the cooperative. Tough decisions will have to be made to ensure that safe, affordable, and reliable power continues to be delivered to our members. An integral part of the understanding and cost analysis resides in the budget. A concentrated effort should be made to ensure that the budget meets the needs of the cooperative and is adhered to as closely as possible.

B. Improvement Proposed by Cooperative

Periodic reviews of the budget will identify decisions that need to be made to ensure that Grayson meets its requirements to its lenders and to its members. Decisions made and how they affect the budget are integral to the bottom line and financial health of the cooperative.

C. Discussion of Cost/Benefit Analysis

Cost benefits would be determined on a case-by-case basis, as each decision would have a financial impact on the bottom line.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
II R-9	Prioritize capital and operational budget items to assist in decision making if mitigation steps are needed in adjusting the budget	May 2020	June 2020
	Review Budget with Board Committee addressing any significant variance and discuss any possible modifications needed	June 2020	Ongoing (Quarterly or as Needed)

Status Update:

The statement in question: Reliability, safety, and efficiency, key components in our strategic goals and mission statement, are considered outside of the financial component of all budget items, was an attempt to communicate that all budget decisions were not/are not solely decide based on financial metrics. Opportunities could occur in which a budget item dealing with reliability, safety, or efficiency may be necessary, even if it may not help financially. The overall budget, however, must adhere to all of the qualities stated.

As part of the enhanced budget and financial process in board meetings, TIER and OTIER continued to be discussed on a monthly basis and board members are presented with actual and projected metrics.

As seen in the chart below, budgeted TIER and OTIER for 2021 was a 2.43 and 2.22 respectively. Actual year-end metrics were a 6.29 TIER and 4.84 OTIER. A 1.37% growth in kWh sales, along with cost control mechanisms implemented and FEMA assistance are key contributors to a successful financial year.

The 2022 budget projected a 2.78 TIER and a 2.50 OTIER. The addition of a 9MW cryptocurrency load was a leading factor in the increase of the budgeted financial metrics. Year to date, TIER is at 6.01 level and OTIER at 4.78. Year-end numbers project to be at a 5.42 and 4.35 level. Additional FEMA allocations and a resulting adjustment have aided the increase in TIER and OTIER levels.

Concerns moving forward with rising interest rates and higher energy costs resulting in conservation could negatively affect our TIER and OTIER. Grayson will continue to monitor on a monthly basis.

Year	Budget TIER	Actual TIER	% Change	Budget OTIER	Actual OTIER	% Change
2021	2.43	6.29	159%	2.78	5.42	95%
2022	2.22	4.84	118%	2.50	4.35	74%

Next Steps:

Grayson will continue to monitor the budget and financial status of the cooperative and will utilize this information to recommend any changes to the capital and operational items listed in the budget.

This will be an ongoing project not only in the current budget but in subsequent budgets as well.

Grayson feels that this recommendation is complete, with the understanding that the implemented process continues through current year and subsequent years.

RECOMMENDATION – III-R1

III-R1 Initiate a new strategic plan that includes re-defining Grayson’s primary mission “To Maintain a TIER of 1.25 or Greater” along with other key operational targets. (Priority: High)

All other business attributes such as safety, reliability, and customer service should be defined as strategic goals that support the TIER based mission. Since this strategic plan focuses on financial issues, it can probably be performed with little or no outside support costs.

Each major Expense and Capital budget initiative should be evaluated and ranked in terms of priority, based on benefit/cost, risk of not achieving strategic goals and impacts on TIER computation. An illustrative prioritization scheme would identify Priority 1 projects as having the highest priority and must be performed regardless of TIER impact. Priority 2 projects are generally necessary however can be deferred or other lower cost solutions be substituted even at the risk that it does not achieve the same benefit-cost ratio. Finally, Priority 3 projects must be deferred until the TIER is projected to equal or exceed 1.25.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Recommendation II R-8 should support this recommendation. Step 3 of this recommendation should be implemented.

B. Improvement Proposed by Cooperative

Recommendation II R-8 should support this recommendation.

C. Discussion of Cost/Benefit Analysis

Please see Recommendation II R-8 for additional support for implementation for this recommendation.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
II R-8	Schedule a strategic planning session.	March 2020	March 2020 (Completed)
	Preliminary discussions on key issues and information that need to be	July 2020	September 2020

	included in the strategic plan. (Board of Directors, Management, Staff)		
	Strategic Planning Session resulting in a formal Strategic Plan Document	September 2020	October 2020
	Implementation of Strategic Plan and periodic discussions with staff and board of progress	October 2020	Ongoing
	Communication with PSC of Strategic Plan and results of Implementation	October 2020	Ongoing

Status Update:

Determination of the Priority levels discussed in the previous update, Grayson followed a similar metric to what was discussed by Liberty.

Three different priorities were assigned, based on discussion between Grayson staff and followed up at a board meeting. These were classified as:

Priority 1 – projects having the highest priority and must be performed regardless of TIER situation.

Priority 2 – projects that are necessary but could be deferred or substitutions made due to necessary circumstances.

Priority 3 – projects that at minimum would be deferred unless TIER was projected to equal or exceed 1.25.

After the projects were categorized and labeled, a summary was provided and discussed how each of the priorities could affect the budget if they were completed or removed.

Next Steps:

Continue during the development of and presentation of each budget meeting to discuss all items and categorize as Priority 1-3 should financial circumstances make it a necessity to review and discuss what projects to move forward with.

RECOMMENDATION – III-R2

III-R2 Review the TIER status report and certify that Grayson’s TIER will equal or exceed 1.25 at each monthly board meeting for the following 12-month period. (Priority: Medium)

If the current month or forecasted 12-month TIER fall below 1.25, the Board will require, from management, by the next monthly meeting an action plan to consider the deferment or substitution of Priority 3 and if necessary, Priority 2 expenditures and capital projects in order to achieve the 1.25 target TIER. If after three consecutive months, the Board still cannot certify that the projected TIER will equal or exceed 1.25, the KPSC should be notified by letter from the Grayson CEO and Board Chairman that the TIER is either currently or projected to be below 1.25 during the course of the proceeding 12-month period. In this letter, Grayson should detail the steps taken pursuant to the strategic plan to mitigate the decline in the TIER.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Communication of TIER and its end of the year forecast are key discussions that need to be had with the BOD on a routine basis. When forecasted models show that TIER could be compromised, discussions and decisions need to be made to help alleviate the situation.

B. Improvement Proposed by Cooperative

Grayson will expand on its current model used to communicate to the Board on a monthly basis. This model will communicate expected and actual TIER on a monthly basis as well as projections on year-end TIER. Based on projections and the model, action can be taken to assist in boosting TIER by reducing expenses and purchases to help reach financial goals and requirements.

C. Discussion of Cost/Benefit Analysis

There should be no costs in developing and implementing the model discussed in this recommendation.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	Develop Model that communicates monthly	April 2020	April 2020

III R-2	projected and actual TIER, along with Year End Projected Tier		
	Prioritize budgeted projects and capital expenditures	April 2020	April 2020
	Present Results monthly to BOD during Financial discussion	April 2020	Ongoing
	Review prioritized list of projects and expenditures if necessary and make appropriate decisions that will assist in achieving TIER	April 2020	Ongoing
	If TIER is projected to be below required target for 3 consecutive months, communicate with PSC action plan moving forward	April 2020	Ongoing

Status Update:

Discussion continues monthly regarding current and projected TIER and OTIER during in last year’s report, the July margin did include a receivable of expected funds to be obligated and received from FEMA. A similar entry has been included in 2022 financial data for additional funds that were obligated to Grayson based on FEMA approved

Next Steps:

Grayson will continue to utilize these models as well as any other scenarios that may be developed. If projections necessitate, discussions and decisions can be made on the status of capital projects based on TIER and OTIER projections.

Implementation of this recommendation is complete.

RECOMMENDATION – IV-R1

IV-R1 **Establish an annual process to determine appropriate pay increases for non-union employees that is equitable, defensible, and transparent. (Priority: Low)**

Vantage recognizes that a compensation study is expensive; however, it is beneficial to create a program that will serve the system for some time into the future. While Vantage does not recommend a below-market pay structure or program that would foster an employee exodus to greener pay pastures, it is concerning that Grayson lacks a formal documented process that governs employee promotion through the pay ranges that could lead to pay levels that exceed current market rates. Coupled with the lack of transparency in the Board's decisions and minutes, the process provides no opportunity for the members of Grayson to be certain that all employees are treated equitably and in a fiscally-responsibly manner.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

A formal documented process is needed to ensure that proper discussion and decisions are made when determining pay increases.

B. Improvement Proposed by Cooperative

Grayson will develop a formal plan on how it addresses annual salary increases. Through the plan, Grayson will develop and utilize an improved evaluation process that could tie to annual salary increases. Grayson will also review national and regional data when developing its yearly increase proposal through publications released. Grayson will make every attempt to utilize information from similar jobs outside of the utility field as well.

C. Discussion of Cost/Benefit Analysis

Costs of implementing the recommendation should be minimal as it will be completed in house. Minimal costs could include the costs of industry and national data relevant to developing pay increase proposals.

