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**Audit Report**

**Alternative Fuel Vehicle  
Audit**

**May 25, 2010**

Office of the City Auditor  
Austin, Texas

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# City of Austin



## Office of the City Auditor

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Date: May 25, 2010  
To: Mayor and Council  
From: Kenneth J. Mory, City Auditor  
Subject: Audit of Alternative Fuel Vehicles

I am pleased to present this report on our Alternative Fuel Vehicles audit. In February 2007, Austin City Council Resolution 20070215-023 included a directive to make the City fleet carbon neutral by 2020 through the use of electric power, non-petroleum fuels, new technologies, mitigation, and other measures as necessary.

We found that the governance structure in place for the City's alternative fuel vehicle program is not adequate to drive the directive of making the City vehicle fleet carbon neutral by 2020. Because no management level leader has taken an active role in setting and enforcing policies in this area, departments are not maximizing the use of alternative fuels and are not coordinating on decisions that would maximize the use of City resources. In addition, there is no comprehensive citywide plan to achieve the directive and no cost benefit analysis has been performed.

In order to correct the deficiencies noted, we recommend that the City's Chief Sustainability Officer should be empowered to set and enforce policies for alternative fuel vehicle use, and should develop a comprehensive plan that incorporates objectives, performance and financial measures, targets and milestones, authority, accountability, data reliability, and reporting. The City Manager indicated that the City Auditor's recommendations will be considered in the process of defining the functions of that position.

We appreciate the cooperation and assistance we received from the Austin Climate Protection Plan and the Fleet Services management and staff during this audit.

cc: Marc Ott, City Manager  
Leslie Browder, Chief Financial Officer  
Gerry Calk, Fleet Officer  
Ester Matthews, Director, Austin Climate Protection Program

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## COUNCIL SUMMARY

This report presents the results of our audit of Alternative Fuel Vehicles. In February 2007, the Austin City Council issued Resolution 20070215-023, which included a directive to make the City fleet carbon neutral by 2020 through the use of electric power, non-petroleum fuels, new technologies, mitigations and other measures necessary.

We found that the governance structure in place for the alternative fuel vehicle program is not adequate to drive the directive of making the City vehicle fleet carbon neutral by 2020. There is no management level leader who has taken an active role in establishing and enforcing policies for the alternative fuel program. As a result, the City missed opportunities to maximize carbon emission reductions because alternative capable vehicles are operated on regular fuel majority of the time. The City does not have a comprehensive citywide plan to achieve the directive, and is not coordinating on decisions that would maximize the use of City resources related to the alternative fuel vehicle program. In addition, no cost benefit analysis has been performed to help define the acceptable costs and funding levels for achieving a carbon neutral fleet.

We also found that the Austin Climate Protection Plan (ACPP) reporting is not adequate to inform decision makers or hold departments accountable for meeting goals. The ACPP reports on carbon emission reductions, but does not report on the potential reductions in carbon emissions that could be achieved if the use of alternative fuels was maximized. Also, the ACPP is not required to report the incremental costs incurred by departments for purchases of either alternative fuel vehicles or the fuel itself. Therefore, decision makers have no basis for comparing costs to benefits achieved, or in determining what the City has been spending to achieve the directive of a carbon neutral fleet.

In order to provide reasonable assurance that the City will achieve the goal of a carbon neutral fleet by 2020, we recommended that the City's Chief Sustainability Officer (CSO) be empowered to set and enforce policies for alternative fuel vehicle use. We also recommend that the CSO develop a comprehensive plan for achieving a carbon neutral fleet that incorporates objectives, performance and financial measures, intermediate targets and milestones, authority, accountability, data reliability, and internal and stakeholder reporting.

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## ACTION SUMMARY VEHICLE UTILIZATION



<b>Recommendation Text</b>	<b>Management Concurrence</b>	<b>Proposed Implementation Date</b>
01. The City's Chief Sustainability Officer (CSO) should be empowered to set and enforce policies for alternative fuel vehicle use.	Concur	The Office of City Manager has indicated that the Chief Sustainability Officer is a new position and much of the substance of how the officer will actually perform is still being determined. The Office of the City Auditor's recommendations will be considered in the process of defining the functions of that position.
02. The CSO should develop a comprehensive plan to achieve a carbon neutral fleet that incorporates the following: <ul style="list-style-type: none"><li>a. Objectives</li><li>b. Performance measures</li><li>c. Financial measures</li><li>d. Intermediate targets and milestones</li><li>e. Authority</li><li>f. Accountability</li><li>g. Data reliability</li><li>h. Internal reporting</li><li>i. Stakeholder reporting</li></ul>	Concur	The Office of City Manager has indicated that the Chief Sustainability Officer is a new position and much of the substance of how the officer will actually perform is still being determined. The Office of the City Auditor's recommendations will be considered in the process of defining the functions of that position.



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## BACKGROUND

The City Council's Audit and Finance Committee approved an audit of the Fuel Management – Implementation of Alternative Fuel/Vehicles Program, as part of the Office of the City Auditor's (OCA) FY 2010 Service Plan.

In February 2007, the Austin City Council issued Resolution 20070215-023, which included a directive to make the City fleet carbon neutral by 2020 through the use of electric power, non-petroleum fuels, new technologies, mitigation and other measures as necessary.

