



State of Nevada  
Department of Administration  
Division of Internal Audits

**Audit Report**

**Department of Transportation  
Utilization of State Equipment**

Report No. 10-02  
September 2009

**EXECUTIVE SUMMARY**  
**Nevada Department of Transportation**

**Introduction**.....page 1

---

**Objective : Can the Department Enhance the  
Efficiency of its Equipment Fleet?**

---

**Consider Alternatives for Low Usage Equipment**.....page 4

The Department could reduce fleet size by disposing of low-usage equipment. Our review found 69 heavy equipment vehicles might not be necessary. Eliminating this equipment would reduce operating costs such as insurance and preventive maintenance. It would also avoid purchasing replacement equipment. We estimate reduced annual operating costs and purchases would be about \$657,000 a year.

The Department should consider the cost/benefit alternatives for crane trucks. Low usage vehicles include some crane trucks because the Department does not have certified operators. Crane trucks require a certified operator for safety reasons. Department management represented staff do not get enough hours on the equipment to maintain certifications. Alternatives for this low use equipment include additional training for staff to become certified operators, obtaining new cranes that do not require operator certification, or using contractors.

**Utilize Vehicle Usage Reports for Decision Making**.....page 5

The Department should establish usage parameters and monitor equipment reports. Parameters are set expectations for equipment usage. The Department issues vehicle usage reports that managers do not use. Utilizing parameters and usage reports would identify equipment that is excessively or under used. The Department could take the burden off high usage vehicles and put it on low usage vehicles. It could also use this information to determine if there is excess equipment or a need to obtain more equipment thereby "right sizing" its fleet.

**Improve Equipment Cost Data for Identifying  
When Equipment Should be Replaced** .....page 6

The Department should ensure equipment cost data is accurate. The Department is interested in using equipment cost and reliability data to determine when to replace equipment. Using less costly and more reliable equipment should reduce operating costs. We found the Department's methods for calculating costs generally acceptable, but it should include certain employee benefit costs and stockroom employees in its calculations.

**Eliminate Custom Paint from Equipment Bid Specifications**.....page 7

The Department should consider eliminating custom paint when it purchases heavy vehicles. Department policy requires most of its heavy equipment to be painted school

bus yellow, which purchasing documents show can incur additional costs. However, these documents also show vendors offer their own construction yellow paint at no additional cost. We estimate using the vendors' own construction yellow paint would save the Department about \$80,000 a year.

---

**Appendix A** .....page 8

Nevada Department of Transportation Response and Implementation Plan

**Appendix B**.....page 10

Timetable for Implementing Audit Recommendations

---

---

---

# INTRODUCTION

---

---

At the direction of the Executive Branch Audit Committee, we conducted an audit of the Department of Transportation's (Department) equipment usage. Our audit focused on enhancing fleet efficiency.

## Department's Role and Public Purpose

The Department was created in 1957. Its responsibilities include:

- Road maintenance – The Department maintains over 5,400 miles of roadway. Road maintenance includes removing snow, repairing potholes, sealing cracks, and paint striping. The Department uses 1,319 pieces of heavy equipment<sup>1</sup> to maintain roadways. This includes snow plows, dump trucks to sand highways, loaders to load the dump trucks, and graders to clear brush growing on road shoulders.
- Heavy equipment maintenance – The Department staff maintains the equipment fleet using maintenance shops and parts stockrooms.

The Department has divided the State into three districts with headquarters in Las Vegas, Sparks, and Elko. The districts are responsible for supervising all state transportation activities within their regions, including maintaining roads. Each district has a heavy equipment fleet.

The Department also has an Equipment Division<sup>2</sup>, located in Sparks, which purchases, maintains, and disposes of heavy equipment for the districts. Among its responsibilities, the Equipment Division acquires and inspects new equipment before sending them to the districts for use. The Division also performs most of the major maintenance such as engine replacement. It keeps a fleet of vehicles for statewide use and disposes of all the Department's old heavy equipment.

The Department is funded by the State Highway Fund. It is a special revenue fund established to account for the receipt and expenditure of highway-user revenue. The monies in the fund are principally derived from vehicle fuel taxes and registration fees.

---

<sup>1</sup> Heavy duty vehicles are vehicles whose gross vehicle weight exceeds 19,500 pounds.

<sup>2</sup> The Equipment Division does the major maintenance for the districts. Additionally, it performs routine maintenance for the Reno district. The other two districts do their own routine maintenance.

