



U.S. Department of Energy
Office of Inspector General
Office of Audits and Inspections

Audit Report

The Department of Energy's
Administration of Energy Savings
Performance Contract Biomass
Projects



Department of Energy
Washington, DC 20585

August 26, 2013

MEMORANDUM FOR THE SECRETARY

FROM: 
Gregory H. Friedman
Inspector General

SUBJECT: INFORMATION: Audit Report on "The Department of Energy's Administration of Energy Savings Performance Contract Biomass Projects"

BACKGROUND

Currently, biomass is the single largest source of renewable energy in the United States. Biomass technologies convert fuels developed from various feed stocks to heat and/or electricity and can be used in place of fossil fuels in most energy applications, such as steam boilers, water heaters, generators and gas turbines. Biomass fuels include all plant and plant-derived (organic) materials that are available on a renewable or recurring basis, including sources from agriculture, forestry, mill residues, urban waste, landfill gases and dedicated energy crops. Energy Savings Performance Contract (ESPC) financing mechanisms can help Federal agencies develop and finance biomass projects to take advantage of local biomass resources while reducing energy costs and achieving Federal renewable energy goals. Under an ESPC, a private-sector energy services company develops, finances and installs energy improvement projects, such as a biomass project, on a Federal site in exchange for a share of future savings over the contract term.

In 2012, to help achieve renewable energy goals and realize energy cost savings, the Department of Energy began operating two new biomass facilities located at its Oak Ridge National Laboratory (Oak Ridge) and the Savannah River Site. The \$65 million Oak Ridge Biomass Gasification Steam Plant replaced four of the Laboratory's six natural gas boilers, and will be supplemented by the remaining two gas boilers to provide steam for the Laboratory's thermal needs. The new \$164 million Biomass Cogeneration Facility at the Savannah River Site replaced a 1950s era coal plant, and was designed to provide enough steam capacity to satisfy the Site's thermal requirements and a significant portion of the electrical demand. Because of the renewable benefits of biomass and the costs associated with ESPCs, we initiated this audit to determine if the Department is effectively and efficiently administering its ESPC-financed biomass projects.

RESULTS OF AUDIT

Our review of the ESPC-financed Biomass Projects at Oak Ridge and the Savannah River Site disclosed that the Savannah River Site had generally developed and administered its Biomass Facility in an effective manner. We found, however, planning and operational issues with the

Oak Ridge Biomass Plant could cause the Department to incur over \$67 million more than necessary over the life of the project. Specifically, we noted that the Oak Ridge Site Office had not always planned and operated its Biomass Plant to minimize the Government's risk and had not:

- Required site characterization testing, and mitigation of adverse conditions, prior to awarding an ESPC that involved a major construction project. Instead, site testing was completed after awarding the ESPC, an omission that contributed to significant construction delays and resulted in a \$44 million life-cycle increase to the ESPC price.
- Mitigated the risk of biomass fuel shortages and cost fluctuations, a problem that could result in fuel costs exceeding original plans/projections by more than \$23 million over the life of the project. Particularly, Oak Ridge had only one supplier, had not performed a current market analysis, and had only enough storage to keep the Biomass Plant operational for a 3-day period.
- Verified the quantity of biomass fuel deliveries. Oak Ridge had no system in place to confirm that the amount of biomass fuels delivered to the site was accurate. This basic safeguard would have reduced the chances of undetected weight variances in delivered loads of fuel which could cause significant cost increases over the life of the project.

These problems were due in part to inadequate guidance and oversight. Notably, the Department had not required major ESPC construction projects to adhere to critical elements of its existing capital project management and acquisition directive. Also, the Department had not developed a process to identify, document and disseminate lessons learned from ESPC projects across the complex.

To their credit, we found that both Oak Ridge and the Savannah River Site endeavored to operate, maintain and repair biomass equipment according to the energy services company's standards, and to ensure savings were generated. Both sites held monthly meetings with Department, Management and Operating Contractor, and energy services company officials to review operation data, discuss equipment issues and manage upcoming maintenance. These meetings enabled all parties to have open communications, monitor progress and proactively address equipment concerns.