Ensuring equitable treatment of employees while safeguarding the financial health of the cooperative are benefits that can be obtained by implementing the recommendation.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
IV R-1	Research and communicate with other cooperatives on their process and policy regarding salary increases	April 2020	Dec 2021
	Develop a draft policy that discusses proposed process in determining salary increases	June 2020	March 2022
	Present to Board Committee for input and changes.	August 2020	March 2022
	Finalize policy and present to Board for Approval	September 2020	June 2022
	Review and present proposal for pay increases	October Yearly	November Yearly

Status Update:

In 2021, the board approved an increase for non-union employees of \$0.25, or average of 0.83%. This was significant lower than the CPI of 7.0% for 2021. Concerns with instability of current market conditions with rising costs factored into the decision.

A review to our Wage and Salary Plan was planned for 2022. After discussion, it was voted to table the review until 2023. Management felt that it would best be served to wait until 2023 to have a better comparison, especially with union contract negotiations forthcoming later in the year, to allow market variances to take affect and give a more accurate picture at that point in time.

As part of the review, Grayson will ask for assistance in developing a matrix to utilize future wage adjustments and what current industry standards are moving towards.

RECOMMENDATION – IV-R2

IV-R2 Accelerate and amplify Grayson’s plan for employee contributions for health care. (Priority: Medium)

Research conducted by the Kaiser Family Foundation indicated that the typical employee contribution for health care across industries was 20%.⁴ Grayson could restructure their health care plan to include an employee contribution closer to the market but combine it with a choice of plans that employees can select based on their personal needs. Additionally, Grayson could consider adding dental and vision benefits at no cost to employees. These, with appropriate benefit limitations, are lower cost items that can offset employees’ out-of-pocket expenses for medical services. There may also be ways to reduce costs through creating/participating in pools with other cooperatives or organizations. Small business organizations frequently offer health care options for members. Options should be explored with their benefits consultant. Employees could be solicited for input prior to any decision.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson should look into increasing its contribution towards medical insurance, as well as different plans and options within their current plans.

B. Improvement Proposed by Cooperative

Grayson will meet with their benefit provider and other providers to look into opportunities of reducing costs. This is tentatively scheduled for March 31st. This could include offering tiered levels of coverage. A committee would be formed where discussions would take place on options that are available and cost sharing suggestions for the cooperative and its employees. Cost sharing ideas could be a targeted percentage to achieve over x number of years and/or capping the costs and increases covered by the cooperative. A proposal would then be drafted to present to the board for their review and/or approval.

C. Discussion of Cost/Benefit Analysis

A reduction of health care costs would be realized through increased contributions and/or change in plans. Employees could also benefit in the offering of tiered coverage as well as different coverages.

⁴ Kaiser Family Foundation research; Wall Street Journal source. 2019

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
IV R-2	Meet with Benefit Administrator to discuss options in regards to coverage and tiered services	March 2020	April 2020
	Form a committee of employees to discuss offerings	April 2020	May 2020
	Develop a proposal to present to BOD committee	May 2020	June 2020
	Finalize proposal and present to board for Approval	July 2020	August 2020
	Review on Yearly Basis	July	August

Status Update:

Grayson reviewed its current health and retirement programs and after discussion voted to remain with the current plans in place. An increase to the employee contribution from 9% to 12% was also approved.

The benefits Advisor mentioned in previous report is with NRECA. After the initial audit report, we had met with him and discussed the recommendations. He did not see any coverage changes that could be made that would reduce the health insurance premium costs. We are currently utilizing the most cost effective plan. His only recommendation to reduce costs was to increase employee contributions.

Dental and vision plans were also discussed, but without the ability to reduce health premiums, any additional coverage would be at an additional cost and therefore was not considered.

In discussion, it was suggested that we do a comprehensive review in 2023 with him, as it will be a time when we are negotiating a new union contract, in which any possible changes could be discussed for the entire organization and not a selected portion.

Retirement Plan:

Please find attached a copy of the board approval requested to change the level from 2.0 to 1.7 with the retirement age remaining at age 62 as Exhibit F.

Clarifying the statement from 2021, the benefit factor for the RS plan was reduced from 2.0 to 1.7 for all newly hired non-union employees after December 1, 2020.

Health Care Plan:

Significant amounts of specialized claims would likely result in a higher number of claims as well as the cost of claims by those covered, leading to the designation characterized as being at more risk (unhealthy).

Grayson does not receive the number of claims or the cost of claims from NRECA on a yearly basis. Through general discussions with our benefits advisor, these assumptions were formulated, as that information is not given to individual cooperatives who are part of the small employer trust. Grayson promotes a healthy lifestyle and provides a benefit of coverage a portion of monthly gym fees to endorse healthy activity; however, it cannot control the number or costs of claims for its covered individuals.

Next Steps:

Grayson's health care contribution for all non-union employees and retirees will increase from 9% to 12% in 2023

Grayson will continue its annual review of benefits and opportunities for cost reductions.

Grayson will meet with their Benefits Advisor with NRECA to discuss opportunities to modify their health and retirement benefits.

RECOMMENDATION – IV-R3

IV-R3 Develop an appropriate path to reduce the ongoing pension and post-retirement healthcare liabilities. (Priority: Medium)

Grayson should develop a strategy and implementation plan to rein in the future costs of retirees. This should be a two-fold effort that includes a longer service requirement for pension eligibility as well as including a requirement of retiree contributions for health care. Caps on health care costs, caps on percentage increases absorbed by Grayson, different contributions for pre-Medicare and supplemental insurance, as well as other market benchmarked strategies should be considered. Vantage is aware this is a difficult process, but the ongoing, increasing cost burden to the Cooperative members warrants serious discussions with the unions and Board.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson’s current and future pension and post-retirement health care costs are an expense that can greatly affect the financial position of the cooperative. Controls should be developed to assist in monitoring and regulating these expenses to ensure they are comparable to others in the industry as well as safeguarding the financial status of the cooperative.

B. Improvement Proposed by Cooperative

Grayson plans on meeting with their benefits administrators of their plans to discuss all options offered. A committee of employees and management could discuss options that were present and develop a proposal(s) that could be presented to the board for their review.

C. Discussion of Cost/Benefit Analysis

Cost savings should be realized by any change in the benefit plans. These could possibly be offset by any requirements of Grayson’s current plans.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
IV R-3	BOD established committee meets with Benefit Administrator to discuss options in	March 2020	April 2020

	regard to coverages and options available		
	Form a committee of employees to discuss offering changes	April 2020	May 2020
	Develop a proposal to present to BOD committee	May 2020	June 2020
	Finalize proposal and present to board for approval	July 2020	August 2020
	Review on Yearly Basis	July	August

Status Update:

As a correction to the 2021 update, the contribution percentage in 2022 for retirees was 9%, not the 6% stated. The contribution percentage will increase from 9% to 12% in 2023.

For 2023, no changes were made in regards to coverage for retirees. With union negotiations upcoming, significant discussions will be held regarding possible considerations in regards to coverage, percentage contributions, and requirements to qualify for coverage.

RECOMMENDATION – V-R1

V-R1 Grayson should establish a Disaster Recovery location. (Priority: Medium)

Grayson needs to establish a location or locations from which they can operate in the event of a disaster. It needs to be:

- Scalable
- Within the service territory.
- Part of a plan
- Does not need to be a one size fits all (systems and customer service locations can be different).

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson realizes that the importance of having a disaster recovery location would be a necessity if a disaster would strike our current location. Being able to quickly get back to our everyday tasks in a facility that would be large enough to accommodate us would be our goal.

B. Improvement Proposed by Cooperative

Grayson is currently working with a several businesses in regards of having a location in our service territory or just outside our service territory that will accommodate our employees and give us an easy transition for us to maintain our daily business in case of a disaster that could occur at our current location at any given time.

C. Discussion of Cost/Benefit Analysis

Currently in our discussion with several businesses that we have contacted there is no cost to the cooperative to implement a disaster recovery plan at their locations. However, a study will have to be done by the staff once we determine the location and the number of employees that will be involved in the relocation of the office to determine what the disaster recovery plan could cost.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
V-R1	Gathering information on locations and business willing to accommodate the cooperative for disaster relief.	Current	April 2020
	Meet with IT staff departments in other cooperatives to see how their disaster recovery plans are implemented.	Current	On going
	Meet with Staff to complete a disaster recovery plan that best fits our business needs.	May 2020	August 2020

Status Update:

Grayson employed a third party IT company to review our disaster recovery (DR) environment and test our backups after we upgraded our virtual environment. We found our backups and replication and recover process is working well. However, we did find our DR needs modifications to have better protection and off-site restoration in a timely manner. A plan has been developed and submitted to get budget approval in 2023 to implement that plan next year. Once the plan has been completed, we will conduct a DR test and report the findings.

RECOMMENDATION – V-R2

V-R2 Grayson should explore opportunities for shared purchasing and consolidations of processes with other Distribution Cooperatives. (Priority: Medium)

At a minimum, the following areas should be explored:

- Purchasing, materials (all of the supply chain)
- Information Technology
- Training
- Service Call outs using bordering Distribution Cooperatives

None of these opportunities require an actual merger to achieve savings. All can be cooperative arrangements. In addition, there is no need for all sharing to be accomplished with any one entity.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson should continue to explore all opportunities of shared services with other Cooperatives. These do not have to be limited by any certain area, nor do they require any type of merger to achieve.

