



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

# Special Report

The Department of Energy's  
Management of the Award of a \$150  
Million Recovery Act Grant to LG  
Chem Michigan Inc.



OAS-RA-13-10


February 2013



**Department of Energy**  
Washington, DC 20585

February 8, 2013

MEMORANDUM FOR THE UNDER SECRETARY OF ENERGY

FROM:   
Gregory H. Friedman  
Inspector General

SUBJECT: INFORMATION: Special Report on "The Department of Energy's Management of the Award of a \$150 Million Recovery Act Grant to LG Chem Michigan Inc."

BACKGROUND

The Department of Energy's Vehicle Technologies Program was established to develop and deploy efficient and environmentally friendly highway transportation technologies to reduce the Nation's dependence on foreign oil and provide greater energy security. The Vehicle Technologies Program received \$2.4 billion under the American Recovery and Reinvestment Act of 2009 for these purposes. The program is managed by the Office of Energy Efficiency and Renewable Energy and is being implemented and monitored primarily by the Department's National Energy Technology Laboratory (NETL).

In February 2010, LG Chem Michigan Inc. (LG Chem Michigan), formerly Compact Power Inc., was awarded more than \$150 million in Recovery Act funding to help construct a \$304 million battery cell manufacturing plant in Holland, Michigan. As part of this process, LG Chem Michigan was also eligible to receive more than \$175 million in tax relief from the State and local governments through 2025. The objective of the project was to design, construct, start up and test a production facility for lithium-ion polymer batteries, create more than 440 jobs, and produce enough battery cells annually to equip 60,000 electric vehicles by the end of 2013, with assembly beginning in 2012.

On October 24, 2012, the Office of Inspector General received a complaint that LG Chem Michigan misused Recovery Act funds. The complainant asserted that employees at the Michigan facility had little work to do and were spending time volunteering at local non-profit organizations, playing games and watching movies at the expense of the Federal government and taxpayers. In a separate action, the Department's Chief of Staff and its General Counsel brought similar concerns to our attention. We initiated this review to examine the allegations and to evaluate the Department's management of the Recovery Act grant awarded to LG Chem Michigan.

RESULTS OF REVIEW

We confirmed the allegations. We found that work performed under the grant to LG Chem Michigan had not been managed effectively. Based on progress to date and despite the expenditures of \$142 million in Recovery Act funds, LG Chem Michigan had not yet achieved the objectives outlined in its Department-approved project plan.

The allegation that the Department reimbursed LG Chem Michigan for labor costs that did not support the goals and objectives of the grant was substantiated. Our review revealed that LG Chem Michigan inappropriately claimed and was reimbursed for labor charges incurred by a variety of supervisory and staff employees for activities that did not benefit the project. Through interviews with LG Chem Michigan management and other staff, we confirmed that employees spent time volunteering at local non-profit organizations, playing games and watching movies during regular working hours. As such, we determined that the Department reimbursed the company for questionable labor costs incurred in the third quarter of 2012. We were unable to calculate the exact loss to the Government because LG Chem Michigan did not track labor activities in detail. However, based on LG Chem Michigan employee revelations regarding work habits, we believe it is likely that the total amount of charges that included at least some non-productive work exceeded \$1.6 million, about \$842,000 of which was reimbursed by the Department in accordance with its cost-sharing arrangement for the project. The projected overpayment by the Department assumes that LG Chem Michigan complied with the terms of its grant to share costs on an equal basis, an aspect that we did not confirm.

We found that the overall goals related to production of battery cells and the projected number of jobs created had yet to be met. In particular:

- Even though the facility had produced a large number of test cells, the plant had yet to manufacture battery cells that could be used in electric vehicles sold to the public.
- Only about 60 percent of the production capacity set forth in the grant agreement was constructed even though nearly \$142 of \$151 million (94 percent) of the Department's share of project funds had been spent. LG Chem Michigan officials estimated that the Department's 50 percent share of the cost to complete the five production lines called for by the grant agreement would be \$22 million, an amount that would significantly exceed the remaining funds available under the grant award. These same officials noted, however, that they had no plans to complete the remaining lines unless demand improved dramatically. We found that LG Chem Michigan had significantly underestimated labor costs and that this was a primary cause of its inability to complete planned construction.
- Project documentation prepared to support the grant award indicated that production of battery cells would transition from LG Chem's South Korean facility to the Michigan plant beginning in 2012, assuming that demand grew as expected. LG Chem Michigan officials indicated that they had not begun production at the facility because demand for the Chevrolet Volt, the U.S. manufactured vehicle for which the plant was to produce battery cells, had not developed as anticipated.
- Less than half of the expected number of jobs had been created to support the project. The period of performance for the grant runs through May 2013. Yet, based on progress and current plans of LG Chem Michigan officials at the time of our review, the expected benefits of the project are not likely to be realized within the originally anticipated timeframes.