However, improvements are warranted to increase the effectiveness and efficiency of the Department's administration of its ESPC-financed biomass projects. We have made several recommendations designed to not only assist the Department with ongoing biomass projects, but also with planning, designing and operating future ESPCs and biomass facilities.

MANAGEMENT REACTION

Management generally concurred with the report's recommendations and identified actions it had planned or underway to address our recommendations. Overall, Energy Efficiency and Renewable Energy management committed to improving the Biomass Program award administration and the award of the ESPCs. Oak Ridge Site Office management agreed to

review available biomass fuel suppliers, assess onsite fuel storage locations, and take action to ensure accuracy of fuel deliveries. We consider management's comments responsive to the report's recommendations. Management's comments are included in Appendix 3.

Attachment

cc: Deputy Secretary
Acting Under Secretary of Energy
Acting Under Secretary for Science
Assistant Secretary for Energy Efficiency and Renewable Energy
Director, Office of Science
Chief of Staff

REPORT ON THE DEPARTMENT OF ENERGY'S ADMINISTRATION OF ENERGY SAVINGS PERFORMANCE CONTRACT BIOMASS PROJECTS

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THE DEPARTMENT OF ENERGY'S ADMINISTRATION OF ENERGY SAVINGS PERFORMANCE CONTRACT BIOMASS PROJECTS

Implementation and Operation of Biomass Projects

The Department of Energy (Department) had not effectively and efficiently managed all of its Energy Savings Performance Contract (ESPC) biomass projects to adequately minimize risk to the Government. Although the Savannah River Site's Biomass Cogeneration Facility was generally planned and administered with the goal of minimizing the Department's risk, the Oak Ridge National Laboratory (Oak Ridge) had not implemented effective risk mitigation strategies during the development of the Biomass Gasification Steam Plant. Specifically, Oak Ridge had not performed site characterization and mitigated adverse conditions prior to awarding the ESPC. In addition, Oak Ridge had not effectively mitigated the risk of biomass fuel shortages and price increases related to its Biomass Plant by identifying multiple fuel suppliers. Also, it had not developed a system for verifying the amount of biomass fuel being received for processing.

Site Characterization

Oak Ridge had not ensured that thorough site characterization was performed and any adverse conditions mitigated prior to awarding the contract and initiating construction on its Biomass Plant. Although an industry best practice, the Oak Ridge Site Office had not ensured the construction site was suitable and the soil conditions had been properly analyzed prior to the initiation of a major construction project. This is especially important for Department sites where legacy contamination is common. However, unlike the Savannah River Site which utilized historic records to identify a location that was devoid of hazardous materials, the Oak Ridge Site Office did not rely on historic records or perform site testing and analysis. Instead it awarded the biomass contract and accepted responsibility for the remediation of hazardous materials outside of asbestos and lead paint. This occurred even though the construction site required the demolition of legacy structures from the original steam plant, which throughout the years operated on coal, fuel oil and natural gas, a fact that compounded potential environmental impacts at the site.

Subsequent geotechnical exploration at Oak Ridge completed 5 months after contract award confirmed the presence of water and/or petroleum odor in seven of the nine soil borings at the construction site. Despite exploration findings at Oak Ridge, construction on the Biomass Plant began without investigation or remedy. During this work, construction crews encountered water infiltration from unknown sources, and detected soil contamination from petroleum and diesel fuel. As a result, the project was delayed by 9 months and construction costs were increased by nearly \$6 million. Rather than pay for this \$6 million increase upfront, the Oak Ridge Site Office financed the increase into the contract with extended terms, and modified the ESPC for an additional \$44 million.

After reviewing our preliminary draft, Oak Ridge Site Office officials stated that site characterization had been performed prior to contract award and provided an assessment report. In particular, a site walk-down assessment was performed on behalf of the energy services company several months before the ESPC was awarded. The independent engineering firm that performed the walk-down identified specific concerns with hazardous materials on the

construction site including petroleum contamination, radioactive contaminated ground water and beryllium contamination. Further, the assessment noted the potential for schedule impacts if plans for remediation of the contamination were not put in place. However, despite the warning, the Oak Ridge Site Office entered into the ESPC and did not: (1) address the contamination issues; (2) include remediation activities in the ESPC scope; or (3) consider its financial impact to the project. After encountering the contamination during excavation, the contract was amended to fund the remediation effort over the life of the contract.