B. Improvement Proposed by Cooperative

Management and staff will continue to brainstorm and explore different opportunities for shared services. They will, together with Recommendation VI R-1, incorporate any options that become available. Regular discussion will be had on subject at appropriate meetings.

C. Discussion of Cost/Benefit Analysis

Benefits and costs will be directly tied to any type of opportunity that is put into place.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	Grayson Staff would continue to brainstorm and explore any opportunities	April 2020	Ongoing

V-R2	for shared service. Discussions had regularly at staff meetings.		
	As opportunities are presented, Grayson will evaluate and implement opportunities that are beneficial	April 2020	Ongoing
	Update Board of Directors and PSC as needed	April 2020	Ongoing

Status Update:

Grayson is not unique in the supply chain issues that it has faced over the last several months. Availability of transformers and minor material has been significantly impacted. Grayson has tried to be proactive in the challenges surrounding the supply chain and have enhanced their efforts in ordering material in advance with the understanding that delays are likely. While we have not experienced any significant issues with operations due to materials, we have been able to assist others. We were able to supply a sister cooperative with a key piece of metering equipment that had failed on them. The lead-time was a significant number of weeks and with a spare on hand; we were able to provide it to them while the other was ordered.

Grayson benefited from its' relationship with their contractor when a digger truck, schedule to be replaced in 2020 but due to supply chain issues, had not received our new truck, broke down and we were without a truck. Our contractor allowed us to borrow one of their spares to continue operations until ours could be repaired.

Due to transformer supply issues, we have also made a concentrated effort on retiring idle services and repurposing the retired equipment to new jobs.

As stated in our previous response, sharing services can be difficult as each cooperative is unique and presents its own challenges. However, as cooperatives, we try to work together as much as possible. As mentioned in Vantage's recommendation: purchasing materials, IT, training, service call outs, etc. could also be opportunities for sharing services. To the extent that it is feasible, we currently already do that. Most, if not all cooperatives, utilize United Utility Supply, a cooperative itself managed by our statewide association, for material and transformer needs. KEC also provides numerous training opportunities across the board that are taking advantage of for all of our different departments.

Information technology makes it difficult to share, especially with cooperatives sharing one person, due to the different nature of equipment and programs utilized by each cooperative. Service call outs by bordering cooperatives would not be feasible in our case, due to contract constraints, but also would be potentially dangerous. Familiarity and understand of a system's infrastructure is a key component in safety.

RECOMMENDATION – V-R3

V-R3 Grayson should explore alternative means of obtaining the necessary IT skill sets. (Priority: Medium)

Some alternatives might include:

- Position sharing with another Cooperative.
- Remote access
- Outsourcing

See also consolidation recommendation

VII. UTILITY RESPONSE (Filled Out By Company)

VIII. Discussion of Recommendation

The Management Audit report states, “Grayson should explore alternative means of obtaining the necessary IT skill sets.” And “Some alternatives might include: Position sharing with another Cooperative, Remote access and Outsourcing”.

Grayson RECC understands that outsourcing or sharing services with other cooperatives could be a cost saving measure especially in the area of benefits.

B. Improvement Proposed by Cooperative

Grayson RECC will look closely at the cost benefits of employing an IT company for both cost saving, added expertise.

C. Discussion of Cost/Benefit Analysis

An IT Help Desk and/or Remote management service would give us a resource with more expertise than we would possibly have in our multitasking environment.

Outsourced IT services would have an expertise we would not necessarily since they work with a variety of business environments thus giving us an insight into the changing world of IT that we wouldn't necessarily be privy too.

Guidance from an expert resource could prevent unforeseen expenses down the road through industry trend implementations, providing knowledge of network weaknesses, developing end-of-life replacement plans on equipment we currently haven't been notified of by the manufacture, utilization of other off-sight services we may not yet be aware of.

Grayson RECC has moved forward, following the loss of our key IT employee, and contracted an IT company to provide remote monitoring and maintenance of our servers and network as well as provide a Help Desk for employees. This change proves to have saved the Cooperative around \$46,000 a year in IT expenses.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
V R-3	<p>Grayson RECC signed a contract with Netgain Technologies in Lexington, KY July 30, 2019 for their Remote IT Services. This includes:</p> <ul style="list-style-type: none"> -Helpdesk -Remote Engineering - Remediation Services, -- Workstation management, -Workstation installation -Proactive Server -Maintenance services -Network monitoring -Vendor management -Off-site data backup -Backup monitoring -Backup Testing -Warranties, maintenance & licensing management -Antivirus verification and updates -Progress Reports & business planning, including Cyber Risk Profile -Development of new solutions via Providers Network Operation Center 	August 1, 2019	Ongoing
	<p>Continue to look for cost saving opportunities</p>	March 2020	Ongoing

Status Update:

Netgain Technologies is currently providing monthly Executive Summary Reports (Exhibit G), but not an annual review. Exhibit C is a copy of recommendations from Netgain in June of 2021.

Grayson completed its upgrade of the virtual environment this year (2022). The old equipment is being re-purposed for daily backups in another building.

We placed an order to begin replacing network switches in early spring and only received notifications of delays to the delivery. The reason for the delays was due to supply chain issues. We cancelled the order and re-evaluated options. We have requested in our 2023 budget, money to change all primary switches next year utilizing a different brand that is supposed to be more cost effective, easier to obtain, and easier to maintain. We also are asking for an upgrade to our firewall equipment in the same budget request.

Grayson's upgrades to our infrastructure were made for all the reasons mentioned in the Staff Response. Those reasons being reliability, efficiency, and safety.

We have also implemented multifactor authentication this year to add to our network security. All systems that were still operating on Windows 7 were replaced as well.

Grayson engaged another IT company to look over the system as a whole and they will be giving suggestions on areas that may be improved for both security and performance.

Next Steps:

Grayson will continue to work with Netgain to expand the coverage and assistance as needed, as well as look for other opportunities to reduce cost or expand coverage as necessary.

Grayson feels that this recommendation is complete, outside of a normal annual review of processes and procedures.

RECOMMENDATION – V-R4

V-R4 Explore opportunities to improve or control costs in line operations. **(Priority: High)**

Grayson should explore opportunities to better manage costs in the line area including:

- Reduced line crew sizes
- Performing hot work with internal resources
- Reducing overtime
- Better balancing in-house and contractor use

None of these opportunities can be fully realized before the next negotiated contract with the line crew bargaining unit; however, data can be gathered, and analysis performed before that time. At a minimum:

- Perform and document an informal survey of other East Kentucky Power Cooperative (EKPC) distribution cooperatives as to their policies regarding line crew size, hot work and overtime.
- Research available studies on these same topics from industry sources such as NRECA, Touchtone, EKPC and others.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson should explore all opportunities to assist in reducing operating expenses.

B. Improvement Proposed by Cooperative

Grayson would form an operations committee to research and evaluate all opportunities to improve its line operations. From the committee, a plan would be developed to address the opportunities that can be achieved and the results associated with them.

C. Discussion of Cost/Benefit Analysis

Costs of implementing the recommendation would be dependent on the opportunities addressed. Additional training and tools may be needed to achieve the changes suggested.

Benefits would be tied directly to a reduction in maintenance and operational costs as well as the opportunity for better service and increased efficiency.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
V-R4	Form a committee to discuss line operations and opportunities to improve. Members would include: <ul style="list-style-type: none"> • Manager of Operations • Assistant Manager of Operations • GIS Technician • Engineering • Maintenance Leadman • Construction Leadman 	April 2020	June 2020
	Discuss with other members of the cooperative community their practices and how they compare to ours	April 2020	June 2020
	Develop a list of opportunities that could be addressed	June 2020	July 2020
	Prioritize list and begin discussing implementation	July 2020	August 2020
	Propose to BOD for their approval	September 2020	October 2020

Status Update:

As mentioned in other recommendations, through 2022 we have been able to complete 220 hours of work hot (61 jobs). This allowed us to either avoid an outage to complete the work or to have our contractor complete, resulting in savings of over \$62,000.

Another method of savings mentioned was “allowing contractors to work storms offsite”. When natural disasters and widespread storms cause significant damage (hurricane in the south for example) and requests are made for assistance, we will allow our contractor to go and assist in the restoration efforts. Because they are working elsewhere, we will not incur the costs of having them working for us during that time period, realizing savings.

We also continue to utilize the savings mechanisms discussed in previous reports and continue to look at all opportunities to save as they arise.

Next Steps

- Continue to analyze the cost savings that can be utilized from actions above as well as any future actions.
- Continue to meet periodically with team and management to discuss any additional issues that could be addressed

RECOMMENDATION – V-R5

V-R5 Explore opportunities to reduce overtime. (Priority: Medium)

The current procedure, which permits some overtime decisions to be made by the field crew itself, is not within industry standards. While the rationale makes sense, a more focused control should be instituted. Proper planning can help to determine manpower needs and hours necessary to complete any assignment. Better planning regarding parts carried and bucket truck inventory can also help facilitate more efficient work.

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson should analyze and make recommendations to assist in reducing the amount of overtime and expense related to overtime work.