The problems we identified occurred, in large part, due to grant monitoring issues with LG Chem Michigan and the Department. Notably, LG Chem Michigan did not fully realize the grant's target goals, and the Department did not always take sufficient action to ensure adequate oversight of project progress and, in turn, protect the taxpayers \$142 million investment in the project. For instance, LG Chem Michigan officials told us that they made a decision to delay production of battery cells at the Michigan facility. LG Chem Michigan officials made that decision even though demand for the Chevrolet Volt averaged 1,955 vehicles per month in 2012. That volume could have readily been produced by using the then built-out capacity of the Michigan plant. NETL officials commented that it was anticipated at the time the grant was awarded that the transition of production from non-U.S. sources to Michigan would occur; however, language requiring the shift in production had not been incorporated into the grant. Thus, they asserted that the Department had no leverage to require the shift in production to the Michigan plant. Yet, until the shift in production takes place or some alternative use for the plant is developed, U.S. taxpayers will receive little direct benefit from a plant for which they provided up to half of the funding.

Further, LG Chem Michigan officials told us that the vast majority of the increase in project costs was due to errors in estimating labor costs. For example, LG Chem Michigan failed to account for the Recovery Act requirement to utilize Davis-Bacon Act wage rates for subcontractors. We found this lapse hard to understand given the emphasis placed on strict compliance with Davis Bacon as one of the Recovery Act's basic principles, a fact that was well known to industry and to responsible Department officials.

In addition, LG Chem Michigan management had not adequately implemented the terms and conditions of the grant agreement as related to unallowable costs. For instance, company officials we spoke with conceded that they submitted all labor costs for reimbursement because, as they asserted, they were unfamiliar with the types of costs that were allowable/unallowable. We found, however, that grant documentation and related Federal regulations clearly established what types of costs were permissible.

We also noted a lack of effective monitoring of grant activities by NETL related to project progress and labor reimbursements. For example, even though there were indications that the project was not progressing as planned early in 2012 – reflected by employee furloughs, construction delays and cost overages – NETL had not taken action to determine whether payments to LG Chem Michigan should be suspended until further review of the project. Notably, the Office of Energy Efficiency and Renewable Energy had taken action to suspend reimbursements for labor charges when it became aware of potential improprieties in October 2012. In preliminary comments on our report, officials also stated that documentation received from LG Chem Michigan did not indicate that the project would not ultimately meet its goals and objectives. In addition, we determined that the Federal project monitoring process had not identified the questionable labor activities highlighted in our report.

#### Production and Transition Issues

LG Chem Michigan officials told us that they were faced with difficult decisions regarding the workforce at the Michigan facility. Plant managers noted that they wanted to do their best to maintain the workforce in hopes that production would start soon. They also indicated that they

resorted to furloughs and permitted employees to engage in non-productive activities to help ensure that their investment in training the employees was not lost. In addition, LG Chem Michigan officials indicated that their range of options was limited, claiming that shifting production to the Michigan plant at this point would actually result in financial losses on battery cells produced in the U.S.

We acknowledge that company officials were faced with difficult choices, with lack of demand for the product being at the core of LG Chem Michigan's problem. Yet, the basic question for Federal grant administrators, in our opinion, was whether grant funding should have continued or suspended once it became clear that: (i) all the promised production lines could not be completed within budget; and, (ii) LG Chem Michigan would continue to fill U.S. demand with battery cells made in South Korea. In light of those realities, we question whether Federal reimbursements for labor payments for any of the plant's employees and other project costs should have continued without a thorough re-evaluation of the project. At the time these facts became known, in our judgment, business risk for the endeavor should have shifted to LG Chem Michigan and should not have been borne, even in part, by the U.S. taxpayer. Ironically, program officials told us that they were considering a request from LG Chem Michigan to extend the grant period until 2016.

#### Impact and Path Forward

The LG Chem Michigan grant recipient faced a number of challenges. Most notably, the demand for battery cells to be produced at the Michigan plant was less than anticipated, frustrating efforts by the Department and its Recovery Act grant recipient to promote the use of electric vehicles and reduce the Nation's dependence on foreign oil. To its credit, NETL had initiated prompt actions related to resolving issues highlighted in the complaint initially referred to us by the Recovery Accountability and Transparency Board, including recovering presumptively unallowable labor reimbursements identified in our report and requiring LG Chem Michigan to submit an action plan to address concerns with the progress of the project.

While the efforts of the Department and LG Chem Michigan's immediate reaction to the allegations resulted in recovery of the non-productive labor charges, the results of our review indicated that more fundamental issues existed, limiting the possibility that the objectives of the project will be met. Without improvements, the Department may continue to reimburse LG Chem Michigan for costs that do not support the intent of the grant. As such, we have made a series of recommendations that should assist the Department in managing its Vehicle Technologies Program as it relates to LG Chem Michigan and similarly situated grantees.

#### MANAGEMENT REACTION

Management concurred with the report's recommendations and indicated that it had taken and/or initiated corrective action to address issues identified in our report.

In its comments on the report, officials confirmed that LG Chem Michigan had reimbursed the Department for the \$842,000 in costs that we had found to be unreasonable and unallowable. However, management noted that this was only a very small percentage of the overall grant. We

think that this comment misses the point. First, our review of costs incurred was limited to costs related to unproductive labor charges by LG Chem Michigan – that is, those charges identified in the initial allegation relating to idle workers playing board games and watching movies at Government expense. Thus, we did not evaluate the reasonableness of the larger body of incurred costs. Second, we leave it to each reader of the report to make their own judgment as to the significance of a \$842,000 reimbursement. Finally, the audit surfaced issues relating to the management of this grant which transcend the reimbursed amount in importance.