We noted that similar exploration surveys conducted at the Savannah River Site were performed prior to awarding the ESPC. Further, the Savannah River Site required an approved site use permit, which solicited interested parties across the complex to comment and express any concerns related to the project site. Site analysis work performed at the Savannah River Site eliminated the potential for contamination issues and the Biomass Facility was built on schedule and within budget.

Woodchip Supply

Oak Ridge had not effectively mitigated the risk of biomass fuel shortages and price increases related to its Biomass Plant. A substantial amount of biomass fuel, approximately 10 truckloads of woodchips per day, is necessary to generate steam at the Biomass Plant during peak operations. Under the ESPC structure, responsibility for operations, preventative maintenance, equipment repair and replacement, and procurement of fuel for the biomass facilities is negotiable and may be assumed by the energy services company, the site Management and Operating (M&O) contractor or by the Federal agency. The Oak Ridge Site Office elected to have these operational responsibilities performed by the M&O contractor. However, this arrangement shifted the performance risk from the energy services company and placed it on the M&O contractor to ensure the biomass plant operates as expected and at the guaranteed cost.

While the Oak Ridge Site Office had assumed the risk and responsibility for the procurement and storage of the woodchips via its M&O contractor, it had not adequately mitigated the risks of fuel shortages or price increases. Specifically, at the time of our audit, the M&O contractor had only one woodchip supplier, and had no backup suppliers identified. While the M&O contractor can contract with multiple suppliers, it had not done so. Further, we found that although the site had conducted an informal survey of suppliers in late 2010 and early 2011, it had relied on the energy services company's fuel supplier analysis that was performed more than 4 years prior to awarding the woodchip supplier contract, instead of performing a current analysis. The M&O contractor should have a current analysis on the woodchip market to ensure availability of backup fuel suppliers. In addition, Oak Ridge had the capability to only store a 3-day supply of woodchips. In contrast, the Savannah River Site had a 30-day supply of woodchips stored on-site, which minimized its risk of fuel shortages.

During the course of our audit, we noted that Oak Ridge's M&O contractor had taken actions to alleviate concerns with its woodchip supply. For instance, the M&O contractor had authorized a "pre-buy" of a 90-day woodchip inventory to be stored at the supplier's place of business. While this is a positive step, Oak Ridge's entire biomass operation remains reliant on a single supplier and the bulk of the inventory is stored at the supplier's location. Disruptions in supply could mean that Oak Ridge's Biomass Plant would be unable to meet the steam needs of the site. In

that case, Oak Ridge's two gas boilers could generate enough steam for the Laboratory's needs. However, the Oak Ridge Site Office assumed the risk of fueling the Biomass Plant, and failure to achieve energy savings due to fuel disruptions would result in the Oak Ridge Site Office paying for the guaranteed savings without them being realized.

Furthermore, with only one supplier, Oak Ridge is particularly vulnerable to cost increases, which it had already experienced. In particular, at \$50 a ton, Oak Ridge was paying nearly twice as much for woodchips as originally estimated by the energy services company, which could cost the Department an additional \$1.63 million in the first year of operation alone. Unlike Oak Ridge, the Savannah River Site elected to have the energy services company responsible for biomass fuel procurement and on-site storage at that site, rather than the M&O, which passes its costs to the Department. The energy services company employed an industry expert to negotiate competitive rates among its seven woodchip suppliers, and had paid an average price of \$28.50 per ton for its woodchips.

Also, the Oak Ridge Biomass Project did not have a set of scales to verify the weight of the woodchips it received. Oak Ridge's supplier weighed the woodchip trucks prior to delivery on a certified scale at its place of business and provided the M&O contractors with a hand-written weight ticket. M&O biomass representatives stated that they reviewed the hand-written weight tickets, but there was no mechanism to ensure that the weights were correct. For example, we noted that Oak Ridge's hand-written weight tickets for fuel ranged from 20 tons to 31 tons, representing a 57 percent variance in loads of woodchips delivered. Further, we noted that several weight tickets did not contain tare weights, indicating that trucks may not have been weighed prior to delivery. Consequently, Oak Ridge had limited assurance that it was receiving the correct amount of woodchips it was paying for. At 10 truckloads a day, even small discrepancies in the weight could result in a significant variance.

