



**Memorandum from the Office of the Inspector General**

April 15, 2025

Tracy D. McCrory

**REQUEST FOR MANAGEMENT DECISION – EVALUATION 2024-17505 –  
CUMBERLAND COMBINED CYCLE TRANSMISSION PROJECT**

Attached is the subject final report for your review and management decision. You are responsible for determining the necessary actions to take in response to our findings. Please advise us of your management decision within 60 days from the date of this report. In accordance with the Inspector General Act of 1978, as amended, the Office of the Inspector General is required to report to Congress semiannually regarding evaluations that remain unresolved after 6 months from the date of report issuance.

If you have any questions, please contact Regina D. Headrick, Senior Auditor, at (865) 633-7329 or Lisa H. Hammer, Director, Evaluations – Projects, at (865) 633-7342. We appreciate the courtesy and cooperation received from your staff during the evaluation.

David P. Wheeler  
Assistant Inspector General  
(Audits and Evaluations)

RDH:KDS

Attachment

cc (Attachment):

TVA Board of Directors  
Charles F. Chappell  
Jessica Dufner  
James Patrick Hall  
Gregory J. Henrich  
Rebecca L. Jones  
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Kay W. Whittenburg  
Michael Yarbrough  
OIG File No. 2024-17505



Office of the Inspector General

## *Evaluation Report*

To the Vice President,  
Transmission Planning  
and Projects

# **CUMBERLAND COMBINED CYCLE TRANSMISSION PROJECT**

Auditor  
Regina D. Headrick

Evaluation 2024-17505  
April 15, 2025

## **ABBREVIATIONS**

CC	Combined Cycle
CES	Cumberland Energy Solution
JPT	Joint Project Team
PM	Project Manager
PRB	Project Review Board
SIS	System Impact Study
SPP	Standard Programs and Processes
TPP	Transmission Planning and Projects
TVA	Tennessee Valley Authority

**TABLE OF CONTENTS**

EXECUTIVE SUMMARY ..... i

BACKGROUND..... 1

OBJECTIVE, SCOPE, AND METHODOLOGY ..... 2

FINDINGS AND RECOMMENDATIONS ..... 3

**APPENDIX**

- A. MEMORANDUM DATED APRIL 10, 2025, FROM TRACY D. MCCRORY TO  
DAVID P. WHEELER



## Evaluation 2024-17505 – Cumberland Combined Cycle Transmission Project

### EXECUTIVE SUMMARY

#### Why the OIG Did This Evaluation

In January 2023, the Tennessee Valley Authority (TVA) issued a record of decision to retire and demolish its Cumberland Fossil Plant and replace one of its two units with a natural gas plant. Subsequently, TVA implemented the Cumberland Energy Solution (CES) project to construct a 1,450-megawatt natural gas-fueled combined cycle (CC) plant. In August 2023, Major Projects obtained approval from the TVA Board of Directors for all related CES project funding (including transmission) totaling \$2.1 billion.

TVA's Major Projects, a business unit under the Chief Operating Office's Generation Projects and Fleet Services organization, is responsible for the CES project. TVA's Transmission Planning and Projects, a business unit under the Chief Operating Office, initiated the Cumberland CC transmission project to support the new Cumberland CC plant.

TVA's Standard Programs and Processes 34.000, *Project Management*, provides a standardized framework for projects with an estimated cost greater than \$400,000 and serves as a basis for TVA's scope and risk management processes.

- Scope management includes the specific project deliverables and tasks the project intends to execute to meet the stated project objectives and acceptance criteria.
- Risk management includes handling of risks through specific methods and techniques to identify critical technical, performance, schedule, and cost risks.

Project managers (PM) are responsible for the development and monitoring of the project scope and risk management with support from stakeholders, including a Joint Project Team (JPT),<sup>i</sup> who supports the PM by providing definitive scope, cost, schedule, risk, and other appropriate information through the project's lifecycle.

Due to the importance of completing the transmission modifications to support the CC plant, we initiated an evaluation of the Cumberland CC transmission project. Our evaluation objective was to determine if the project followed TVA's (1) scope and (2) risk management guidelines.

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<sup>i</sup> Those leading and providing services to the project. They maintain an appropriate level of specific knowledge and expertise to plan, design, permit, construct/implement, and close out the project.