Management's comments and our response are summarized and more fully discussed in the body of the report. Management's formal comments are included in their entirety in Appendix 3.

Attachment

cc: Deputy Secretary  
Assistant Secretary for Energy Efficiency and Renewal Energy  
General Counsel  
Chief of Staff

**SPECIAL REPORT ON THE DEPARTMENT OF ENERGY'S  
MANAGEMENT OF THE AWARD OF A \$150 MILLION RECOVERY ACT  
GRANT TO LG CHEM MICHIGAN INC.**

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**TABLE OF  
CONTENTS**

**Project Performance and Cost**

Details of Finding .....1  
Recommendations and Comments.....9

**Appendices**

1. Objective, Scope and Methodology .....11  
2. Related Reports .....12  
3. Management Comments.....13

# **THE DEPARTMENT OF ENERGY'S MANAGEMENT OF THE AWARD OF A \$150 MILLION RECOVERY ACT GRANT TO LG CHEM MICHIGAN INC.**

## **PROJECT PERFORMANCE AND COST**

The Department of Energy (Department) and LG Chem Michigan Inc. (LG Chem Michigan) had not effectively managed grant activities related to the Electric Drive Vehicle Battery and Component Manufacturing Initiative (Manufacturing Initiative). In particular, based on progress at the time of the report and despite the expenditure of \$142 million in American Recovery and Reinvestment Act of 2009 (Recovery Act) funds, we found that production and job creation goals and objectives outlined in the Department-approved project plan are unlikely to be achieved within anticipated timeframes. Furthermore, LG Chem Michigan inappropriately claimed and was reimbursed for labor costs that did not support the purpose/objective of the grant, including costs for workers to perform volunteer activities, play games and watch movies during regular work hours.

### Project Goals and Objectives

We found that the goals and objectives of the Manufacturing Initiative had not yet been met. The objective of the project was to design, construct, start up and test a production plant for lithium-ion batteries to support the manufacture of 60,000 electric vehicles by the end of 2013. Although assembly operations were to begin at the Michigan plant in 2012, we noted that goals related to production of battery cells and the number of jobs created had not been achieved. While the period of performance for the grant will continue until at least May 2013, and many variables affect whether goals are realized, our evaluation indicated that the expected benefits of the project are unlikely to be realized within the originally anticipated timeframes. In particular:

- Although LG Chem Michigan had made significant progress related to completion of design, construction and testing of the plant, it had not begun production of battery cells for commercial use. We noted that while a large number of test cells had been created as of June 2012, the plant had yet to have the entire production process tested and validated and, therefore, had not generated any cells that could be used in electric vehicles sold to the public.
- Grant award documentation indicated that production of battery cells was scheduled to transition to the Michigan plant from non-U.S. sources beginning in 2012, assuming that demand achieved expected levels. However, we found that this had not occurred. The project plan called for beginning production of battery cells in 2012, at the



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Michigan plant, with production of all Chevrolet Volt battery cells occurring at the Michigan plant by the end of 2013. LG Chem Michigan officials commented, however, that while they were prepared to begin production, they had not begun the transition to the Michigan plant due to lower than expected demand for electric vehicles.

- Production capacity set forth in the grant agreement had not been realized even though nearly all the Department's share of project funds had been spent. Specifically, the project plan called for 5 production lines that would each produce enough battery cells annually to support at least 12,000 vehicles. However, despite spending \$142 million (94 percent) of funds available from the Department, only three of five production lines had been constructed. LG Chem Michigan officials estimated that construction of the additional lines, if completed, would cost about \$44 million. Under the terms of the grant, the Department's share would be \$22 million, which would significantly exceed the remaining grant funds. Based on our review of available documentation, we determined that the vast majority of the increase in project costs was due to higher than expected labor costs. Specifically, despite budgeting \$15 million for the installation of all equipment, LG Chem Michigan had spent nearly \$30 million by the time of our review on completing only three of the five production lines. Furthermore, LG Chem Michigan officials indicated that the company had indefinitely delayed plans to construct the final two assembly lines.
- Although project planning documentation estimated that the project would create more than 440 jobs by the end of 2012, less than half of the expected number of jobs had actually been created. We found that the plant reached a peak of 215 jobs in early 2012, but the number of employees had dropped to 200 by the time of our review. To help compensate for the lack of production and reduce operating costs, plant management decided to furlough employees beginning in April 2012. The furloughs continued at the time of our review and, according to plant officials, had saved the company nearly \$580,000 to date, a portion of which was realized by the Department. With no firm plans to begin production, it is unclear how and when the idle capacity will be addressed.

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## Labor Activities

We concluded that the Department paid LG Chem Michigan for labor costs that did not support the goals and objectives of the grant. Specifically, our review of worker activities at LG Chem Michigan, including supervisors, operators and engineers, indicated that employees used regular work hours to volunteer at local organizations, play board, card and video games and watch movies. As such, we determined that the Department may have reimbursed the company up to about \$842,000 for questionable labor charges for just the third quarter of 2012. In particular, we found:

- 16 of 26 employees interviewed had participated in various volunteer activities during normal work hours in recent months. Based on our evaluation, we determined that the volunteer work began in or around August 2012, and continued until November 2012. This included volunteer work at Habitat for Humanity, animal shelters and outdoor nature centers, among others. While our interviews demonstrated that these activities had taken place, we were unable to quantify the number of days spent on volunteer work because the company did not track labor activities to this level of detail. Our test work indicated, however, that the amount of time spent volunteering ranged from one day for certain employees to 5 days per week for others. In total, the cost of labor for the third quarter was about \$2.3 million, including \$1.7 million for direct labor charges and \$670,000 in related fringe benefits.
- 13 of 26 employees we spoke with had participated in various activities at work that were not appropriate for reimbursement by the Department, including watching movies and playing board, card and video games. We determined that these activities generally began prior to the volunteer work and continued until just before the time of our review. For instance, at least two individuals interviewed believed that such activities began prior to July 2012, but did not provide any documentation to support this assertion. Similar to the volunteer work, we were unable to quantify the amount of time spent on these activities because the company did not track labor to this level of detail.