The Department uses Highway Fund monies to purchase vehicles for its fleet. The Department has spent about \$10 million annually to replace both light duty vehicles, such as cars, and heavy vehicles. However, for Fiscal Year 2009 it planned not to make any purchases. For Fiscal Years 2010 and 2011, the Department plans to purchase \$5 million in vehicles each year.

## **Scope and Objective**

We began the audit work in October 2008. Our audit focused on heavy equipment because it represents about 90 percent of the cost of planned fleet purchases. In the course of our audit, we reviewed the Nevada Revised Statutes and Equipment Division policies and procedures. We also reviewed Department of Transportation Board meeting minutes, Equipment Division accounting records, and State Purchasing bid documents related to Department vehicle purchases. Additionally, we interviewed management and staff from the Department, staff from the State Purchasing Division, and surveyed staff from several western states. We concluded field work and testing in April 2009.

Our audit focused on the following objective:

- ✓ Can the Department enhance the efficiency of its equipment fleet?

The Division of Internal Audits expresses appreciation to the Director and staff of the Department of Transportation for their cooperation and assistance throughout the audit.

Contributors to this report included:

Mike Colburn, CPA  
Executive Branch Auditor

Kirk Starkey, CPA  
Executive Branch Auditor

## **Nevada Department of Transportation Response and Implementation Plan**

We provided draft copies of this report to Department officials for their review and comments. Their comments have been considered in the preparation of this report and are included in Appendix A. In its response, the Department accepted each of the recommendations we made. Appendix B includes a timetable to implement our recommendations.

NRS 353A.090 specifies within six months after final release of this report, the Chief of the Division of Internal Audits shall evaluate what steps the Department has taken to implement the recommendations and shall determine whether the steps are achieving the desired results. The Chief shall report the results of the evaluation to the Executive Branch Audit Committee and Department officials.

The following report contains our findings, conclusions, and recommendations.

---

---

## **Can the Department Enhance the Efficiency of its Equipment Fleet?**

---

---

The Department can enhance fleet efficiency by doing the following:

- Considering alternatives for low usage equipment, including reducing fleet size;
- Utilize equipment usage reports for decision making;
- Improving cost data for identifying when to replace equipment; and
- Eliminating custom paint requirements.

Using these methods, we estimate the Department could save \$737,000 a year.

### **Consider Alternatives for Low Usage Equipment**

We reviewed the Department's heavy equipment usage. Using a standard accepted by other states,<sup>3</sup> we identified low usage heavy equipment. The standard identifies equipment in the lowest 25 percent of usage for possible disposal. After our review using this standard and discussions with Department management, it was determined 69 heavy equipment vehicles might not be necessary. This equipment had little usage or no evidence of being used for three fiscal years.

### **Reduce Fleet Size**

The Department could reduce fleet size by disposing of low-usage equipment. This would reduce operating costs such as insurance and preventive maintenance. It would also avoid purchasing replacement equipment. We estimate reduced annual operating costs and purchases would be about \$657,000 a year.<sup>4</sup>

### **Recommendation**

1. Consider reducing fleet size for low usage vehicles.<sup>5</sup>

---

<sup>3</sup> Florida and South Carolina.

<sup>4</sup> The estimated replacement cost of this equipment is about \$8.9 million with an average life of 14.4 years, or \$618,000 annually. The Department would also avoid an estimated \$39,000 a year in insurance and preventive maintenance.

<sup>5</sup> Recently passed legislation could effect the Department's fleet operations. Senate Bill 377 of the 2009 Legislative session requires the Department change bidding requirements for certain projects. The bill could allow more road maintenance work to be contracted, and thus reduce the size of the Department's fleet.

## **Evaluate Renting Vehicles When Lacking Certified Operators**

The Department explained crane trucks have limited use because they do not have certified operators. Crane trucks have a boom the worker raises or lowers to reach signs or lights. Crane trucks require a certified operator<sup>6</sup> for safety reasons. Certification includes 1,000 hours of combined training and experience. Department management represented staff do not get enough hours on the equipment to maintain certifications.

To address the lack of certified operators for crane trucks, the Department can:

- Retain equipment and train staff to become certified operators;
- Replace older cranes with new equipment that does not have the same certification requirements to operate;
- Retain equipment and contract certified operators; or
- Dispose of the equipment and rent vehicles with certified operators.