According to Oak Ridge Site Office representatives, it was standard practice to accept hand-written tickets for various types of commodities delivered to Oak Ridge. In regard to the woodchips, Oak Ridge Site Office officials believed that the supplier's certified scale provided the assurance that the weights were accurate and stated that it would assume the risk of falsification. However, since the supplier's certified scale does not generate a computerized weight ticket, the hand-written tickets allow for an increased risk of human error and/or falsification.

Management of ESPC-Financed Biomass Projects

These conditions occurred, in part, because the Department did not have sufficient guidance and oversight for managing the construction of large-scale ESPC projects. The Department also did not share lessons-learned from other similar projects.

Guidance and Oversight

The Department lacked sufficient guidance for managing the construction of large-scale ESPC projects. Specifically, the Department relied on its Federal Energy Management Program (FEMP) to provide guidance on ESPC projects and the Sustainability Performance Office to oversee the Department's sustainability efforts. While FEMP's guidance addresses the

development, award and administration of ESPC projects, it does not address the construction phase of the projects. In constructing large-scale facilities for capital assets costing \$50 million or more, the Department generally relies on guidance established in Department Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. The objective of the order, among other things, is to strengthen line management accountability, clearly define roles and responsibilities, and develop an integrated project team to assist in planning, programming and budgeting. The Order also establishes critical decision points and independent project reviews to facilitate project oversight. Although the Oak Ridge Biomass Plant and the Savannah River Site Biomass Facility each cost more than \$50 million, they were obtained with alternative financing rather than capital funds, and thus were not required to follow the tenants of Department Order 413.3B.

Consequently, the Oak Ridge Biomass Project did not implement a rigorous and structured project management process. For example, the project lacked an integrated project team and neither the Department's contracting staff, or the project management staff assigned to the project, had prior experience in overseeing construction projects or in negotiating and managing ESPCs. According to Oak Ridge Site Office representatives, this lack of experience led the Site Office to accept unsuitable terms in the contract, such as those that excluded remediation of hazardous materials at the construction site. Had Department Order 413.3B or similar project management requirements applied to alternatively-financed projects, Oak Ridge would likely have flagged the construction site problems through critical decision points and independent reviews, and thus addressed them prior to incurring additional costs. In contrast to Oak Ridge's efforts, we noted that the Savannah River Site did follow tenants of Department Order 413.3B to ensure that risks were identified and mitigated, and that an integrated project team was established. Unlike the Oak Ridge Biomass Plant, the Savannah River Site Biomass Facility was completed ahead of schedule and within budget.

Further, although the ESPC is between the Oak Ridge Site Office and the energy services company, we found that the Site Office was notably under-represented at the construction and design meetings, in terms of project management and construction expertise, even after the project encountered substantial problems. Project personnel stated that during the construction meetings, the Contracting Officer's Representative was the only Department official present to address technical issues. Given the representative's inexperience with construction and ESPC projects, and the lack of Department support at the meetings, the Department's interests may not have been fully protected. For example, the Oak Ridge Site Office failed to formally request the energy services company change its project manager when it became apparent that the manager lacked the qualifications to manage the construction of the Biomass Plant. The project manager supervised construction for approximately 9 months before the energy services company agreed to replace the manager with a more experienced one. By that point, the construction had encountered significant delays and additional expenses.

Sharing Lessons learned

The Department also did not have an effective process to identify, document and disseminate lessons-learned from ESPC projects across the Department complex. Sharing of critical lessons-learned could help ensure that project personnel, especially those new to ESPCs, are fully aware

of the fundamental risks and benefits associated with ESPCs, and could assist them in structuring the most advantageous contract. For instance, the Savannah River Site noted the value of lessons-learned through the experience it gained during the 2008 installation of a separate Biomass Facility. The Savannah River Site used an energy services company to construct the prior Biomass Facility, and similar to Oak Ridge, the Department assumed the risks for operations and maintenance via the Site's M&O contractor. After experiencing multiple mechanical failures under this arrangement, the Savannah River Site ensured that operations and maintenance responsibilities for the new Biomass Facility would be borne by the energy services company.