National Energy Technology Laboratory (NETL) officials became aware of the questionable activities as a result of media reports and notified LG Chem Michigan on November 1, 2012, that it would

not be reimbursed for its share of more than \$531,000, or approximately \$265,500 (half of \$531,000), in labor costs occurring in the third quarter of 2012. We determined, however, that the amount of questionable labor costs may be much higher. Specifically, NETL's estimate only included costs for production supervisors and operators, but did not include costs of more than \$482,000 for several other categories of employees that also participated in volunteer activities, game playing and movie watching during work hours. The estimate developed by NETL was based on inaccurate information provided by LG Chem Michigan regarding which individuals had participated in volunteer activities. Based on our review, we are questioning costs of up to about \$842,000, as summarized in the following table.

Functional Group	Total Employees	Labor Costs by Functional Group	Questioned Labor Costs <sup>1</sup>
Construction	5	\$49,798	-
Production Engineers	20	\$283,266	\$283,266
Production Supervisors	4	\$48,427	\$48,427*
Production Operators	101	\$483,037	\$483,037*
Electrode Engineer	5	\$55,885	-
Electrode Operators	12	\$56,049	\$56,049
Administrative Personnel	22	\$407,514	-
Preventive Maintenance Technicians	8	\$81,314	-
Preventive Maintenance Engineers	3	\$47,534	-
Quality Assurance Engineers	6	\$75,940	\$75,940
Quality Assurance Operators	14	\$67,400	\$67,400
<b>Total Direct Labor</b>	<b>200</b>	<b>\$1,656,164</b>	<b>\$1,014,119</b>
Fringe Benefits		\$670,258	\$670,258
<b>Total Labor</b>		<b>\$2,326,422</b>	<b>\$1,684,377</b>
		Department's Share of Cost	50%
		<b>Total Questioned Costs</b>	<b>\$842,189</b>

\* These costs were initially questioned by NETL. The calculation of questioned costs assumes that LG Chem Michigan complied with the terms of its grant to share costs equally – an aspect that we did not confirm.

The decision of the company to permit employees to perform questionable activities using Department funds did not support the goals and objectives of the grant agreement, and therefore, was a questionable cost. LG Chem Michigan management told us that it was unaware that these costs may be considered unallowable and would work with the Department to address the situation. We found, however, that grant terms and readily available Federal regulations on the subject clearly established the types of costs that

<sup>1</sup> We did not question costs for certain labor categories because our sample of interviews did not identify individuals that participated in activities that did not support the goals and objectives of the project.

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were appropriate. Subsequent to our review, Department officials provided evidence that they had fully recovered the questioned costs identified in our report.

## **Project Implementation and Monitoring**

The problems we identified occurred, in part, because LG Chem Michigan had not effectively implemented activities that supported the goals and objectives of the Manufacturing Initiative. In addition, many of the issues identified were due to the lack of effective monitoring of grant activities by NETL related to project progress and labor reimbursements. Furthermore, the goals and objectives of the project were not met within the estimated timeframes, in part, because electric vehicle sales were lower than anticipated.

### Grant Activities

Senior LG Chem Michigan officials decided to retain production of battery cells outside of the U.S. rather than transition operations to the Michigan plant because the demand for electric vehicles was lower than anticipated. LG Chem Michigan officials made that decision even though demand for the Chevrolet Volt, the U.S. manufactured vehicle for which the plant was to produce batteries, averaged 1,955 vehicles per month for 2012. That volume could have readily been produced by using the then built-out capacity of the Michigan plant. In addition, while the potential for production overcapacity was highlighted as a significant risk in the Project Management Plan when the grant was awarded, LG Chem Michigan's response indicated that demand for electric vehicles was strong enough to mitigate these concerns and that supply agreements with other major vendors would be obtained. At the time of our review, however, no other agreements had been established.

LG Chem Michigan also had not appropriately implemented the terms and conditions of the grant as related to potentially unallowable labor costs. In particular, company officials we spoke with explained that they were unfamiliar with all of the nuances of the agreement because they had never received grant funds from the Department prior to the Recovery Act. However, we noted that the terms and conditions of the grant referred to Department Financial Assistance Regulations, 10 CFR 600, which demonstrated the types of activities that were permissible under the terms of the award. For instance, Federal regulations state that costs could be considered reasonable, and therefore reimbursable, if ordinary and necessary for the conduct of business or contract performance. LG Chem Michigan management also noted that it

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made the decision to pay individuals to support local community activities rather than potentially terminating their employment due to a lack of production. They explained that this decision was made in response to the high cost to train workers and the fluidity in vehicle sales projections. However, we continue to question whether the cost for various activities should have been reimbursed by the Department as it did not appear reasonable to meet the intent of the grant. In our opinion, the cost of business decisions made by LG Chem Michigan should be absorbed by the company, not the U.S. taxpayer.