## **Recommendation**

2. Evaluate cost/benefit of crane truck operations.

## **Utilize Vehicle Usage Reports for Decision Making**

The Equipment Division issues vehicle usage reports quarterly to the districts. These usage reports identify how many miles or hours each piece of equipment is used. However, the districts do not use the reports. According to Department data, some equipment shows little or no usage over the last three fiscal years compared to similar vehicles in the fleet.

The Department should establish parameters and monitor equipment to ensure it is used within them. Parameters are set expectations for equipment usage. Using parameters and reports would identify equipment that is excessively used or under used.

Other states<sup>7</sup> we surveyed set parameters and monitor equipment usage. These states represent they use the data to make decisions such as whether to transfer equipment to different locations to get more use or dispose of it. The Department should review reports for equipment usage falling outside of the parameters and then:

---

<sup>6</sup> Nevada Administrative Code 618 establishes crane operator standards.

<sup>7</sup> Colorado, Idaho, and Oregon.



- Take the burden off high usage vehicles and put it on low usage vehicles. Consultants<sup>8</sup> used by other states represent high usage vehicles cause earlier replacement and lower resale values.
- Determine if there is excess equipment or a need to obtain more equipment thereby “right sizing” its fleet.

## Recommendations

3. Establish parameters for vehicle usage.
4. Use parameters to determine appropriate usage and when to dispose of equipment.

### Improve Equipment Cost Data for Identifying When Equipment Should be Replaced

The Department uses age and usage<sup>9</sup> for determining when to replace equipment. However, it is interested in using equipment cost and reliability data to determine when to replace equipment. Costs include repairs (labor and materials) and operating costs such as fuel. Reliability is the amount of time lost due to repairs. Using less costly and more reliable equipment should reduce operating costs.

Since the Department is interested in using cost data to determine when to replace equipment, we reviewed its methods for calculating costs. We found the methods generally acceptable, but the Department should adjust for the following:

- Additional employee benefit costs – The Department includes employee benefits in its cost calculations. Our audit and department staff found additional benefits which should be included in the cost calculations.
- Stockroom employees – The Department has stockroom employees who are responsible for parts and supplies used for equipment maintenance. Since these employees support equipment maintenance, their labor should be included in cost calculations.

## Recommendation

5. Ensure equipment cost data is accurate for assessing which equipment to replace.

---

<sup>8</sup> Mercury and Associates, a fleet equipment consulting firm.

<sup>9</sup> Odometer mileage or life to date hours for metered equipment.

## **Eliminate Custom Paint from Equipment Bid Specifications**

Department policy requires most of its heavy equipment to be painted school bus yellow. We estimate this specification results in additional costs of about \$4,700 per vehicle based on State Purchasing documents. These documents show vendors frequently offer their own construction yellow<sup>10</sup> paint at no additional cost.

Department management represents it wants its fleet to consist of one standard color for road safety and to distinguish it from privately owned heavy equipment. However, Department field staff felt motorists relied more on vehicle lights for safety. Additionally, Arizona and Oregon have chosen to use manufacturers' colors because they do not believe there is a difference in safety.

The Department should consider eliminating custom paint when it purchases heavy vehicles. We estimate this would save about \$80,000 a year.

### **Recommendation**

6. Consider eliminating custom paint specification for new equipment.

---

<sup>10</sup> For example, *John Deere* yellow, or *Caterpillar* yellow.

# Appendix A

## Department of Transportation Response and Implementation Plan

---



JIM GIBBONS  
Governor

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
1263 S. Stewart Street  
Carson City, Nevada 89712

June 10, 2009

SUSAN MARTINOVICH, P.E., Director

In Reply Refer to:

William Chisel, Chief  
Department of Administration  
Division of Internal Audits  
3427 Goni Road, Suite 103  
Carson City, NV 89706

RECEIVED

JUN 16 2009

DIVISION OF INTERNAL AUDITS

Dear Mr. Chisel:

Over the past several months the Department of Transportation (NDOT) has provided input and cooperated with the Department of Internal Audits (DIA) in determining if NDOT can enhance the efficiency of our equipment fleet. On May 28, 2009, the draft final report was presented for our review and comment.

We have carefully reviewed the draft audit report and believe it is an accurate representation of the processes utilized to manage our equipment fleet. After careful review of the audit recommendations our individual comments are as follows:

- 1) Consider reducing fleet size for low usage vehicles.