Furthermore, while the FEMP provides project facilitators and guidance to assist Federal agencies in planning ESPCs, FEMP may not be aware of problems encountered by agencies. For example, we noted that FEMP was not aware that Oak Ridge had experienced difficulties in the construction of the Biomass Plant, which resulted in significant project delays and cost increases. Consequently, while lessons gained from that experience may help Oak Ridge in future endeavors, these valuable lessons were not shared with other sites to enable them to avoid making similar mistakes and assume unnecessary risk.

Cost Controls

Without improvements, Oak Ridge will continue to miss opportunities to reduce project implementation and operating costs. Specifically, had the Oak Ridge Site Office performed due diligence in characterization of the project site prior to project award, it could have avoided the \$44 million required to finance the contract cost overruns resulting from remediation of water and contamination issues identified at the construction site.

In addition, Oak Ridge Site Office elected to have operational responsibilities performed by the M&O contractor. However, this arrangement removed the performance risk from the energy services company and placed it onto the M&O contractor to ensure the Biomass Plant operates as expected and at the guaranteed cost. The Department will be obligated to continue full payments to the energy services company even if the M&O contractor's biomass strategies result in an increase in operational costs or do not meet the energy services company's guarantee.

Also, in the absence of a current market analysis of wood chip suppliers and procurement of wood chips from multiple suppliers, Oak Ridge is unable to mitigate the risk of supply shortages or cost increases in fuel. For example, at the time of our review Oak Ridge was paying \$50 a ton for wood chips or nearly twice what was originally estimated for the project. As a result, Oak Ridge will realize an additional \$23.4 million in operational costs over the life of the project.

Furthermore, the lack of internal controls over woodchip procurement and deliveries exposes Oak Ridge to increased risk of overpayment for wood chips. For example, without a system in place to verify the weight of the woodchips received, recording an excess weight of just 5 percent on the hand-written tickets could cost Oak Ridge an additional \$2.9 million over the life of the ESPC.

RECOMMENDATIONS

We believe the observations in this report will not only assist with the operation of the current Oak Ridge Biomass Facility, but also provide valuable lessons learned for the Department with

planning, designing and operating future ESPCs and biomass facilities. To improve the administration of ESPC biomass projects and the overall effectiveness of ESPCs, we recommend that the Assistant Secretary for Energy Efficiency and Renewable Energy ensure that the Director, Sustainability Performance Office, in coordination with the Program Manager of the Federal Energy Management Program:

1. Implement critical project management practices, to include the development of an integrated project team, critical decision points and independent reviews for managing the construction of projects funded through alternative financing mechanisms; and
2. Implement a process to identify, document and disseminate lessons-learned from ESPC projects across the Departmental complex and the Federal government.

We also recommend that the Manager, Oak Ridge National Laboratory Site Office:

3. Annually update the biomass fuel supplier analysis to identify the availability of backup suppliers and evaluate the opportunities to implement a multiple fuel supplier delivery process;
4. Conduct an assessment of potential on-site biomass fuel storage locations to increase Oak Ridge's storage capacity and title to fuel supply; and
5. Develop a system to verify the biomass fuel delivery that is independent of the supplier's scale.

MANAGEMENT REACTION

Management generally concurred with the report's recommendations and indicated that corrective actions were planned or underway to address the issues identified. In response to Recommendation 1, Office of Energy Efficiency and Renewable Energy (EERE) management stated that the Headquarters' ESPC review procedures will be revised to provide recommendations on project management when project investment costs are greater than \$50 million. However, EERE management added that it did not have authority over other Department programs and sites and that construction projects are managed by field offices in conformance with landlord program requirements. Regarding Recommendation 2, EERE management responded that they have an existing lessons-learned process which includes project facilitators to identify and incorporate lessons-learned. However, they agreed to continue to look for ways to further incorporate lessons-learned and to improve Departmental as well as programmatic processes.

With regard to Recommendation 3, Oak Ridge Site Office management stated that a review of fuel suppliers will be conducted at a frequency of no less than every 3 years, or when approximately 80 percent of a current wood fuel contract value has been reached. However, Management contended that the site's broker/supplier contract with its current woodchip supplier allows it to obtain fuel from alternate sources. Concerning Recommendation 4, Site Office management stated that it will prepare an assessment report evaluating the onsite storage of

biomass fuels to increase storage capacity and title to fuel supply. Addressing Recommendation 5, Oak Ridge Site Office management agreed to formalize the biomass fuel acceptance criteria by requiring a machine printed weight ticket from a state certified scale.

