



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

August 6, 2018

David L. Owens, WT 10C-K

**REQUEST FOR FINAL ACTION – EVALUATION 2017-15517 – REVIEW OF COAL QUALITY ADJUSTMENT REPORT PAYMENTS**

During fiscal years (FY) 2016 and 2017, the Tennessee Valley Authority (TVA) purchased about 43.5 million tons of coal at a cost of approximately \$1.3 billion to fuel its fossil plants. TVA also processed 245-coal quality adjustment reports (CQAR) totaling just over \$29.61 million in payment adjustments over the two-year period. Since the adjustments on coal quality can significantly affect the net cost TVA pays vendors for coal, we initiated an evaluation of CQARs processed during FYs 2016 and 2017 to determine if the CQARs were accurately calculated in accordance with contract terms.

We determined CQARs were not always calculated in accordance with the applicable contractual terms, and as a result, TVA did not accurately adjust the payments made to some coal vendors. The miscalculations were due to incorrect (1) rounding of moisture, ash, and British thermal units (BTU)<sup>1</sup> quality adjustment rates and (2) weighted averages used for moisture, ash, and sulfur calculations. We estimated the incorrect calculations resulted in net underpayments to coal vendors totaling \$103,576.

We recommend the Vice President, Coal and Gas Services (CGS), (1) implement appropriate measures to verify CQARs are accurately calculated and (2) review the accuracy of recently processed CQARs to determine if payment adjustments are warranted.

In response to our draft report, TVA management provided planned actions to address the recommendations by conducting additional training for newer Asset Management Specialists and incorporating steps to verify the accuracy of formulas and adjustments. TVA management also stated they have participated in training related to how quality adjustment formulas are created. See the Appendix for TVA management's complete response.

**BACKGROUND**

Coal sampling and analysis is an essential part of the power production program. Without sampling and analyzing the content of the coal, TVA has no assurance the coal received is the quality necessary to operate the fossil plants effectively within environmental standards and operating guidelines. In addition, coal sampling and analysis is necessary to (1) determine if the coal complies with the quality guarantee in the terms of TVA's

---

<sup>1</sup> BTUs measure the heat content of fuels or other energy sources. Fuels with higher BTU content burn more efficiently than fuels with lower BTU content.

contracts and (2) provide a basis for price adjustments via CQARs. Coal quality is determined by laboratory analyses performed by TVA, the coal vendor, and/or a third-party laboratory. CQARs are generated by CGS personnel to adjust the amount paid for coal based on whether the actual coal quality exceeds or does not meet contract standards. The adjustments are based on the amount of moisture,<sup>2</sup> ash,<sup>3</sup> sulfur,<sup>4</sup> and BTUs in the coal received. The calculated adjustments can significantly affect the net cost TVA pays vendors for coal.

During FYs 2016 and 2017, TVA purchased about 43.5 million tons of coal at a cost of approximately \$1.3 billion to fuel its fossil plants. TVA also processed 245 CQARs totaling just over \$29.61 million in adjustments over the two-year period. Since the adjustments on coal quality can significantly affect the net cost TVA pays vendors for coal, we initiated an evaluation of CQARs processed during FYs 2016 and 2017.

**OBJECTIVE, SCOPE, AND METHODOLOGY**

The objective of our evaluation was to determine if CQARs were accurately calculated in accordance with contract terms. The scope of our review was limited to CQARs for FYs 2016 and 2017. To achieve our objective we:

- Obtained an understanding of TVA’s coal acquisition and supply process by (1) reviewing pertinent policies and procedures and (2) interviewing TVA CGS employees responsible for generating CQARs.
- Obtained contracts and contract supplements/amendments from TVA’s Enterprise Content Management system to identify contract terms.
- Obtained from TVA’s accounts payable system a list of CQARs processed during FYs 2016 and 2017. TVA processed 245 CQARs totaling about \$29.61 million in adjustments during that period.
- Selected a statistical sample of CQARs (using dollar unit sampling with a 95-percent confidence level) to determine if the CQARs were calculated in accordance with contract terms. As shown in the following table, 30 items totaling \$18.67 million were selected including (1) 12 high-dollar CQARs that totaled \$13.89 million and (2) 18 other CQARs totaling \$4.78 million. Since this was a statistical sample, the results of the 18 sampled items can be projected to the \$15.72 million population.

CQARs	Population		Items Sampled	Sample Amount
	Items	Amount		
High-dollar	12	\$13,889,797	12	\$13,889,797
Other	<u>233</u>	<u>15,718,757</u>	<u>18</u>	<u>4,775,545</u>
Total	245	\$29,608,554	30	\$18,665,342

<sup>2</sup> Moisture is the measure of water in coal. High moisture content decreases the heat value of coal and increases coal’s weight, both of which are undesirable. Walter Energy, 2013 Annual Report.  
<sup>3</sup> Ash is the residue that remains after the combustion of coal. Low ash is desirable because businesses must dispose of ash after coal is used. Walter Energy, 2013 Annual Report.  
<sup>4</sup> When burned, coal produces pollutants in the form of sulfur dioxide. The amount of sulfur dioxide produced depends on the concentration of sulfur in the coal. Walter Energy, 2013 Annual Report.

- Obtained laboratory reports from CGS employees to identify the coal quality results for the shipments included in the CQARs selected in our sample.
- Recalculated the CQARs sampled based on coal weights, coal quality, and contract terms and compared our calculations to the CQARs to identify any variation.