## **Evaluation 2024-17505 – Cumberland Combined Cycle Transmission Project**

### **EXECUTIVE SUMMARY**

#### **What the OIG Found**

We determined the Cumberland CC transmission project complied with most elements of scope and risk management. For example, (1) the project had completed required scoping documentation, including a project charter, work breakdown structure, and supporting schedules; (2) funds were appropriately allocated for a change in the project scope; and (3) the risk register contained required elements. However, documentation reflected inadequate collaboration and estimating related to project cost. In addition, risk register development did not adequately include JPT members and some risk response owners were not aware of their monitoring responsibilities.

#### **What the OIG Recommends**

We recommend the Vice President, Transmission Planning and Projects, increase collaboration with Major Projects, ensure planning estimates are adequately developed, and take steps to involve JPT members in risk management.

#### **TVA Management's Comments**

TVA management agreed with and is actively working to address the recommendations. See the Appendix for TVA management's complete response.

## **BACKGROUND**

In January 2023, the Tennessee Valley Authority (TVA) issued a record of decision to retire and demolish its Cumberland Fossil Plant and replace one of its two units with a natural gas plant. Subsequently, TVA implemented the Cumberland Energy Solution (CES) project to construct a 1,450-megawatt natural gas-fueled combined cycle (CC) plant and 500-kilovolt switchyard. In August 2023, Major Projects obtained approval from the TVA Board of Directors for all related CES project funding (including transmission) totaling \$2.1 billion.

TVA's Major Projects, a business unit under the Chief Operating Office's Generation Projects and Fleet Services organization, is responsible for the CES project. Responsibilities include the initial planning of the project, obtaining approval for project funding for activities associated with the CES project (including transmission), and oversight of engineering, procurement, and construction contractors and activities.

TVA's Transmission Planning and Projects (TPP), a business unit under the Chief Operating Office, initiated the Cumberland CC transmission project to support the new Cumberland CC plant. TPP's scope of work includes making necessary modifications to reroute existing transmission lines to the Cumberland CC plant and new switchyard constructed as part of the CES project.

TVA's Standard Programs and Processes (SPP) 34.000, *Project Management*, provides the minimum requirements and guidance to enhance the probability for project success, which is measured by safely completing projects on budget and on schedule. According to TVA-SPP-34.000, projects equal to or greater than \$10 million require Project Review Board (PRB) approval. Under this guidance, TVA projects are typically approved at three phase gates, with the most common phase progression being (1) Phase One – Project Plan, (2) Phase Two – Project Design, and (3) Phase Three – Project Implementation.

TVA-SPP-34.000 also provides a standardized framework for projects with an estimated cost greater than \$400,000 and serves as a basis for TVA's scope and risk management processes.

- Scope management includes the specific project deliverables and tasks the project intends to execute to meet the stated project objectives and acceptance criteria. Specifically, the scope management process begins with developing the project scope and includes (1) collecting requirements, (2) developing cost and schedule estimates, including a work breakdown structure and milestone schedule, and (3) defining project deliverables. Examples of scope management documentation includes (1) the project charter, (2) scoping checklists, and (3) work breakdown structure.
- Risk management includes handling of risks through specific methods and techniques to identify critical technical, performance, schedule, and cost risks. Identified risks should have sound risk mitigation strategies and actions

developed and documented. Risk management requirements for identifying and managing project risk include (1) developing the risk register, (2) determining the project risk impact, (3) estimating cost and schedule contingency and (4) monitoring and controlling risk.

Project managers (PM) are responsible for the development and monitoring of the project scope and risk management with support from stakeholders, including a Joint Project Team (JPT),<sup>1</sup> who supports the PM by providing definitive scope, cost, schedule, risk, and other appropriate information through the project's lifecycle. For the Cumberland CC transmission project, members from the JPT included, among others, environmental support, engineering, scoping specialist, and project control specialists.

Due to the importance of completing the transmission modifications to support the CC plant, we initiated an evaluation of the Cumberland CC transmission project.

## **OBJECTIVE, SCOPE, AND METHODOLOGY**

The objective of this evaluation was to determine if the Cumberland CC transmission project follows TVA's (1) scope and (2) risk management guidelines. Our scope included scope and risk management, as of November 2024, for the Cumberland CC transmission project. To complete the evaluation, we:

- Reviewed TVA project management SPPs to gain an understanding of scope and risk management requirements and guidance, including (1) TVA-SPP-34.000, *Project Management*, and (2) TVA-SPP-34.001, *Project Management Governance, Oversight, Execution, and Support*.
- Reviewed Enterprise Project Management Office documentation, including the *Scope Guide*, *Risk Management Process Guide*, and the guide for *Project Complexity* to gain an understanding of project requirements related to scope and risk management.
- Conducted interviews with the PM and judgmentally selected JPT members, such as environmental support, scoping specialist, and project control specialists to determine the project's practice for scope and risk management.
- Reviewed project scoping documents such as the interconnection system impact study (SIS), project charter, scoping checklists, work breakdown structure, and documentation related to a TPP project scope change and approval to determine if the project followed TVA guidance related to scope management.