B. Improvement Proposed by Cooperative

Grayson will analyze their overtime hours and develop a plan that could assist in reducing these hours and expenses. Evaluating maintenance zones, scheduling, and other procedures implemented would all be discussed in the overtime plan.

C. Discussion of Cost/Benefit Analysis

A reduction of overtime would directly reduce the overtime expense of the cooperative. A negative benefit of reducing overtime could be sacrificing service to our members as outage times could increase when reducing overtime hours.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
V-R5	Complete overtime analysis and discuss with staff and board each month	May 2020	Ongoing
	Develop a plan to discuss overtime issues and any trends noticed through analysis and discussion	May 2020	June 2020
	Implement changes to procedures that would	July 2020	Ongoing

	reduce overtime expenses		
	Compare overtime expense and outage time to realize any savings/benefits	July 2020	Ongoing

Status Update:

Grayson has been able to complete 220 hours of work by completing 61 jobs through hot line work. If these jobs had resulted in outages of similar length, approximately \$13,600 worth of overtime labor would have been saved.

While 2022 has not seen a significant decrease in overtime hours from the previous year, the number of overtime hours remains at a reasonable level compared to previous years, especially when factoring in storm hours (While not declared a FEMA event, this summer saw storms in June and July that caused over 800 hours of overtime due to significant outages). See Chart Below

Year	Overtime Hours
2014	6769
2015	6843
2016	5454
2017	5528
2018	6314
2019	5448
2020	4224
2021	9088
2022	4823

Overtime is continuously monitors and scrutinized. As can be seen and demonstrated through other recommendations, everything is being done to try and minimize costs and hours to serve our members as best as we can.

Next Steps

- Continue to monitor overtime and expenses, acting accordingly if measures present themselves

RECOMMENDATION – VI-R1

VI-R1 Explore potential merger opportunities with both adjacent utilities and other nearby utilities should they arise. (Priority: Medium)

While mergers may be difficult, there have been successful Kentucky cooperative mergers in the recent past. Grayson, unless it merges, will continue to find it difficult to reduce costs significantly and expand operational flexibility by a significant degree. Therefore, Grayson is faced with a paradox: Even though a merger is unlikely, though not impossible, the achieved efficiencies and cost savings would be of value to both merging utilities' customers.

Grayson should pursue a two-part strategy. First, if no merger be possible, a plan should be developed that reviews all cost categories and determine if there is potential for combining processes with other cooperatives; then develop plans and action steps to actively pursue any opportunities for cost savings or operational enhancements through joint processes; and finally report the results to the Commission every 6 months.

Second, investigate opportunities for merger, including minimization of restraints. Explore a merger with another EKPC cooperative that is not contiguous. Determine whether the service territory can be split between two or more coops. Does the near term retirement of the Grayson's CEO provide a window for merger opportunities?

VII. UTILITY RESPONSE (Filled Out By Company)

A. Discussion of Recommendation

Grayson should, at a minimum, begin discussions on the possibilities of a merger with another cooperative. Through these discussions, cost saving and shared service opportunities could arise.

B. Improvement Proposed by Cooperative

Operational and Financial improvements would be realized through any merger or shared service agreements. A more stable cooperative and the ability to continue to operate and provide safe, affordable, and reliable power to our members could also be achieved.

C. Discussion of Cost/Benefit Analysis

Costs of seeking a merger or shared service agreement should be minimal. Further pursuit of a merger if a qualified candidate emerged could increase the costs as studies

would need to be completed to determine the feasibility of such. Calculation of the short and long term benefits from a numbers perspective would have to be realized through a study, but operationally, as discussed above, the results could be beneficial to all parties involved.

VIII. IMPLEMENTATION STEPS (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
VI R-1	Committee Assigned to Discuss Merger Opportunities	March 2020	March 2020
	Merger Committee will Research and Develop Criteria to Assist with Merger discussions. Included will be discussions with individuals and groups that have experience with mergers.	April 2020	June 2020
	Documentation presented to full Board on how Mergers will be discussed and evaluated.	June 2020	June 2020
	Review Periodically and as needed to BOD and PSC progress towards a merger and/or shared services	June 2020	Ongoing (Every 3-6 Months)

Status Update:

Grayson has not inquired or received any inquiries regarding a merger over the past year. We have continued to look at all appropriate situations in regards to shared services as explained thru other recommendations.

Grayson will continue to monitor for opportunities to improve their efficiency and operations with shared services in critical areas should a beneficial situation arise.

Action Plans

Focused Management and Operations Audit of Grayson Rural Electric Cooperative Corporation

Presented To:

*Kentucky
Public Service Commission*

Presented by:

*The
Liberty Consulting Group*

December 18, 2020

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Management Audit Action Plan

Recommendation No. 1

I. Report Reference

- A. Chapter II
- B. Section I. Field Practices
- C. Recommendation No. 1
- D. Priority: High

II. Recommendation Statement

Conduct trial retention of an arborist to assist with the vegetation management program.

III. Background

Grayson RECC has experienced lesser performance on a comparative basis, as measured against industry-typical reliability metrics. The large numbers of fallen off-ROW trees it experiences diminish its reliability performance as does its infrequent use of hot-line work, which increases the outages it needs to take to conduct many maintenance activities. Its high proportion of line lengths inaccessible by trucks also contributes to outage lengths.

Spending more to address off-ROW hazard trees and to keep pace with the eight-year vegetation management cycle offers material opportunities for improving reliability performance.

Grayson RECC uses consultants to assist it with electrical construction issues but does not utilize the services of a utility arborist consultant to assist with its vegetation management program. We find it typical, and often required, that an electric utility conduct vegetation management with the support of an International Society of Arboriculture (ISA) Certified Arborist Utility Specialist on staff or engaged as a consultant. Utility arborists have training and experience permitting them to lead or to assist in conducting vegetation management, including program management, ROW clearing, electric pruning, removing hazard trees, and storm response. They bring important knowledge about tree species, growth, diseases, conditions, and failures on and off power line rights of way. A certified utility arborist can provide Grayson RECC with utility-based guidance for ensuring that its vegetation management program and activities meet good utility practices and prove cost effective.

Grayson RECC should engage a certified utility arborist familiar with electric cooperatives, to conduct a study to examine management's vegetation management program, activities, and spending.

IV. Expected Improvement/Implementation Timeline

Fallen off-ROW trees contribute up to 50 percent of Grayson RECC circuit outages. Use of an arborist, experienced in vegetation management for electric utilities, will assist in determining the most cost effective practices generally, and provide expertise in identifying and removing likely off-ROW hazard trees. We do not conclude that Grayson RECC requires a full-time arborist or even on a part-time or consulting basis for more than an interim period. Management should contact other regional electricity providers (particularly larger ones) to assess the possibilities of a lending or sharing approach. Within two years, it should become clear whether the expected value justifies continuing use of an arborist, or whether knowledge transfer to internal staff has been sufficient.

Reliability improvement, rather than cost reduction, drives this recommendation. However, reducing outage incidents creates the possibility for generating savings, especially in reducing overtime costs. Grayson estimates the cost of an arborist at \$35 per hour, or \$280 per day. Management should arrange for the start of an arborist, either hired or made available for consultation by a larger regional electric utility, by April 2021.

We suggest a six-month (129 work day) contract starting in March or April 2021 as sufficient for an experienced utility arborist to review and report on Grayson RECC's vegetation program and field activities and to develop recommendations regarding improving efficiencies in the program, including:

- Addressing the 8-year vegetation management cycle
- Ways to reduce costs
- How to cost effectively address hazard trees
- Providing justified estimates for annual costs.

The arborist study should include

- Inspection of all ROWs for access, clearing, and tree contact issues
- Determination of the types of, and conditions of, vegetation (brush) and trees in or near the ROWs, especially the conditions and fall risk of off-ROW trees
- Review of management's vegetation management and tree removal practices
- Review of the management's ROW clearance, tree limb contact, and fallen tree reliability issues
- evaluation of the length of the 8-year cycle
- Evaluation of tree clearance and cutting and spraying contractor performances
- Development of an optimum hazard tree removal program (such treat pose the largest threat to reliability)
- Examination and evaluation of vegetation management costs
- Conclusions regarding the appropriateness of vegetation management practices and proposed cost increases
- Recommendations to improving the cost efficiencies and effectiveness of vegetation management and hazard tree removal.

V. Cost/Benefit Analysis and Support

A. Cost Analysis

Grayson RECC reported that an arborist would cost \$280 per day. We would expect a higher rate, perhaps in the range of \$500 per day. The higher amount would produce a cost in the range of \$60,000 for the proposed retention period. Prompt action will be required to make an arborist available for work completion in 2021.

Grayson RECC spends over \$1.7 million each year for vegetation management (and expects that figure to increase to \$2.4 million annually). Expending \$60,000 or \$70,000 thus represents a very modest amount, requiring only very marginal reductions in annual vegetation management costs to justify it even on a cost basis.

B. Benefit Analysis

The arborist’s study should identify recommendations to improve the effectiveness of Grayson RECC’s vegetation management program effectiveness and provide guidance on removing hazard trees. It is not certain that the use of an arborist would identify future cost reductions.