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

## **FINDINGS**

We determined CQARs processed during FYs 2016 and 2017 were not always calculated in accordance with the applicable contract terms, and as a result, TVA did not accurately adjust the payments made to some coal vendors. Specifically, our review of a sample of 30 CQARs totaling \$18.67 million found 19 of the CQARs were incorrectly calculated. These incorrect calculations resulted in net underpayments to coal vendors totaling \$58,304. Based on these sample results, we estimated TVA's total payment adjustments for FY2016 and 2017 were understated by a net \$103,576.

- High-dollar CQARs – Our review of 12 high-dollar CQARs totaling \$13.89 million found 11 of the CQARs had a net underpayment of \$37,318. The net error consisted of five underpayments totaling \$66,514 and six overpayments totaling \$29,196.
- Remaining CQARs – Our review of 18 (totaling \$4.78 million) of the remaining 233 CQARs (totaling \$15.72 million) found 8 of the CQARs had a net underpayment of \$20,986. The net error consisted of four underpayments totaling \$26,508 and four overpayments totaling \$5,522. Based on the sample errors, we are 95 percent confident the total payment errors ranged from underpayments of \$167,171 to overpayments of \$34,655. We estimated the total adjustment error was a net underpayment of \$66,258 for the 233 CQARs.

The miscalculations summarized above were due to incorrect (1) rounding of moisture, ash, and BTU quality adjustment rates and/or (2) weighted averages used for moisture, ash, and sulfur calculations.

Rounding Errors – We found instances where CQAR adjustments were not rounded in accordance with the terms of the contract. For example, a contract-specified rounding should be to the nearest tenth of a cent per ton for moisture and ash. However, BTU adjustments and associated calculations were rounded to the nearest hundredth of a cent per ton.

Incorrect Weighted Averages – We found instances where the weighted averages used in the calculations of some CQARs were not calculated in accordance with contract terms. For example, on one CQAR, the moisture percentage calculation should have used a value of 8.68 percent. However, in the actual formula for the calculation, a value of 8.80 percent was used.

## **RECOMMENDATIONS**

We recommend the Vice President, CGS: (1) implement appropriate measures to verify CQARs are accurately calculated and (2) review the accuracy of recently processed CQARs to determine if payment adjustments are warranted.

**TVA Management's Comments** – In response to our draft report, TVA management provided planned actions to address the recommendations which include: (1) conducting quality adjustment learning sessions for newer Asset Management Specialists, (2) incorporating a peer-check process for contract entries, (3) conducting formula accuracy tests on current contracts to ensure payments are calculated accurately, and (4) verifying the accuracy of formulas used to calculate coal quality adjustments. TVA management also stated they recently participated in a training session related to how quality adjustment formulas are created in the system used to calculate coal quality adjustments. See the Appendix for TVA management's complete response.

**Auditor's Response** – We concur with TVA management's planned actions for the recommendations.

- - - - -

This report is for your review and final action. Your written comments, which addressed your management decision and actions planned or taken, have been included in the report. Please notify us when final action is complete. 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 or need additional information, please contact Samuel L. Ruble, Senior Auditor, Evaluations, at (865) 633-7384 or E. David Willis, Director, Evaluations at (865) 633-7376. We appreciate the courtesy and cooperation received from your staff during the evaluation.



David P. Wheeler  
Assistant Inspector General  
(Audits and Evaluations)  
WT 2C-K

SLR:FAJ  
Attachment  
cc (Attachment):

TVA Board of Directors  
Janet J. Brewer, WT 7C-K  
Robertson D. Dickens, WT 9C-K  
William D. Johnson, WT 7B-K  
Dwain K. Lanier, MR 6D-C

Justin C. Maierhofer, WT 7B-K  
Jill M. Matthews, WT 2C-K  
David W. Sorrick, LP 3K-C  
OIG File No. 2017-15517

July 27, 2018

David P. Wheeler, Assistant Inspector General  
ET 3C-K

RESPONSE TO REQUEST FOR COMMENTS - EVALUATION 2017-15517 - REVIEW OF COAL  
QUALITY ADJUSTMENT REPORT PAYMENTS

We appreciate the opportunity to provide comments on the subject evaluation as requested in your memorandum dated July 3rd, 2018.

The evaluation determined that there were marginal differences in the CQAR calculations when compared to the applicable contractual terms.

Based on the recommendations of the subject audit, Coal and Gas Services (CGS) has developed the following plan of action to address each recommendation.

RECOMMENDATIONS

1. Implement appropriate measures to verify CQARs are accurately calculated.

Actions:

- CGS recently participated in a training session with Fusion (ComTrac software supplier) on June 25, 2018, and discussed quality adjustment formulas and how they are created in ComTrac.
- CGS Originators will be conducting a learning session on quality adjustments to explain the commercial context and value to newer Asset Management Specialists.
- CGS Asset Management Specialists will incorporate a peer check in the process of entering new coal contracts. The peer check will confirm that the formula is working as stipulated in the contract.

2. Review the accuracy of recently processed CQARs to determine if payments adjustments are warranted.

Actions:

- CGS Asset Management Specialists will conduct formula accuracy tests on current coal contracts to ensure 2018 payments are calculating accurately.
- CGS Asset Management Specialists will work closely with CGS Commercial Systems and Support to verify accuracy of quality formulas.

We would like to thank the OIG team for their professionalism in conducting this audit. If you have any questions or if you need additional information, please let us know.

  
David L. Owens  
VP, Coal and Gas Services  
WT 9C-K