### Monitoring and Oversight

The issues identified were also due to a lack of effective monitoring of grant activities by NETL related to project progress and labor reimbursements. For example, even though there were indications that the project was not progressing as planned – including employee furloughs, construction delays and cost overages – NETL had not taken action to determine whether payments to LG Chem Michigan should have been suspended pending further review of the project. In particular, although a technical review of the project's budget was completed during the grant award process, NETL did not require LG Chem Michigan to take corrective action when it became evident that the cost of the project would exceed the planned budget. For instance, our review of a site visit checklist completed by Federal officials in August 2012, did not include any discussion related to a comparison of cost versus capacity. In fact, documentation we reviewed indicated that the project was on track to meet program milestones and that there were no concerns with project progress. In addition, LG Chem Michigan officials told us that the vast majority of the increase in project costs was due to errors made by the company in estimating labor costs. While NETL completed a technical review of the budget, it did not ensure that LG Chem Michigan accounted for the requirement to utilize Davis-Bacon Act wage rates for subcontractors.

We also determined that NETL did not question LG Chem Michigan's decision to delay production at the Michigan plant. NETL officials commented that while they were aware of the planned transition to the Michigan plant as part of the grant documentation, they stated that the Department could not interfere with LG Chem Michigan's business decisions and noted that this did not impact the need to establish the award. In preliminary comments on our report, officials noted that the project plan included language related to transitioning production to Michigan,

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but that factor had never been incorporated in the terms of the grant award. Federal officials also indicated that although the final two assembly lines were not installed, failure to complete the planned capacity would not impact the maximum amount of the Department's contribution. Senior LG Chem Michigan officials commented, however, that there were no plans to install the additional lines in the near future due to lower than expected demand for electric vehicles.

In addition, we determined that the Federal project monitoring process had not identified the questionable labor activities highlighted in our report. Although the Federal Project Manager visited the plant at the end of August 2012 – after many of the volunteer activities, games and movies had already begun – the issues were not identified. In light of the indications that the project was not progressing as planned and production had not begun, we believe it would have been prudent for Federal officials to inquire about employee activities given the large number of individuals employed at the plant. Had officials spoken to project engineers and/or operators about what they were doing during periods of inactivity, the questionable activities may have been identified. In fact, we do not believe that the monitoring process used by NETL would have ever identified the labor issues highlighted in our report. To its credit, NETL took immediate actions to respond to the allegations of labor improprieties, including suspending payments for labor, initiating cost recovery proceedings and directing LG Chem Michigan to develop corrective action plans.

#### Market Factors

NETL and LG Chem Michigan officials told us that lower than anticipated sales of electric vehicles also played a significant role in the progress of the Manufacturing Initiative. Specifically, although initial demand projections at the time of award were for 60,000 vehicles per year, 2012 sales totaled only 23,461. As a result, LG Chem Michigan officials decided to construct only three of the five planned production lines for the lithium-ion polymer batteries used to manufacture electric vehicles. LG Chem Michigan officials stated that they had placed an order for equipment to support assembly of a fourth production line, but suspended the order in December 2011, due to the lack of activity at the plant. While we recognize that the demand for electric vehicles was a significant factor impacting the success of the plant, the issues identified in our report demonstrate that there were also opportunities for enhanced project management practices

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that should have been utilized to help implement the project in an effective manner.

Lack of demand and progress problems should have, in our opinion, prompted Federal officials to intensify/focus their review efforts on determining whether funding for the plant should have continued or should have been suspended pending further review. Notably, LG Chem Michigan officials told us that they have no specific plans to begin production in Michigan because of low demand. Even though NETL officials were aware of this fact, they told us that they could not interfere with business decisions of the company. Instead, they elected to continue to fund, in essence, business risks that, in our opinion, should have been assumed by LG Chem Michigan when it became apparent the goals of the grant would not be achieved within the originally anticipated timeframes. Unless and until production begins at the Michigan plant, in our opinion, the U.S. taxpayer will garner little benefit from its \$143 million investment.

## **Impact and Path Forward**

The Department faced a number of challenges in managing the LG Chem Michigan grant, particularly in light of the less than expected demand in the target market for battery cells to be produced at the Michigan plant. Without improvements, however, the Department may continue to reimburse LG Chem Michigan for costs that are questionable. For instance, as a result of the issues noted in this report, we identified up to about \$842,000 in questionable costs related to reimbursements for labor charges that did not support the intent of the grant.

In addition, we are concerned that the goals and objectives of the grant may not be fully achieved due to lower than expected demand for electric vehicles. While the lack of electric vehicle demand for the project was a significant factor to the issues identified in our report, senior LG Chem Michigan officials countered that the plant remained critical to the long-term strategy of the company and believed that it would eventually succeed – whether through increased demand for vehicle batteries or expanding the scope of plant activities to produce other products such as energy storage solutions. However, until the company begins production at the Michigan plant or develops some alternative use for the plant, U.S. taxpayers will receive little direct benefit from a plant for which they provided at least half of the funding.