C. Cost/Benefit Summary

Category	One Time	Annual Recurring
Cost:	<ul style="list-style-type: none"> • \$60,000 to \$70,000 	<ul style="list-style-type: none"> • None
Benefit:	<ul style="list-style-type: none"> • Verifying optimum VM program design • Verifying appropriate VM costs 	<ul style="list-style-type: none"> • Improved VM efficiency • Possible reduced VM costs • Improved reliability

D. Other Costs or Benefits

None identified.

VI. Utility Responsibility (Filled Out By Company)

A. Name: Mike Martin

B. Title: Assistant Manager of Operations

C. Recommendation Action: Utilize a utility vegetation management specialist and/or arborist to facilitate improvements in Grayson’s vegetation management program in conjunction with reliability metrics

D. Explanation of Exception or Rejection: Grayson accepts the recommendation

VII. Utility Response (Filled Out By Company)

- A. **Discussion of Recommendation:** Grayson agrees that off-ROW trees are a key component in the outages that they are faced with and the subsequent effects they have on reliability indices and overtime costs. Approximately 25% of outages can be attributed to ROW related issues. This number has remained above 25% for the past two years and continues to be an issue.

Grayson's current practice is to cut 40-foot ROW clearance. In comparison to other cooperative's practice in the surrounding area, this practice is larger than others. Due to terrain and location of lines, even with a 40-foot clearance, hazard trees will continue to be an issue.

A thorough look at our current Vegetation Management plan would be beneficial to Grayson and to its' members. Any improvements and modifications that would provide a benefit to the Cooperative and to the members through decreasing costs and increasing reliability would be well served to explore and implement.

- B. **Improvement Proposed by Company:** Grayson proposes, as an initial step, to utilize a sister cooperative's vegetation management manager to review Grayson's practices and procedures and recommend any improvements that they observe to be beneficial. An agreement is currently in place for that to happen (initially scheduled for February but due to weather will be reschedule at the end of March or first of April).

Following their recommendations and implementation of improvements, Grayson will seek to continue the shared relationship or will look to contract their own arborist for guidance. Through discussions with other cooperative's management teams, a focus should be given to utilizing an arborist or individual who specializes in utility vegetation management and has the proper credentials related to the field.

In conjunction with the consultation and with strategic plan items discussed in relation to Grayson's Management Audit, a comprehensive and formal Vegetation Management plan will be updated, drafted and presented to the Board for their approval and will be reviewed on a yearly basis.

- C. **Discussion of Cost/Benefit Analysis:** Grayson agrees with the cost/benefit analysis presented by the Liberty Group. The opportunity to reduce the cost of the arborist is a possibility with an agreement or agreements with other cooperatives and utilizing their personnel in shared agreements.

VIII. Implementation Steps (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	Consult with Vegetation Management Specialist from sister cooperative to review current practices.	April 2021	April 2021
	Incorporate recommendations of previous review into current vegetation management plans	May 2021	Ongoing
	Determine if relationship is feasible to continue with utilizing/sharing personnel	May 2021	May 2021
	Continue process above or contract an arborist/utility vegetation management specialist to assist in program	May 2021	June 2021
	Develop, Review, and Approve an updated Vegetation Management Plan in conjunction with Strategic Plan goals	June 2021	December 2021

IX. Comments/Clarification of Intent**A. Consultant Name: Mark Lautenschlager****B. Discussion**

Status Update:

Grayson has continued to utilize an off right of way danger tree crew to proactively remove trees hazardous to its infrastructure. 932 dead and hazard trees have been removed as of November 7th, 2022. Off right of way trees have continued to be an issue, likely assisted by storms that hit the area during the summer, as well as extreme wet conditions for the first half of 2022. However, it can be safely assumed that without the work of the crew, reliability could have been affected even worse on areas that off right of way danger trees had not been removed.

Mr. Nelke continues to work with Mike Martin to provide feedback and suggestions on issues that are plaguing systems through the area.

Low volume spraying will continue again in the summer of 2023. We are currently looking at increasing usage to complete all circuits or other programs that may better assist and improve our right of way program, especially on those circuits that see the worst reliability indices.

Management Audit Action Plan

Recommendation No. 2

I. Report Reference

- A. Chapter II
- B. Section I Field Practices, Part 4 Vegetation Management
- C. Recommendation No. 2
- D. Priority: High

II. Recommendation Statement

Increase vegetation management activities sufficiently to meet the requirements of the eight-year cycle and implement an off-ROW hazard tree removal program.

III. Background (Filled Out By Consultant)

Continuation of management reductions in vegetation management expenditures will produce an activity rate that generates in practice a longer than 8-year cycle. The 8-year cycle has proven sufficient to maintain ROWs and limit tree limb contact-caused outages to a low level. However, off-ROW trees falling onto power lines have formed the primary contributor to reliability issues. causing poor reliability was, which has not been formally addressed.

Management proposed increasing its annual budget from \$1.7 million to \$2.4 million to maintain the 8-year cycle. It is not clear that an increase of this magnitude will prove necessary, depending on the results of the arborist study we recommend. The need for funding increases should await the base work of the arborist, which management should complete promptly. Completion will provide a sounder foundation for assessing continuing vegetation management needs and associated resources and costs.

IV. Expected Improvement/Implementation Timeline

Contacts from trees and brush have not contributed substantially to outages, indicating vegetation management brush and tree trimming effectiveness in past years. However, the very substantial 2020 decrease in vegetation management activities and expenditures appears too large to be sustainable, if continued. It is important for management both to set optimum cycles and then to commit the expenditures needed to accomplish the work required to meet them. Moreover, we see a need for increased off-ROW hazard tree removal - - the primary cause of outages here. We recommend a formal off-ROW hazard tree removal program, focused on most effectively identifying and removing those trees most likely to fall into lines. Management needs to examine its cycle and increased hazard tree removal, to ensure that it will optimize expenditures, without necessarily increasing them.

This recommendation seeks reliability improvement, rather than cost reduction. However, increased hazard tree removal need not necessarily add to total costs. Working with the arborist, cycle changes for routine vegetation management may prove possible, particularly given the lack of contact (as opposed to falls) from trees and brush as a material source of interruptions under historical practice and expenditure levels. Incorporating hot-spot trimming may also assist in more refined tailoring of regular cycles to correspond to the variety of vegetation conditions across the service territory.

Management should revisit plans to increase vegetation management spending post-2020 to \$2.4 million per year (from an historic base of \$1.7), following engagement of an arborist and completion of the recommended study.

V. Cost/Benefit Analysis and Support

A. Cost Analysis

This recommendation will operate in concert with the first one, requiring marginal costs of \$60,000 to \$70,000 for engaging an arborist. Some increase above 2019 expenditures of \$1.7 million are necessary on a base level, added to which will be the costs of off-ROW hazard tree removal.

B. Benefit Analysis

A redesigned base program employing the experience of an arborist will better inform future vegetation management activities and associated costs. Whatever amounts are spent will be better directed at the vegetation-related drivers of interruptions, thus improving reliability, or at least maintaining it at a lower cost.

C. Cost/Benefit Summary

Category	One Time	Annual Recurring
Cost:	<ul style="list-style-type: none"> Until study is completed 	<ul style="list-style-type: none"> TBD
Benefit:	<ul style="list-style-type: none"> When study is completed, verifying appropriate VM costs, and confirming optimum VM program 	<ul style="list-style-type: none"> TBD

D. Other Costs or Benefits

None identified.

VI. Utility Responsibility (Filled Out By Company)

A. Name: Mike Martin

B. Title: Assistant Manager of Operations

C. **Recommendation Action:** Construct a comprehensive Vegetation Management Plan that focuses on increase reliability and proper maintenance of Grayson’s infrastructure and ROW

D. **Explanation of Exception or Rejection:** Grayson accepts recommendation proposed

VII. Utility Response (Filled Out By Company)

A. **Discussion of Recommendation:** Grayson agrees that an aggressive vegetation management plan that has a focus on off-ROW trees is a necessary component for maintaining reliability of service. Cost becomes a prohibitive factor that management must balance when deciding on the maintenance route to take

In 2019, 1.79 million dollars was spent on ROW expenses. 1.81 millions dollars was budgeted for 2020, however, due to the Covid-19 pandemic and staffing issues with our ROW crews, spending decreased to 1.57 million dollars. 2021 budgeted dollars for ROW expenses remained at 2020 levels and increased to 1.83 million in 2021.

Grayson is in favor of maximizing its monetary expenses towards its vegetation management program that achieves increased reliability without increasing cost to its’ members.

B. **Improvement Proposed by Company:** Review of Grayson’s vegetation management program should be the first step in achieving its goals through the recommendation. Based on the review and input from the arborist and in conjunction with Recommendation 1, a formal Vegetation Management plan should be updated and presented to the Board for their approval, with a focus on off-ROW trees and improving reliability.

C. **Discussion of Cost/Benefit Analysis:** Ideally, maximization of current practices while shifting costs would be the goal of the proposed improvement. Any additional spending would have to be scrutinized through the budget process.

VIII. Implementation Steps (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	Utilize feedback from studies in Recommendation 1 to make necessary changes in ROW Program	April	Ongoing
	Budget accordingly during budget review process to incorporate feedback and changes produced from Recommendation 1.	October	December

IX. Comments/Clarification of Intent

A. Consultant Name: Mark Lautenschlager

B. Discussion

Status Update:

While budgeted funds to right of way programs has remained constant, thru changes implemented in the Recommendation 1, we are seeing an increase in productivity and effectiveness in programs established and implemented.