AUDITOR COMMENTS

EERE's and Oak Ridge Site Office's planned corrective actions are generally responsive to our recommendations. Regarding Recommendation 1, EERE does have the authority to distribute guidance to all ESPC projects even though it does not have authority over other Department programs and sites. Such guidance would aid in the effective and efficient management of ESPC projects throughout all phases including construction. Regarding Recommendation 2, we acknowledge the benefits derived from the experience and advice of Departmental project facilitators. However, a more formalized process would help ensure that ESPC project personnel make well-informed decisions. Nevertheless, EERE's continuing efforts to further incorporate lessons-learned for process improvement are commendable.

With regard to Oak Ridge Site Office's response to Recommendations 3 through 5, we consider the planned corrective actions responsive. However, we believe that annual supplier updates would provide greater protection against fuel disruption risks. Further, we disagree that the site's woodchip supply contract represents a broker contract arrangement. The current woodchip supplier has title to the wood located at the supplier's place of business and processes whole logs into chips to be delivered to Oak Ridge. Finally, while obtaining a machine printed weight ticket from a state certified scale strengthens controls, independent verification of biomass fuel quantities would be ideal. Management's comments are included in their entirety in Appendix 3.

OBJECTIVE

The objective of the audit was to determine if the Department of Energy (Department) is effectively and efficiently administrating its Energy Savings Performance Contract projects.

SCOPE

The audit was performed from July 2012 through August 2013. We conducted work at the Oak Ridge National Laboratory (Oak Ridge) in Oak Ridge, Tennessee and the Savannah River Site in Aiken, South Carolina. At the time of our audit, both the Oak Ridge Biomass Gasification Steam Plant and the Savannah River Site's Biomass Cogeneration Facility were in their first year of operation. Therefore, our review focused on the activities related to the administration and operation of the recently constructed projects and did not include a detailed analysis of generated energy savings.

METHODOLOGY

To accomplish our object, we:

- Reviewed guidance applicable to energy savings performance contracts and management of capital asset projects;
- Reviewed the energy savings performance contract delivery orders at Oak Ridge and the Savannah River Site;
- Evaluated the operations and maintenance structure of the Biomass Plant at Oak Ridge and the Biomass Facility at the Savannah River Site;
- Identified construction lessons learned from the Oak Ridge and the Savannah River Site Biomass Projects; and
- Analyzed the Oak Ridge Biomass Plant and the Savannah River Site Biomass Facility including fuel storage areas and fuel delivery processes.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Accordingly, we assessed significant internal controls and compliance with laws and regulations necessary to satisfy the audit objective. In particular, we assessed the Department's implementation of the *GPRRA Modernization Act of 2010* and found the Department had not established performance measures related to the operations of its biomass facilities or its Energy Savings Performance Contract task orders within the Department. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We did not rely on computer-processed data to accomplish our audit objective.

Appendix 1 (continued)

We held an exit conference with Office of Energy Efficiency and Renewable Energy officials on August 15, 2013.

RELATED REPORTS

Office of Inspector General Report

- Audit Report on the [*Management of Energy Savings Performance Contract Delivery Orders at the Department of Energy*](#) (DOE/IG-0822, September 2009). The audit revealed the Department of Energy (Department) had not always effectively used Energy Savings Performance Contract orders to achieve energy savings. Specifically, it was noted during the audit that the Department had not ceased payments to the energy services company after projects had stopped generating savings, verified the Energy Savings Performance Contract orders had generated the contractually required energy savings, ensured equipment installed was appropriately operated and maintained, and taken actions to include all costs necessary to implement the project when evaluating the project's cost-effectiveness. It was also noted that the site offices had not ensured adequate management existed for the individual orders, the Department had not implemented an effective training program for contract and technical support personnel, and the Federal Energy Management Program had not developed specific guidance regarding estimates of the costs of energy improvements.