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**RECOMMENDATIONS**

To improve management of the Manufacturing Initiative and help achieve the goals of the Recovery Act, we recommend that the Assistant Secretary for Energy Efficiency and Renewable Energy direct Vehicle Technologies Program officials to:

1. Enhance grant monitoring procedures to ensure that goals and objectives of the Manufacturing Initiative are achieved in the most effective manner;
2. Utilize the full range of remedial actions available to the government under the terms of the grant to hold LG Chem Michigan accountable for the outcome of the Michigan project; and,
3. Coordinate with LG Chem Michigan officials to facilitate either beginning battery cell production at the Michigan plant or implementation of some alternative, productive use for the plant.

We also recommend that the contracting officers for the Vehicle Technologies Program:

4. Evaluate questioned costs identified in our report and recover overpayments made to LG Chem Michigan.

**MANAGEMENT  
REACTION**

Department management agreed with the report's recommendations and stated that it had initiated actions to address the issues identified. For instance, management stated that it had taken action to disallow project costs identified in our report, although it noted that the unallowable labor costs represent less than 1 percent of EERE's contribution to the project. Management commented that while it was considering a request from LG Chem Michigan to extend the period of performance for the grant, the extension would not, in and of itself, increase the project's value or the Department's share of the project costs. In addition, management stated that it is committed to effective grants management and strives to implement sound grants management practices. Management also commented that, concurrent with our review, it provided guidance to LG Chem Michigan to assure a clear understanding of the reporting requirements as the project moves forward. Furthermore, management stated that it was in the process of establishing a uniform set of terms and conditions for funding opportunities and awards to facilitate active project management. Although management concurred with the need to enforce the terms and conditions of the grant award, it noted that under the terms of the grant it could not force LG Chem Michigan



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to transition production to the Michigan plant. Management also provided technical comments that are addressed in the body of the report, where appropriate.

**AUDITOR COMMENTS**

Management's comments and corrective actions are responsive to our recommendations. However, in response to management's comments on the unallowable labor costs identified in the report, we note that while these costs comprised less than 1 percent of EERE's contribution to project costs, the scope of our audit was limited and would not necessarily have identified all unallowable costs, because we did not review all project invoices. We modified Recommendation 3 in response to management's assertion that based on the terms of the grant, it could not force LG Chem Michigan to transition production to the Michigan plant. Management's formal comments are included in Appendix 3.

## Appendix 1

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### OBJECTIVE

To determine whether work performed under the American Recovery and Reinvestment Act of 2009 (Recovery Act) grant awarded to LG Chem Michigan Inc. (LG Chem Michigan) was appropriately managed.

### SCOPE

The review was performed between November 2012 and February 2013, at the National Energy Technology Laboratory in Morgantown, West Virginia, and the LG Chem Michigan plant in Holland, Michigan.

### METHODOLOGY

To accomplish our objective, we:

- Reviewed applicable laws and regulations, including those pertaining to the Recovery Act;
- Interviewed Federal project officers, contract specialists and contracting officers regarding the grant awarded to LG Chem Michigan;
- Reviewed LG Chem Michigan grant documentation obtained from the Department of Energy's Strategic Integrated Procurement Enterprise System;
- Interviewed approximately 30 employees of LG Chem Michigan to obtain information related to activities performed at the plant, including the conduct of volunteer activities, game playing and video watching;
- Performed reviews of LG Chem Michigan's project plans, volunteer program, raw material balances and equipment tracking; and,
- Reviewed related reports issued by the Office of Inspector General and the U.S. Government Accountability Office.

An exit conference was held with officials on February 6, 2013.

### **RELATED REPORTS**

#### **Office of Inspector General Reports**


- Audit Report on [\*Follow-up on the Department of Energy's Implementation of the Advanced Batteries and Hybrid Components Program Funded under the American Recovery and Reinvestment Act\*](#) (OAS-RA-L-12-05, July 2012). The review identified opportunities for the Department of Energy (Department) to improve its administration of the Advanced Batteries and Hybrid Components Program. Specifically, the Department could better define regulations governing the retention of documentation supporting procurement decisions. In addition, the Department should ensure recipients adequately safeguard equipment purchased with Federal funds. Lastly, the Department should obtain and review required audit reports to ensure the sufficiency of internal controls and compliance with laws and regulations.
- Audit Report on [\*Progress in Implementing the Advanced Batteries and Hybrid Components Program under the American Recovery and Reinvestment Act\*](#) (OAS-RA-L-10-04, April 2010). The audit revealed that the Department had made significant progress in implementing the Advanced Batteries and Hybrid Components Program. Specifically, the Department had issued a Funding Opportunity Announcement that included defined selection criteria and established a grantee selection process that incorporated review of all aspects of applicant proposals. In addition, the Department awarded funding to 20 grantees, obligating 85 percent of the available American Recovery and Reinvestment Act of 2009 funding for projects such as construction of factories that will build lithium-ion batteries for hybrid and electric vehicles and facilities that will produce materials and components to supply battery manufacturers. Furthermore, the Department had established conditions on the use of funds awarded until such time as grantees can demonstrate, for example, that they have completed environmental reviews. Finally, the Department developed a comprehensive monitoring program plan that, if successfully implemented, should reduce the financial, technical and marketing risks associated with the projects.