The low spraying program is providing an almost 50% increase in the number of miles of line that can be serviced thru the program. Moving a cutting crew to an off right of way tree removal program has also seen the benefits of reducing the risk of outages with the 932 danger trees removed.

This has been significantly important, as it has allowed us to continue cutting and servicing the same and necessary miles of line even with the increase in costs with respect to inflation. Our current budget has remained the same, allocating nearly two million dollars towards the right of way program.

Management Audit Action Plan

Recommendation No. 3

I. Report Reference

- A. Chapter II
- B. Section F. Reliability
- C. Recommendation No. 3
- D. Priority: Medium

II. Recommendation Statement

Increase the use of “hot-line” work by internal lineworkers to reduce outages taken to perform maintenance activities.

III. Background

Grayson RECC’s performance as measured against industry-typical reliability metrics is comparably low. The large numbers of fallen off-ROW trees it experiences diminish its reliability performance and its low use of hot-line work requires outages for many maintenance activities. A high proportion of line inaccessible by truck also contributes to outage lengths at Grayson RECC.

Management lists “Maintenance” as the cause for about 13 percent of CAIDI. Management has trained some line workers in methods, procedures, and safety practices required for working on energized lines. Management should extend training to all its line workers to permit all to practice hot-line work. This measure would improve CAIDI and would reduce costs for contractors, who now normally perform hot-line work on the system.

IV. Expected Improvement/Implementation Timeline

The goal is to improve CAIDI, but implementation could produce a small reduction in contractor costs as well. Marginal additional training costs are all that is required to enable all Grayson RECC line workers to work on energized circuits. Management should train and prepare all lineworkers for hotline work, and begin conducting hotline work by Spring 2021.

V. Cost/Benefit Analysis and Support

A. Cost Analysis

We estimate a need for two days of hot line training for all 14 lineworkers, producing a costs of less than \$20,000 including instructor and lineworker hourly rates.

B. Benefit Analysis

Using internal lineworkers will reduce line contractor costs, as well as reducing CAIDI caused by maintenance outages.

C. Cost/Benefit Summary

Category	One Time	Annual Recurring
Cost:	<ul style="list-style-type: none"> \$20,000 	<ul style="list-style-type: none"> \$2,000 (for retraining)
Benefit:	<ul style="list-style-type: none"> Reduced contactor costs Improved CAIDI 	

D. Other Costs or Benefits

None identified.

VI. Utility Responsibility (Filled Out By Company)

A. Name: Kyle Clevenger

B. Title: Manager of Operations

C. Recommendation Action: To implement a training and safety program that would allow for Grayson RECC to perform hot line work.

D. Explanation of Exception or Rejection: Grayson agrees with the recommendation with the exception of the one time cost and time line for completion and implementation. Due to safety equipment needed, the one time cost would increase an additional \$30,000. Meeting the training requirements necessary to begin utilizing hot-line work for all employees would take additional time outside of Spring 2021.

VII. Utility Response (Filled Out By Company)

A. Discussion of Recommendation: Hot-line work would provide Grayson the opportunity to increase its reliability, decrease overtime costs, and provide the opportunity to reduce contractor costs.

Currently, all maintenance on lines completed by Grayson RECC requires an outage to perform. While certain outages are unavoidable regardless if linemen are trained to complete hot-line work, those that could be completed safely while still energized are being completed by the contractor or requiring an outage, thus affecting reliability indices.

A training and safety plan would ultimately need to be developed and approved before hot line work could begin. Additional training and experience would be necessary before all employees would be capable of safely completing the work.

B. Improvement Proposed by Company: Grayson will discuss with other cooperative operation managers and safety instructors to determine the necessary training requirements to ensure that all employees are safely trained to complete hot-line work. In conjunction with KEC statewide safety instructors, a training plan will be developed and implemented before hot line work begins.

Requirements of safety equipment, training, and supervised work from experienced personnel would be included in the plan. Completion of the program would be required before hot-line work could begin.

C. Discussion of Cost/Benefit Analysis: Additional costs of \$30,000 should be expected due to purchase of necessary safety equipment to complete hot line work. Continuous training should be provided as a service from statewide association and would limit any recurring costs to the purchase of safety equipment.

VIII. Implementation Steps (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	Purchase safety equipment necessary to complete hot-line work	January 2021	March 2021
	Develop training program with guidelines on achieving certificate to complete hot-line work	January 2021	April 2021
	Begin training program	May 2021	Ongoing
	Hot-line work utilized	May 2021	Ongoing

Status Update:

All linemen have completed hot-line training and are available for hot-line work.

From January 5, 2022 to October 22, 2022, Grayson has completed 61 jobs hot for a total of 220 hours.

Periodic safety meetings and discussions are held reviewing safe policies for working jobs hot and to address any concerns that employees may have.

Management Audit Action Plan

Recommendation No. 4

I. Report Reference

- A. Chapter II
- B. Section F. Reliability
- C. Recommendation No. 4
- D. Priority: Medium

II. Recommendation Statement

Provide a structured program for conducting and documenting work activities addressing work on the previous year's worst performing circuits, including follow up inspections and corrective maintenance conducted, and estimated or actual reliability improvements.

III. Background

Management does not focus on reporting and assessing the effectiveness of work conducted to improve the reliability of its worst-performing circuits. It does address them regularly, but does not use the increasingly prevalent practice of formally analyzing cost and performance change data following work on those circuits, in order to identify most effective measures and results.

IV. Expected Improvement/Implementation Timeline

Structured, highly visible worst-circuit programs have become common in optimizing efforts to enhance reliability performance. To ensure that the causes of outages on these circuits are addressed and to optimize expenditures on them, management should annually catalogue efforts and costs to investigate the causes of outages, corrective actions taken, and estimated reliability improvements (*e.g.*, avoided customer interruptions and numbers of customers interrupted each year, or improvements in SAIFI and CAIDI, for each of the previous year's worst performing circuits).

This recommendation seeks to improve reliability by addressing the worst performing circuits, but will also optimize reliability gains for the money spent. Adopting and implementing the program should involve no material cost. Management should by January 2021, begin documenting all identified causes of outages occurring for the previous year's worst performing circuits, document corrective actions and costs applied during the year, and estimate the reliability improvement resulting those corrective actions.

V. Cost/Benefit Analysis and Support

A. Cost Analysis

No additional costs.

B. Benefit Analysis

Implementation will enable management to identify and report the work, *e.g.*, adding reclosers, fuses, replacing insulators, cross arms, poles, or conductor, specifically undertaken on the worst performing circuits, the cost of that work, and the estimated numbers of customer interruptions (CIs) or customer minutes of interruption (CMIs) avoided each year, or SAIFI and CAIDI improvements, because of the reliability work and improvements. The data collected and analysis performed will provide a tool for prioritizing worst performing work and improvements and for determining reliability value gained for dollars expended under each of the methods applied to the circuits involved.

C. Cost/Benefit Summary

Category	One Time	Annual Recurring
Cost:	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None
Benefit:	<ul style="list-style-type: none"> • Provide a means to verify worst performing work was done, what it was, what it cost, and measuring the cost to avoided CIs and CMIs • Improved SAIFI and CAIDI 	

D. Other Costs or Benefits

None identified.

VI. Utility Responsibility (Filled Out By Company)

A. Name: Brian Poling/Kyle Clevenger

B. Title: Manager of Technical Services/Manager of Operations

C. Recommendation Action: To document and provide explanations of work that is completed on worst performing circuits

D. Explanation of Exception or Rejection: Grayson agrees with recommendation

VII. Utility Response (Filled Out By Company)

A. Discussion of Recommendation: Grayson understands the importance of maintaining reliable service, measures by reliability indices such as CAIDI and SAIFI. Since 2017, Grayson has seen improvement in its indices as seen in the table below.

Year	SAIFI (#)	CAIDI (Minutes)	SAIDI (Minutes)
2017	3.7	148	545
2018	3.0	125	378
2019	2.6	147	381
2020	2.5	136	338

To assist in maintaining acceptable reliability standards, Grayson should focus on its worst performing lines and document the steps taken to ensure that significant issues are being addressed and progress is being made.

While Grayson does address its worst performing circuits, it has not in the past documented and provided explanations on what has been to achieve these improvements.

- B. Improvement Proposed by Company:** Grayson will develop a report that can be submitted to the Commission at its request that will document the necessary steps taken to address the worst performing circuits.

- C. Discussion of Cost/Benefit Analysis:** Additional costs should not be incurred by Grayson through the implementation of this recommendation, as costs associated with improvements would already have incurred through corrective action.

VIII. Implementation Steps (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	From the Reliability report submitted to the PSC annually, document all preventive and corrective measures on the worst performing circuits.		
	Submit documentation to the Commission regarding the corrective and preventive measures taken on previous years worst performing circuits when completing Annual Reliability Report.		