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<sup>1</sup> Those leading and providing services to the project. They maintain an appropriate level of specific knowledge and expertise to plan, design, permit, construct/implement, and close out the project.



- Reviewed risk management documentation for the Cumberland CC transmission project, including the risk register, Monte Carlo<sup>2</sup> analysis, project complexity reports, project health review and follow-up actions, lessons learned, and project budget/forecast information to determine if the project followed TVA guidance related to risk management.
- Reviewed TVA Board of Directors packages, PRB agendas, and supporting documentation relating to the Cumberland CC transmission project to determine funding requests associated with the project.

This evaluation was conducted in accordance with the Council of the Inspectors General on Integrity and Efficiency's *Quality Standards for Inspection and Evaluation*.

## **FINDINGS AND RECOMMENDATIONS**

We determined the Cumberland CC transmission project complied with most elements of scope and risk management. For example, (1) the project had completed required scoping documentation, including a project charter, work breakdown structure, and supporting schedules; (2) funds were appropriately allocated for a change in the project scope; and (3) the risk register contained required elements. However, documentation reflected inadequate collaboration and estimating related to project cost. In addition, risk register development did not adequately include JPT members and some risk response owners were not aware of their monitoring responsibilities.

### **SCOPE MANAGEMENT**

As previously stated, TVA-SPP-34.000 provides the criteria for the scope management process. We reviewed detailed scoping documentation and determined the project generally complied with TVA's scope management guidelines. Specifically, we confirmed that a project charter and work breakdown structure and supporting schedules had been completed. We also examined documentation related to a change in the TPP project scope and confirmed that funds associated with that scope change were appropriately allocated. However, when reviewing cost estimation information for the TPP project, we identified an issue with inadequate collaboration and estimating related to project cost.

#### **Inadequate Collaboration and Estimating Related to Project Cost**

Major Projects indicated that the funding request for the CES project included \$10 million to be allocated to the transmission project led by TPP. According to Major Projects, the \$10 million was based on an estimate obtained from a TPP Interconnection SIS. This study provided that estimates were expected to be within a 50 percent variance of the actual planning-level estimate. During project

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<sup>2</sup> A Monte Carlo analysis is a method that approximates solutions and associated probabilities by performing statistical sampling analysis. It is utilized to assess project risks and determine a project's cost contingency amount and its schedule contingency duration allowance.

planning, Major Projects added the procurement of two large pieces of equipment and long-lead time materials to TPP's scope of work at a total estimated cost of \$10 million. In May 2024, TPP presented the full cost estimate to the PRB for phase two approval, increasing the \$20 million project estimate (\$10 million from the SIS plus the \$10 million equipment procurement) used by Major Projects in their request for project funding to \$40.6 million,<sup>3</sup> including contingency.

TVA-SPP-34.000 states that project estimate accuracy at phase one should be +/- 30 percent. However, the change between the allocation of \$20 million used by Major Projects and the cost for phase two of the TPP project reflected a variance of over 100 percent.<sup>4</sup> This variance also exceeded the 50 percent variance noted in the TPP SIS. We reviewed documentation related to cost estimates and found the TPP SIS was based on historical costs and did not account for inflation of material costs. TPP provided a list of five items needed for the project that were subject to significant cost inflation from 2019 to 2023, which had cost increases ranging from 34 percent to 179 percent. Although the SIS was performed by TPP in July 2022, the estimation tool used at the time of the study included outdated costs that did not account for inflation. Additionally, the estimate was not verified for accuracy by Major Projects prior to use, approximately one year later. In 2024, the estimating tool was updated to more efficiently capture up-to-date costs for use in future SIS estimates.

## **RECOMMENDATIONS**

We recommend the Vice President, Transmission Planning and Projects:

- Increase collaboration with Major Projects early in the project process to mitigate the risk of inadequate funding.
- Ensure planning estimates are adequately developed and account for cost inflation.