#### **Government Accountability Office Report**

- [\*Batteries and Energy Storage Federal Initiatives Supported Similar Technologies and Goals by Had Key Differences\*](#) (GAO-12-842, August 2012).

MANAGEMENT COMMENTS

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

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SUBJECT: Response to Office of Inspector General Draft Special Report on  
"Department of Energy's Management of the Award of a \$150 Million  
Recovery Act Award by the Department of Energy to LG Chem Michigan  
Inc."

The Office of Energy Efficiency and Renewable Energy (EERE) appreciates the opportunity to respond to this audit report.

EERE's investment was to partially fund an advanced battery manufacturing facility, and it's simply unacceptable that any of those funds were used to pay for other work in the community, or for any other purpose. Immediately upon learning of these allegations, EERE took swift action to stop further payments, secured a refund for taxpayers on \$842,189 in questionable costs, and report the matter to the Department's Inspector General. In addition, EERE is taking a series of steps to strengthen project management in the future, including a reorganization within EERE, an updated grants management process, increasing the number of site visits each year to large projects, and centralizing the review of project invoices. A more complete summary of these actions is below.

While the demand for electric vehicles hasn't grown quite as quickly as expected and there will likely be some more challenges in the next few years, electric drive vehicle sales tripled last year and are expected to continue growing rapidly. EERE's investment in this battery manufacturing facility – matched dollar for dollar by LG Chem Michigan Inc. – is helping to put Michigan and the United States in a prime position to capture a rapidly growing global market. This is part of an overall effort to make sure that America's auto manufacturing base continues to adapt to the most innovative technologies, deliver the gasoline-saving vehicles that consumers increasingly want, and to continue to grow the manufacturing sector in the United States.

While the Department has no tolerance for and moved swiftly to correct this case of inappropriate billing, it's also critical that the United States continue to compete aggressively for the clean energy jobs and industries of the future. Ultimately, the choice comes down to whether the United States should lead what will become an enormously valuable and growing market, or whether we will give up this industry because sales "only" grew 200 percent last year. Emerging technologies and industries often face struggles early on, but the race will be won by those who remain focused and committed to the end goal.

### **Electric Drive Vehicle Battery and Component Manufacturing Initiative**

The objective of the Electric Drive Vehicle Battery and Component Manufacturing Initiative is to enable the United States to lead the development and manufacturing of batteries and components for electric drive vehicles (EDVs). EERE has invested, on a cost-shared basis with industry, in the establishment of a domestic battery and electric drive component industry capable of competing effectively in the global market. Specifically, EERE has provided financial assistance to raw materials suppliers, materials processors, electric drive component and systems manufacturers, cell manufacturers, and pack assemblers. This Initiative has successfully expanded domestic battery production capacity for EDVs – as of September 30, 2012, these projects had achieved a total manufacturing capacity exceeding 290,000 batteries/year.

### **LG Chem Michigan Inc. Project**

EERE is providing financial assistance to LG Chem Michigan Inc. to construct an 850,000 square foot manufacturing facility in Michigan and to procure, install, and validate manufacturing equipment. LG Chem Michigan Inc. is contributing over half (\$151,403,339) of the total project cost (\$302,790,339), and EERE is providing the remainder (\$151,387,000). The unallowable labor costs identified in this report represent less than 1 percent (specifically, 0.5 percent) of EERE's contribution to this project.

This project will enable LG Chem to produce Lithium-Ion Polymer battery cells and batteries in the United States for automotive applications (including hybrid electric, plug-in hybrid electric, pure electric vehicles for commercial purposes, and military hybrid vehicles) and other applications, such as aviation, smart grid support, broadband backup power, and energy storage for renewable energy.

LG Chem Michigan Inc. has successfully completed the construction of the cell manufacturing facility and the installation of an electrode manufacturing line, four safety reinforcing separator lines, and three cell assembly lines. In addition, LG Chem Michigan Inc. has built hundreds of thousands of test cells to validate plant operation.

The project is scheduled to be completed on May 31, 2013; however, LG Chem Michigan Inc. has requested an extension in order to better align the remaining project tasks (representing about 6% of EERE's contribution to the total project cost) with market demand. If EERE grants this extension, it will not provide any additional funding beyond the amount specified in the original grant.

### **EERE Request for Office of Inspector General Assistance and Response**

The unallowable labor costs identified in this audit report are unacceptable and indefensible. *EERE will achieve full recovery of these labor costs* – EERE is requiring LG Chem Michigan Inc. to repay all \$842,189, and LG Chem Michigan Inc. has agreed to do so.

DOE promptly referred the allegations of labor improprieties to the Office of Inspector General. In addition, EERE promptly took the following actions:

1. Suspended all reimbursements;
2. Initiated cost recovery proceedings;
3. Required LG Chem Michigan Inc. to develop a corrective action plan, including an updated project budget and project management plan in order to validate the project cost and schedule;
4. Increased scrutiny of quarterly project reports; and
5. Provided LG Chem Michigan Inc. with additional guidance on compliance with Federal reporting requirements.