U.S. Government Accountability Office Report

- Report on [*Natural Resources: Woody Biomass Users' Experience Offer Insights for Government Efforts Aimed at Promoting Its Use*](#) (GAO-06-336, March 2006). The U.S. Government Accountability Office identified several challenges faced by the 13 woody biomass users included in their review. The availability of an affordable supply of woody biomass depends to a significant degree on the presence of a local logging and milling infrastructure to collect and process forest materials. Without a milling infrastructure, there may be little demand for forest materials, and without a logging infrastructure, there may be no way to obtain the materials. Some users had difficulty obtaining a sufficient supply of woody biomass, either because of constraints on the supply of the material or because of insufficient availability of loggers to collect it. Additionally, wood utilization also tended to increase operation and maintenance requirements for users. For example, after one facility converted from natural gas and fuel oil to wood, it reported that the number of personnel needed to maintain its central heating plant nearly doubled.

MANAGEMENT COMMENTS




Department of Energy

Washington, DC 20585

July 19, 2013

MEMORANDUM FOR: RICKEY R. HASS
DEPUTY INSPECTOR GENERAL
FOR AUDITS AND INSPECTIONS
OFFICE OF INSPECTOR GENERAL

FROM: KATHLEEN B. HOGAN 
DEPUTY ASSISTANT SECRETARY FOR ENERGY EFFICIENCY
ENERGY EFFICIENCY AND RENEWABLE ENERGY

SUBJECT: Response to Inspector General Draft Report on "The Department of Energy's Administration of Biomass Projects"

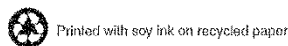
Thank you for the opportunity to review and comment on the subject draft report. With respect to the specific recommendations in the draft report, the Energy Efficiency and Renewable Office (EERE) have provided a formal Management Response as follow below. EERE also welcomes the opportunity to work with the Inspector General's Office to improve the Biomass Program award administration and specifically the award of the Energy Savings Performance Contracts (ESPCs).

Recommendation 1: Implement critical project management practices, to include the development of an integrated project team, critical decision points and independent reviews for managing the construction of projects funded through alternative financing mechanisms.

EERE Management Response: EERE partially concurs for the following reasons: The Sustainability Performance Office will revise the Headquarters' ESPC review procedures to provide recommendations on project management when a project investment costs are greater than \$50 million by September 30, 2013. However, EERE does not have project management authority over other Department of Energy (DOE) programs and sites; construction projects are managed by field offices in conformance with landlord program office requirements.

Recommendation 2: Implement a process to identify, document and disseminate lessons-learned from ESPC projects across the Departmental complex and the Federal government.

EERE Management Response: EERE partially concurs. EERE has an existing process to identify and incorporate lessons learned into ESPC. The continuous process improvement experienced in this program is a direct result of incorporating lessons learned. Additionally, DOE project facilitators incorporate lessons learned into their work for all agencies. As a result, the DOE departmental complex receives that benefit whenever the DOE Indefinite Delivery Indefinite Quantity (IDIQ) is used, since DOE project facilitators are required on each DOE IDIQ project. That being said, EERE will continue to look for ways to further incorporate lessons learned and to further improve Departmental as well Program processes. EERE will complete this action by September 30, 2013.



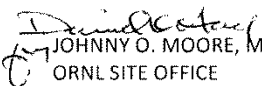


Department of Energy

ORNL Site Office
P.O. Box 2008
Oak Ridge, Tennessee 37831-6269

July 3, 2013

MEMORANDUM FOR RICKEY R. HASS
DEPUTY INSPECTOR GENERAL FOR AUDITS AND INSPECTIONS
OFFICE OF INSPECTOR GENERAL

FROM: 
JOHNNY O. MOORE, MANAGER
ORNL SITE OFFICE

SUBJECT: DRAFT AUDIT REPORT ON "THE DEPARTMENT OF ENERGY'S ADMINISTRATION OF BIOMASS PROJECTS"

Thank you for the opportunity to review and comment on the subject draft report. With respect to the specific recommendations in the draft report, the Oak Ridge National Laboratory (ORNL) Site Office's (OSO) comments follow below. In addition, the attachment to this memorandum identifies general comments to improve the clarity and factual accuracy of the report.

One of the U.S. Department of Energy's (DOE) primary missions is to transform the nation's energy system and secure U.S. leadership in clean energy technologies. ORNL's Biomass Steam Plant (BSP) is one example of DOE's successful deployment of this mission.