We agree with the audit recommendation. Highway maintenance requires a diverse fleet of equipment to fulfill its mission. Each class of equipment will exhibit specific characteristics of utilization based on its purpose. For example, the utilization of equipment specifically designed for winter maintenance will be highly dependent on the severity of the winter and service vehicles transport materials and tools to a work site where it remains stationary for the duration of the work activity. In some cases there are classes of equipment that are difficult to lease or rent due to the specific nature of their use.

The audit team identified several pieces of equipment that had abnormally low usage, even for that class of equipment. These individual pieces of equipment will be closely evaluated with the users for placement and need. If it is determined that they can be relocated or disposed, such action will be taken. Target for implementation is December 31, 2009.

- 2) Evaluate cost/benefit of crane truck operations.

We agree with this recommendation. The three (3) crane trucks requiring certification and/or special training to operate will be re-equipped with smaller cranes if it is determined that these pieces of equipment are necessary. When the work effort requires the use of a larger crane, the service will be contracted for. Target for implementation is June 30, 2010.

3) Establish parameters for vehicle usage.

We agree with this recommendation. The Department will establish an equipment utilization policy and usage criteria in order to identify over and under utilization to adequately manage the fleet. Target for implementation is June 30, 2010.

4) Use parameters to determine appropriate usage and when to dispose of equipment.

We agree with these recommendations. Utilizing the policy and utilization parameters established as a result of recommendation #3, annual evaluations of equipment utilization will be conducted. Adjustments in fleet composition and location will be considered to balance over-utilization and under-utilization adjusted for variations due to weather and other extenuating circumstances. Target for implementation is June 30, 2010.

5) Ensure equipment cost data is accurate for assessing which equipment to replace.

We agree with this recommendation. We diligently strive to present the most accurate data possible. We consistently monitor our methods of capturing and reporting on equipment cost data, and make changes anytime we ascertain it is appropriate to presenting more reflective costs. The current methodology for calculating labor rates were established as a result of an Executive Audit conducted in 2004. Adjustments to that methodology will be implemented by September 30, 2009.

6) Consider eliminating custom paint specifications for new equipment.

We agree with this recommendation. The Department's use of "school bus yellow" can be traced back over 40 years. There are 2 principle reasons for establishing a specific vehicle livery; safety in the form of conspicuity and fleet recognition.

Some limited research into vehicle color has been conducted by transportation and insurance institutes have not produced definitive conclusions as to the "safest" color for equipment fleets. Many highway agencies involved in snow plowing utilize yellow or orange for their heavy vehicle fleet since these colors seldom occur in nature and they provide good contrast. The Department will evaluate the cost to specify a specific color for heavy equipment and modify policies as appropriate. Target for implementation is December 31, 2009.

NDOT has been recognized by Fleet Equipment Magazine and 100 Best Fleets in North America as one of the 100 Best Fleets in 2005 and 2006. We are always striving to improve our operation and implementation of these audit recommendations will help us in that task.

Sincerely,



Richard J. Nelson, P.E.  
Assistant Director, Operations

cc: Susan Martinovich, Director  
Scott Rawlins, Deputy Director  
Rudy Malfabon, Deputy Director, Southern Nevada

## Appendix B

### Timetable for Implementing Audit Recommendations

---

---

In consultation with the Department, the Division of Internal Audits categorized the recommendations contained within this report into two separate implementation time frames (i.e., *Category 1* – less than six months; *Category 2* – more than six months). The Department should begin taking steps to implement the recommendation as soon as possible. The Department's target completion dates are incorporated from Appendix A.

---

---

#### **Category 1: Recommendations with an anticipated implementation period of less than six months.**

<u>Recommendations</u>	<u>Time Frame</u>
1. Consider reducing fleet size for low usage vehicles. (page 4)	Dec 2009
5. Ensure equipment cost data is accurate for assessing which equipment to replace. (page 6)	Sep 2009
6. Consider eliminating custom paint specifications for new equipment. (page 7)	Dec 2009

---

---

#### **Category 2: Recommendations with an anticipated implementation period exceeding six months.**

<u>Recommendations</u>	<u>Time Frame</u>
2. Evaluate cost/benefit of crane truck operations. (page 5)	Jun 2010
3. Establish parameters for vehicle usage. (page 6)	Jun 2010
4. Use parameters to determine appropriate usage and when to dispose of equipment. (page 6)	Jun 2010

---

The Division of Internal Audits shall evaluate the action taken by the Department concerning report recommendations within six months from the issuance of this report. The Division of Internal Audits must report the results of its evaluation to the Committee and the Department.