**TVA Management's Comments** – TVA management agreed with and is actively working to address the recommendations. See the Appendix for TVA management's complete response.

## **RISK MANAGEMENT**

Risk management is a continuous and iterative process that if followed, will provide a framework for identifying and managing project risks before they happen. In practice, the project team should identify risks and develop strategies to reduce the potential impact or lower the probability of the risk occurring. Risk management also provides a method to determine and consistently apply

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<sup>3</sup> The estimate was later revised by TPP to \$41.1 million.

<sup>4</sup> According to TPP the majority of the increase was related to inflation of material costs in the original estimate.

both cost and schedule contingency. As stated previously, requirements for managing project risks are included in TVA-SPP-34.000.

We reviewed risk management documentation for the Cumberland CC transmission project, including development of the risk register, cost and schedule contingency, and the monitoring and control of risks and determined the project generally complied with TVA guidance. Based on our review, we noted that the Cumberland CC transmission project risk register was developed using risks from similar projects and lessons learned, as required. We also determined that, in accordance with the SPP, each of the risks included on the risk register had the required elements, including severity and likelihood. However, we found the PM did not involve JPT members, in accordance with the SPP, during the identification of risks and the development of risk strategies.

### **Improvements Needed in Risk Register Development and Risk Monitoring**

While the PM is responsible for project risk management, TVA-SPP-34.000, suggests that the JPT should participate in the development of the risk register to the largest extent possible. The SPP specifically recommends involving the JPT in (1) risk review meetings, (2) risk assessments, and (3) assignment of qualitative ratings for impact and likelihood for each risk. Additionally, after risks are identified and assessed, the risk response should be assigned to a specific project team member. Responsibilities of assigned risk response owners include (1) ensuring the risk response actions are completed in time to make them effective, (2) monitoring trigger events to ensure the event will be detected with enough time to make the trigger response effective and (3) evaluating the risk for closure once the trigger release date has elapsed.

Based on discussions with TVA personnel and review of project documentation, we determined the PM did not include the JPT in project risk discussions. Specifically, according to the PM, the risk register was developed using entries from prior risk registers without the JPT's input. The PM indicated that risks would be identified through scoping meeting discussions; however, there was no evidence supporting that risks were identified during these meetings. Additionally, some risk responses were assigned to business units rather than to specific individuals. For instance, several risk responses on the risk register were assigned to the environmental group rather than to a specific individual. Because risk response owners were not made aware of their responsibilities, ongoing monitoring was not performed by these individuals as required by the SPP.

## **RECOMMENDATION**

We recommend the Vice President, Transmission Planning and Projects, take steps to involve JPT members in risk identification and notify risk owners of their assigned responsibilities.

**TVA Management's Comments** – TVA management agreed with and is actively working to address the recommendation. See the Appendix for TVA management's complete response.



1101 Market Street, Chattanooga, Tennessee 37402

David P. Wheeler  
Assistant Inspector General – Audits & Evaluations  
Office of the Inspector General

April 10, 2025

RE: REQUEST FOR COMMENTS – DRAFT EVALUATION 2024-17505 – CUMBERLAND COMBINED CYCLE TRANSMISSION PROJECT

Dear Mr. Wheeler,

The Transmission team would like to thank the Office of the Inspector General (OIG) for their diligence and support in assessing the Cumberland Combined Cycle Transmission Project.

The Transmission Planning & Project (TPP) leadership team has reviewed your draft memorandum dated March 11, 2025, and would like to provide initial responses.

**Recommendations**

1. **Scope Management** – *We recommend the Vice President, TPP*
  - *Increase collaboration with Major Projects early in the project process to mitigate the risk of inadequate funding*
  - *Ensure planning estimates are adequately developed and account for cost inflation.*

**RESPONSE**

TPP agrees with this recommendation and is actively working to address.

2. **Risk Management** – *We recommend the Vice President, TPP, take steps to involve JPT (Joint Project Team) members in risk identification and notify risk owners of their assigned responsibilities.*

**RESPONSE**

TPP agrees with this recommendation and is actively working to address.

On behalf of TPP, Transmission and TVA, I thank you for allowing us to review your findings and the opportunity to address them.

A handwritten signature in black ink, reading "Tracy D. McCrory". The signature is written in a cursive, flowing style.

Tracy McCrory  
Vice President  
Transmission Planning and Projects

RDH:KDS  
Attachment  
cc(Attachment):

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