IX. Comments/Clarification of Intent

- A. Consultant Name:** Mark Lautenschlager

B. Discussion

Status Update:

Please find attached as Exhibit H a copy of Grayson’s most recent Annual Reliability Report

PM – Preventive Maintenance

CM – Corrective Maintenance

with T-MED	2020	2021	2022
SAIDI	338.4	11588	488.8
SAIFI	2.48	4.30	2.5
CAIDI	136.5	2694.9	197.0

w/o T-MED	2020	2021	2022
SAIDI	338.4	332.8	298.0
SAIFI	2.48	1.92	2.09
CAIDI	136.5	173.3	142.9

PM/CM Completed

- Animal Guards: Continue to install animal guards in areas where animal outages could or have caused significant reliability issues.
- Off - ROW Trees: Targeting areas where off right-of-way trees have caused significant reliability issues. One crew has been assigned to focus on these feeders.
- Equipment Replacement: Replaced breakers and other equipment in areas where breakdowns and outages have been prevalent.
- AMI Monitoring: Focused on data from AMI information to monitor and assist in preventing outages before they happened.

Next Steps

- Monitor cause codes in these areas to address issues
- Complete documentation during Annual Reliability Report discussing worst performing circuits from previous years.

Management Audit Action Plan

Recommendation No. 5

I. Report Reference

- A. Chapter II
- B. Section F. Reliability
- C. Recommendation No. 5
- D. Priority: Medium

II. Recommendation Statement

Conduct a structured annual training program for properly identifying outages and require reporting intended to reduce “unknown” as the cause of outages.

III. Background

Management has been working with its maintenance lineworkers to reduce the number of outage causes listed as “unknown.” Outages attributed to unknown causes accounted for about 8 percent of system-wide outages in 2019, with at least one circuit having 21 percent of its causes attributed to unknown causes.

IV. Expected Improvement/Implementation Timeline

Management should formalize its training for identifying causes so that the engineering chiefs and the manager of operations can address the causes of outages. The goal is to improve reliability. Implementation will require only nominal costs. By April 2021, management should be operating a formal outage-cause identification training program encouraging and preparing all lineworkers to investigate the causes, or the most likely causes of all outage causes. The training should give them sufficient ability to identify outage causes and an understanding of the importance of accurate outage data.

V. Cost/Benefit Analysis and Support

A. Cost Analysis

Training for demonstrating the importance of, and the methods for identifying the most likely causes of outages should require about day for management to develop. Lineworker training can be part of periodic safety training. No additional costs should be incurred.

B. Benefit Analysis

Listing outage causes as unknown hinders investigation and correction of them individually. It can also produce misunderstanding about the relative contributions of major causes, which can affect the locations and emphases on which management focuses its planning and budgeting. Reducing reported unknown causes allows the engineering chiefs, and others, to address those causes both individually and with respect to what causes are the principal drivers of outages across the system.

C. Cost/Benefit Summary

Category	One Time	Annual Recurring
Cost:	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> \$0
Benefit:	<ul style="list-style-type: none"> Improved Reliability 	

D. Other Costs or Benefits

None identified.

VI. Utility Responsibility (Filled Out By Company)

A. Name: Kyle Clevenger

B. Title: Manager of Operations

C. Recommendation Action: Developing and implementing a continuous training program that focuses on identifying and documenting outage causes while reducing the amount of unknown to a minimum

D. Explanation of Exception or Rejection: Grayson accepts the recommendation

VII. Utility Response (Filled Out By Company)

A. Discussion of Recommendation: Documenting outage causes is an important part of ensuring and improving reliability to Grayson’s members. Excessive use of unknown causes does not provide the proper feedback and allow for management and their teams to ensure proper improvements and maintenance occurs.

Proper education and training is essential to provide the front line worker the tools they need to accurately assess the situations and provide the proper feedback needed.

Grayson has already conducted training sessions through their safety program on the importance of proper documentation with outages. As you can see from our data, unknown outages have dropped from 162 in 2018 to 118 in 2019 and 23 in 2020.

B. Improvement Proposed by Company: Grayson plans to continue their education of proper outage determination through their safety trainings in-house and in conjunction with the statewide safety program.

Grayson will also continue to monitor their outage codes and causes and will utilize the data to propose changes or improvements to their operational goals and work flow.

- C. Discussion of Cost/Benefit Analysis:** Grayson agrees that outside of any special training for special situations, there should be no cost associated with the continued training and a benefit of increased reliability through the system.

VIII. Implementation Steps (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	Continue and Incorporate periodically safety presentations that regard to outages and the importance of correct documentation and determination factors.	January	Ongoing
	Facilitate with KEC Safety program an annual safety presentation regarding outages and cause reporting.	January	Ongoing
	Review outage data with management team and when necessary the Board of Directors and determine proper course of action to improve any outlying numbers.	April	Ongoing

IX. Comments/Clarification of Intent

- A. Consultant Name: Mark Lautenschlager**
B. Discussion

Status Update:

Similar to recommendation II-R3 in Management Audit.

Grayson has continued to focus on outage causes and viewing trends as an opportunity for improvement.

Through the documentation process, we noticed an increase on Unknown outage causes early in 2022. Management addressed the issue with a specific safety meeting regarding outage causes and their importance, stressing how valuable these outage causes were in assisting in improving reliability in the future and addressing any current issues. Statistics improved following the education.

Management Audit Action Plan

Recommendation No. 6

I. Report Reference

- A. Chapter II
- B. Section H. Field Operation, Part 3 Field Labor Costs
- C. Recommendation No. 6
- D. Priority: High

II. Recommendation Statement

Evaluate and take actions to optimize lineworker overtime levels, considering the need to support maintenance of reliability performance.

III. Background

Grayson RECC lineworkers worked 3,973 overtime hours in 2019, producing a total cost of approximately \$270,000 for overtime maintenance work. Rates have fallen some recently, but remain at a comparatively high percentage of regular hours.

IV. Expected Improvement/Implementation Timeline

Grayson RECC has charged all lineworker overtime to maintenance work, with none to construction work since 2017. Much maintenance overtime likely results from addressing off-hours outages and restoring power to end users. However, management should identify where it can delay or make temporary outage restorations, permitting repairs during regular time hours. Management's review should identify any other areas it can reduce or eliminate maintenance overtime. This study should include considerations for CAIDI consequences of these actions.

Before management secures a fuller understanding of the drivers of overtime levels, savings estimates remain speculative. However, the recommendation will lead to a determination of how to best manage overtime use as part of its resource mix. The analysis should involve no material incremental costs. Management should complete by March 2021 a study of overtime drivers with conclusions about where lineworker overtime hours can be reduced in the future, without substantially affecting reliability.

V. Cost/Benefit Analysis and Support

A. Cost Analysis

Conducting the overtime reduction study in-house should require no appreciable incremental costs.

B. Benefit Analysis

Reducing overtime costs reduces the RECC's costs that go into the consumer rates. After the study is completed, management should set reasonable reduction goals, and plan work accordingly.

C. Cost/Benefit Summary

Category	One Time	Annual Recurring
Cost:	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Benefit:	<ul style="list-style-type: none"> Up to \$270,000 per year 	

D. Other Costs or Benefit

None identified.

VI. Utility Responsibility (Filled Out By Company)

A. Name: Bradley Cherry

B. Title: Interim President & CEO

C. Recommendation Action: Conduct a study to evaluate overtime with Grayson RECC’s lineworkers and develop a framework to potentially reduce overtime hours while not causing a negative change in reliability indicies.

D. Explanation of Exception or Rejection: Grayson accepts Liberty’s recommendation

VII. Utility Response (Filled Out By Company)

A. Discussion of Recommendation: Grayson fully understands the effect that an excessive number of overtime hours has on its’ members. Increased maintenance expenses passed on to members through rates and negative reliability indices are directly related to high overtime hours. While maintenance overtime hours will never be eliminated, an ability to reduce or control the hours would greatly benefit Grayson and its’ members.

In order to plan and make the necessary changes to improve in this matter, a framework will need to be developed to assist in monitoring and evaluating overtime hours. Once developed, this framework would be utilized in determining causes as well as managing the appropriate steps necessary to manage currently and in the future.

Additional policies could potentially be developed in order to assist and properly determine the course of action necessary to take in maintenance situations. Reliability and safety will remain a key component in all changes and decisions made.

B. Improvement Proposed by Company: Grayson will develop a framework to document and analyze all overtime hours. From this analysis, Grayson will determine the proper procedures to address potentially reducing overtime hours by delaying overtime maintenance work.

Grayson through its data analysis, could also determine that potential corrective maintenance be scheduled to reduce the opportunity of overtime maintenance on lines that potentially face issues.

C. Discussion of Cost/Benefit Analysis: Grayson agrees with Liberty’s cost/benefit summary. Any additional cost occurred through corrective maintenance would be offset by reduction of future overtime hours or construction hours.

VIII. Implementation Steps (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	Development of model to determine key data points necessary for analysis.	December	January
	Utilization of model and analysis of data	March	Continuous
	Periodic discussion of data and necessary changes in procedures moving forward	March	Monthly
	Review overtime hours and report to necessary parties (Management/Board/PSC)	March	Monthly
	Schedule of corrective maintenance as needed	March	Monthly

IX. Comments/Clarification of Intent

A. Consultant Name: Mark Lautenschlager

B. Discussion

Status Update:

Grayson has continued to utilize its model to assist in overtime analysis and make necessary decisions for improvements to line operations.