The BSP Project is a significant renewable energy showcase for the Laboratory's sustainability efforts. Replacing four fossil-fuel-fired boilers with a biomass-fueled boiler system ORNL's BSP will reduce fossil fuel consumption by more than 70 percent and cut greenhouse gas emissions by more than 20,000 tons per year. As a result, energy savings at the Lab will dramatically exceed energy efficiency goals for federal facilities.

ORNL utilized an Energy Savings Performance Contract (ESPC), averting one of the most problematic hurdles to accomplishing renewable energy projects – financing. Foregoing traditional funding mechanisms, ORNL chose to finance the BSP by using an ESPC. The ESPC eliminates upfront capital costs or special Congressional appropriations, while the contractor pays the upfront costs of purchasing and installing new equipment, and the Laboratory repays the cost over the life of the contract from savings gained through the project's energy efficiency measures.

The Federal Government, as the nation's largest energy consumer, and ORNL, DOE's largest science and energy research facility, a consumer of tremendous amounts of electricity, gas and water, are leading by example. The BSP will save electricity, natural gas, water, and operational savings of more than \$260 million over the next two decades.

Recommendation 3: That the Manager, OSO, annually update the biomass fuel supplier analysis to identify the availability of backup suppliers and evaluate the opportunities to implement a multiple fuel supplier delivery process.

Management Response: Partially concur. Currently, ORNL is able to utilize multiple fuel suppliers and has established a broker/supplier contract that allows the supplier to obtain fuel from alternate sources.

An assessment of available fuel suppliers was conducted in 2008 by Ecostrat, and again, in 2011 by ORNL. ORNL recommends that a fuel supplier analysis be conducted triennially to support contract award(s).

Appendix 3 (continued)

RICKEY R. HASS

-2-

July 3, 2013

SUBJECT: DRAFT AUDIT REPORT ON "THE DEPARTMENT OF ENERGY'S ADMINISTRATION OF BIOMASS PROJECTS"

Action Plan: A review of fuel suppliers will be conducted at a frequency of no less than every three years, or when approximately 80 percent of a current wood fuel contract value has been reached.

Estimated Completion Date: November 2014.

Recommendation 4: That the Manager, OSO, conduct an assessment of potential onsite biomass fuel storage locations to increase Oak Ridge's storage capacity and title to fuel supply.

Management Response: Concur. ORNL has evaluated onsite storage of biomass fuels. Based on the evaluation findings at this time, it is resource and cost beneficial to place the fuel storage requirement on the wood fuel supplier. Placing this requirement on the supplier reduces financial, environmental, and fire hazard risks associated with construction, operation, and maintenance of an additional wood storage facility. We agree that the evaluation should be formalized and documented in a report.

Action Plan: ORNL will prepare an assessment report evaluating the onsite storage of biomass fuels to increase storage capacity and title to fuel supply. The assessment will take into consideration potential storage locations, storage capacities, costs, resources, and liabilities.

Estimated Completion Date: April 2014.

Recommendation 5: That the Manager, OSO, develop a system to verify the biomass fuel delivery that is independent of the supplier's scale.

Management Response: Partially concur. All wood delivered to the ORNL BSP must be accompanied by a weight ticket from a state certified scale. In the wood product industry, using handwritten weight tickets reflects the industry standard. At ORNL, it is common practice to accept bulk materials (e.g., diesel fuel, bulk chemicals, bulk gasses, road salt, etc.) with machine printed weight tickets from state certified scales. ORNL recognizes that printed weight tickets provide a standardized document that is less vulnerable to alteration or misinterpretation. ORNL will treat the delivery of wood chip transactions like other commodity acquisitions received at the ORNL site.

Action Plan: ORNL will formalize the biomass fuel acceptance criteria by requiring a machine printed weight ticket from a State of Tennessee (or state of origin) certified scale. ORNL will also ensure that requirements for printed weight tickets are included in all future biomass fuel contracts.

Estimated Completion Date: December 2014.

Attachment

cc w/attachment:

Merley L. Lewis, CF-50

Leslie J. Thomas, EM-63

Janet B. Veneri, SC-41.3

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