Based on information provided by LG Chem Michigan Inc. and the Office of Inspector General, EERE has determined that:

- The unallowable labor costs identified in this audit report were outside the scope of the award;
- LG Chem Michigan Inc. did not have a process in place to accurately track and account for labor hours associated with out-of-scope activities;
- LG Chem Michigan Inc. did not disclose the out-of-scope activities in any documentation submitted to EERE (e.g., invoices);
- EERE was not made aware, through invoicing or otherwise, that it was reimbursing LG Chem Michigan Inc. for out-of-scope activities; and
- After EERE opened its inquiry into the questioned labor costs, LG Chem Michigan Inc. failed to provide adequate evidence to allow the specific identification of the unallowable labor costs versus allowable labor costs. As a result, EERE, in consultation with the contracting officer, made the determination to disallow (and require reimbursement of) the entire \$842,189, which includes a mix of allowable and unallowable costs.

EERE is committed to effective grants management. In April 2012, EERE began a comprehensive review of its grants management procedures. (This review predates the referral of LG Chem Michigan Inc.'s questioned labor costs to the Office of Inspector General in October 2012.)

- EERE benchmarked its grants management process against peer agencies (e.g., Advanced Research Projects Agency-Energy).
- EERE established an internal "community of practice" composed of subject matter experts in program and project management to develop new standard operating procedures and best practices, which will be applied to all EERE programs and projects.
- EERE created a new Project Management Coordination Office (PMCO) to ensure consistent and active project management across EERE's diverse portfolio of projects. PMCO is working with peer offices at other Federal agencies to develop training courses for Federal project managers and standards for a certification credential.
- EERE is in the process of consolidating multiple IT systems in order to establish a single Enterprise IT solution for core business functions, including grants management. This new system will provide EERE project managers with innovative tools for managing and evaluating projects, including their technical progress, budgets, and schedules.
- EERE is in the process of establishing a uniform set of terms and conditions for funding opportunities and awards, which will facilitate active project management. EERE will use cooperative agreements for most of its future projects, which will allow greater oversight of project activities. EERE will also establish annual go/no go milestones for every project, which will facilitate the modification or termination of underperforming projects.
- EERE is strengthening and centralizing its review of project invoices.
- EERE is increasing its engagement with recipients. Federal project managers will hold meetings (by telephone or webinar) at least once per quarter with every recipient and review the project's technical progress, budget, and schedule.
- EERE is increasing the frequency of site visits. Federal project managers will visit most projects at least once per year. Larger projects will be subject to greater scrutiny. Federal project managers will visit larger projects at least twice per year, and independent firms may be retained to conduct additional audits.

Specific responses to IG recommendations are provided below.

### EERE Response to the Audit Report Recommendations

**RECOMMENDATION #1:** *“Enhance monitoring procedures, as appropriate, to help ensure that goals and objectives of the Manufacturing Initiative are achieved in the most effective manner.”*

**MANAGEMENT RESPONSE: CONCUR.** As described above, EERE has increased its scrutiny of quarterly project reports, provided LG Chem Michigan Inc. with additional guidance on compliance with Federal reporting requirements, and required LG Chem Michigan Inc. to submit an updated project budget and project management plan in order to validate the project cost and schedule. Separately, EERE is developing and implementing a wide range of measures, including new processes and systems, to strengthen its grants management.

**RECOMMENDATION #2:** *“Utilize the full range of remedial actions available to the government under the terms of the grant to hold LG Chem accountable for the outcome of the Holland, MI Project.”*

**MANAGEMENT RESPONSE: CONCUR.** EERE will continue to enforce the terms and conditions of the grant and hold LG Chem Michigan Inc. accountable for any failures to comply therewith.

**RECOMMENDATION #3:** *“Enforce the terms of the grant award, as appropriate, to ensure that LG Chem either transitions production of battery cells to the Michigan plant or implements some alternative use for the facility.”*

**MANAGEMENT RESPONSE: PARTIAL CONCUR.** EERE will continue to enforce the terms and conditions of the grant and hold LG Chem Michigan Inc. accountable for any failures to comply therewith. For example, EERE will enforce compliance with 10 C.F.R. 600.321, which governs the disposition of project property and equipment. EERE’s award requirements are based on the American Recovery and Reinvestment Act of 2009, OMB’s “Initial Implementing Guidance for the American Reinvestment Act of 2009,” and Federal financial assistance regulations.

DOE’s investment in this battery manufacturing facility is helping to put Michigan and the United States in a prime position to capture a rapidly growing global market. This is part of an overall effort to make sure that America’s auto manufacturing base continues to adapt to the most innovative technologies and deliver the gasoline saving vehicles that consumers increasingly want. Our grant is designed to provide this capacity to Michigan.

DOE does not concur that the grant terms for this grant can be used to force LG Chem Michigan Inc. to transition production of battery cells from South Korea to the Michigan plant. DOE does not have authority to dictate the production decisions of LG Chem Michigan Inc., which are based on the market.

**RECOMMENDATION #4:** *“Conduct a review of questioned costs identified in our report and determine whether the costs were allowable and reasonable.”*

**MANAGEMENT RESPONSE: CONCUR.** EERE, in conjunction with the contracting officer, conducted a review of the questioned labor costs. EERE concurs with the IG finding of unallowable costs in the amount of \$1,684,377, of which the EERE share was \$842,189. EERE, through the contracting officer, took action to disallow these project costs on December 18, 2012. *EERE will achieve full recovery of these labor costs* – EERE is requiring LG Chem Michigan Inc. to repay all \$842,189, and LG Chem Michigan Inc. has agreed to do so.

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