Through discussions, Grayson has made minor changes to its model to improve the data received based on concerns by staff utilizing the data.

Please refer to Recommendation V R-5 for additional information

Management Audit Action Plan

Recommendation No. 7

I. Report Reference

- A. Chapter II
- B. Section H. Field Operations, Part 2 Resources and I. Field Practices, Part 3 Restoration and Retirement
- C. Recommendation No. 7
- D. Priority: High

II. Recommendation Statement

Engage, initially on a trial basis, a professional ground-line pole testing and treating contractor.

III. Background

A common utility practice plans replacement of wood poles when they have lost 50 percent of their original strength. Ground line inspection and testing comprises the only reliable way to determine pole strength quantitatively. The process also includes injection and wrapping measures designed to extend expected pole life to 60 years or more. Grayson RECC uses the significantly less accurate method of sounding (thumping with a hammer) poles to detect internal voids, conducted as part of its two-year circuit inspection cycle. We do not consider this procedure alone as an effective in determining when to replace poles.

The lack of a sounder approach creates risk that management is replacing poles unnecessarily, or not addressing poles that should be replaced. A companion issue arises from the large number of poles (about one-third of the total) of indeterminate age, as addressed in Recommendation No. 8.

IV. Expected Improvement/Implementation Timeline

Reducing the rate of pole replacement can produce material savings by requiring fewer construction lineworkers. Management estimated, based on conducting ground-line inspection on about 2,253 poles each year (1/10 of all poles known to be older than 20 years old, plus those poles with unknown age) that the annual cost would be in the range from \$90,000 for the ground-line inspection plus fungicide to about \$126,000 if insecticide was included. This cost may be reduced if management can determine the age of its poles of unknown age. Management should institute a trial pole ground-line testing program by April 1, 2021.

V. Cost/Benefit Analysis and Support

A. Cost Analysis

Management determined that the maximum cost could be \$126,000 per year. However, changing the 10-year cycle to 15 years would reduce costs to \$10,000.

B. Benefit Analysis

Wood poles should last about 60 years, unless ground conditions, moisture, and insects have caused internal deterioration. The best way to identify this deterioration is to bore the pole above and below the ground line, and measure shell thickness. Grayson RECC construction lineworkers spend a large portion of their time replacing poles that maintenance line workers had determined as bad by inspection and thumping. Management budgeted about \$1.4 million in 2021, and \$1.5 million in 2022, at about \$4,500 per pole for replacing poles. The goal of this program is to reduce the numbers of poles replaced, or at least ensuring that only poles rejected by professionally trained inspectors are replaced.

Grayson RECC has already replaced about 4,000 poles since 2010. As the pole testing and treatment program progresses, fewer poles should be identified for replacement.

C. Cost/Benefit Summary

Category	One Time	Annual Recurring
Cost:	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> \$80,000 to \$126,000
Benefit:	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Possibly fewer poles replaced at \$4,500 per pole Pole life extended by treatment

D. Other Costs or Benefits

None identified.

VI. Utility Responsibility (Filled Out By Company)

A. Name: Robert Brown

B. Title: GIS Technician

C. Recommendation Action: Implement a ground-line pole testing program to facilitate proper maintenance and replacement of critical infrastructure.

D. Explanation of Exception or Rejection: Grayson accepts the recommendation

VII. Utility Response (Filled Out By Company)

A. Discussion of Recommendation:

- B. Improvement Proposed by Company:** Grayson will implement a pole testing program that utilizes testing at the ground level while determining any sort of corrective action that may need to take place.

After selecting a contractor to facilitate the pole testing program, Grayson will utilize their service to assist in determining the replacement of poles on its system as well as allowing for treatment to take place at the pole to help ensure the longevity of the structure as well as assisting in reducing costs from unnecessary pole changes.

- C. Discussion of Cost/Benefit Analysis:** Grayson agrees that the benefit of the program could lead to fewer poles being changed as well as longevity of the poles and their structures. Costs associated will be better understood once formal quotes are received. An ongoing review, at minimum on a yearly basis, should be completed to ensure that the cost benefit of the program is a savings for the cooperative.

VIII. Implementation Steps (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	Solicit bids on performing pole testing program	March 2021	April 2021
	Select contractor	April 2021	May 2021
	Begin Pole Testing Program	May/June 2021	Ongoing
	Review progress and effectiveness of Program	December 2021	Ongoing

IX. Comments/Clarification of Intent

- A. Consultant Name:** Mark Lautenschlager

- B. Discussion**

Status Update:

In the past year, UAM has tested 2,527 poles for Grayson. They are identified on our GIS map as visited or tested as they are completed. Currently, we are initially having UAM test entire circuits as it helps control the costs of the contractor by limiting the amount of time and distance they would have to drive from several different locations throughout the system. If trouble areas are detected through visual inspections, as described below, we will direct UAM to test the area of concern.

Pole ages are listed on the mapping system and given to the contractor for verification.

Our service men examine other circuits as well and perform a visual inspection, with a sound test conductor via a hammer and screw driver on the poles. We follow up with UAM testing and inspecting these circuits with Ultra Sound technology that gives us an idea of what kind of shell rot the pole may have. This assists in giving us a yearly range when the pole may need to be tested again. If necessary, treatment of the pole will be completed as necessary.

Next Steps

Continue pole testing program, selecting circuits that focus on those with significant unknown age poles and worst performing circuits with history of elevated pole changes.

Management Audit Action Plan

Recommendation No. 8

I. Report Reference

- A. Chapter II
- B. Section U. Field Practices, Part 3 Restoration and Retirement
- C. Recommendation No. 8
- D. Priority: Medium

II. Recommendation Statement

Investigate the ages of poles with unknown ages.

III. Background

A companion issue to the ground-line pole testing program (Recommendation No.7) arises from the large number of poles (about one-third of the total) of indeterminate age.

About one-third of the RECC’s poles do not have the manufacturer’s date marks required to determine pole age. If management determined the install dates of these poles, then it can determine whether to include those poles in the ground-line pole testing and treatment program. Management indicated that it may not be possible to date all of these poles. However, management should research its records to identify likely install dates.

IV. Expected Improvement/Implementation Timeline

The number of wood poles known to be over 30 years is not large, but management does not know the age of almost a third of its poles due to label fading. Management should endeavor to determine the age of the poles of unknown age. A program that reduces this number substantially may produce a reduction in the numbers of poles tested each year. Researching pole age should not produce material marginal costs. If research does not provide management with pole ages by April 1, 2021, then ground-line pole testing should include the provision of age estimates.

V. Cost/Benefit Analysis and Support

A. Cost Analysis

No additional costs.

B. Benefit Analysis

Identifying pole age may reduce the numbers of poles included in the ground-line pole testing and treatment program.

C. Cost/Benefit Summary

Category	One Time	Annual Recurring
Cost:	• None	• None

Benefit:	<ul style="list-style-type: none"> • Reduce cost of pole testing program 	

D. Other Costs or Benefits

None Identified.

VI. Utility Responsibility (Filled Out By Company)

A. Name: Robert Brown

B. Title: GIS Technician

C. Recommendation Action: To determine the age of unknown poles located on Grayson’s system to assist in the pole testing program

D. Explanation of Exception or Rejection: Grayson agrees with the recommendation

VII. Utility Response (Filled Out By Company)

A. Discussion of Recommendation: In 2015, Grayson began a project that allowed it digitally map its system for the first time. During this process, all poles were given a unique pole identifier number and data was collected on each point that contained the makeup of the pole and all of its material, attachments, and the age of the pole.

During the progress, a significant portion of the poles that were on the system had their date marking become unreadable, mostly due to weather. When the contractor could not read the date stamp, they were marked as unknown. Because this was the first time a unique identifier was referenced to each individual pole and not just a Grayson tag, it has become nearly impossible for Grayson to determine the age of the majoring of the unknown poles.

When speaking with possible contractors for the pole testing program, Grayson inquired about the possibility of accurately identifying the age of poles before testing. The response was greatly that they could try, but it would be likely that accurately determining the age of the poles would be difficult.

- B. Improvement Proposed by Company:** In conjunction with Recommendation 7, Grayson will utilize its pole testing program to assist in determining the age of any unknown poles. For any poles that a contractor can accurately determine their age, it will be noted and updated in the system. Otherwise, testing and documentation of the pole as is will have to be incorporated
- C. Discussion of Cost/Benefit Analysis:** Any poles that can be identified would only benefit the over GIS system and its data outputs, as well as possibly eliminating the need to test those pole, providing additional opportunity to test and treat other poles. Grayson agrees there should be no additional costs, only the benefits of avoiding testing unnecessary poles and being able to test and treat more poles that need it.

VIII. Implementation Steps (Filled Out By Company)

Recommendation No.	Implementation Steps	Start Date	Completion Date
	Solicit contractor of pole testing program to assist in determining age of pole as applicable	May 2021	Ongoing

IX. Comments/Clarification of Intent

- A. Consultant Name:** Mark Lautenschlager
- B. Discussion**

Status Update:

Please see Response LR-7.

Grayson feels this Recommendation should be closed due to relationship with LR-7