In order to comply with the resolution, the City created the Austin Climate Protection Program (ACPP) and assigned a staff to manage the implementation of the Austin Climate Protection Plan across all City departments. Functionally, the ACPP staff reports to the Vice-President of Distributed Energy Services at Austin Energy.

Currently, the City uses the following fuel types for the majority of its alternative fuel vehicles. The percentages reflect the relative share of all alternative fuel used in CY 2009:

- **Bio-diesel (85%)** - Produced from renewable sources including soybean oil, rapeseed oil, and animal fats. The most common blend is B20, which contains 20 percent bio-diesel blended with 80 percent petroleum diesel.
- **Ethanol (E85) (8%)** – Fuel blends of 85 percent ethanol and 15 percent gasoline. Vehicles that use this fuel can also run on regular gasoline.
- **Propane (3%)** – Commonly known as Liquefied Petroleum (LPG). Vehicles that use this fuel can also run on regular gasoline.
- **Compressed Natural Gas (CNG) (3%)** – Natural gas made of 95% methane and other various gases.

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## **OBJECTIVES, SCOPE, AND METHODOLOGY**

### **Objectives**

To determine whether:

- City Departments are in compliance with City policies on alternative fuel vehicle use, including Resolution 20070215-023 which called for the City fleet to become carbon neutral by 2020.
- Controls are in place to provide reasonable assurance of effective implementation and monitoring of the actions being taken to achieve the directive of a carbon neutral fleet, including financial monitoring.

### **Scope**

- The planning, implementation and management of the alternative fuel vehicle programs within City departments from 2007 to the present.
- The Austin Climate Protection Plan staff planning and implementation related to achieving a carbon neutral fleet from 2007 to the present.
- Data on alternative fuel use and vehicles from 2007 to 2009.

Our data testing for this audit was limited to assessing the queries made by Fleet Services on its database, and the extent to which the information provided by Fleet Services accurately reflected the results of those queries. We did not test the accuracy or completeness of the data contained in the Fleet Services database, M5, because Fleet Services stated that the mileage data contained in the database was not entirely accurate.

In addition, during our work we were unable to validate the 2009 emissions data reported by ACPD because ACPD personnel no longer had the supporting data for the emission computation.

### **Methodology**

To accomplish our objectives, we did the following:

- Interviewed City directors and managers involved in the alternative fuel/vehicle program.
- Analyzed the following documentation related to the alternative fuel/vehicle program:
  - Planning documents;
  - Reports and supporting documentation; and
  - Financial reporting documents.
- Completed analyses of vehicle and fuel use based on data provided by Fleet Services.
- Reviewed City policies and Council resolutions related to the goal of achieving a carbon neutral fleet.

We conducted this performance audit in accordance with generally accepted government auditing standards (GAGAS). 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.

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## AUDIT RESULTS

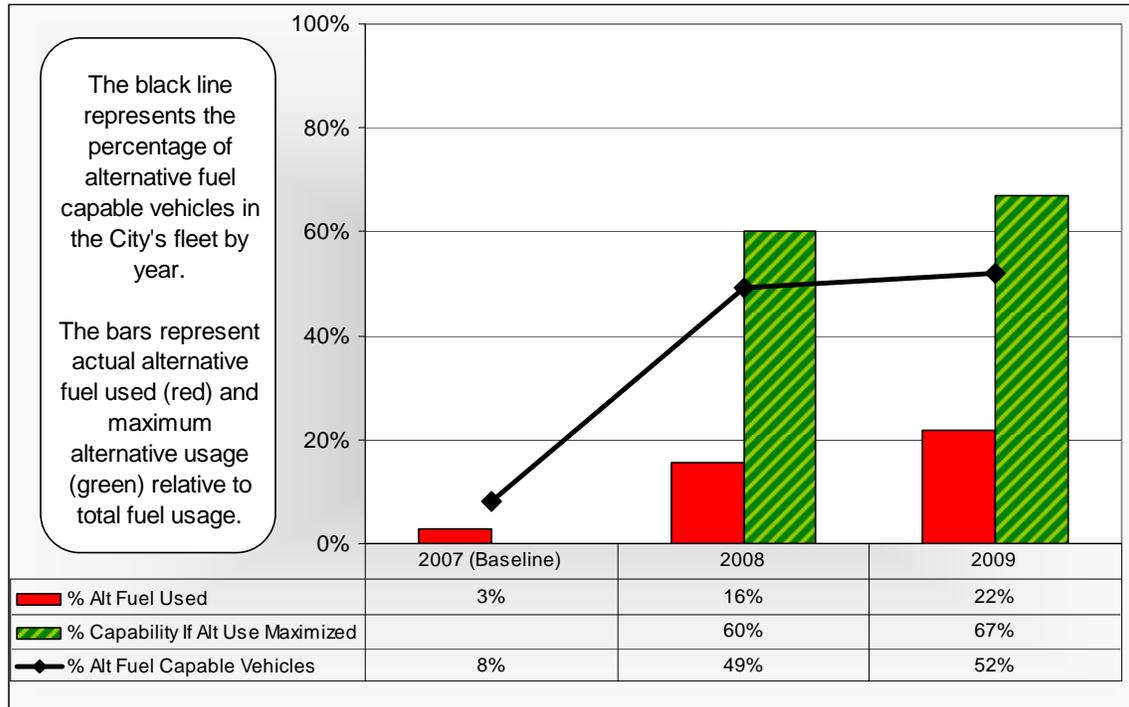
The governance structure in place for the alternative fuel vehicle program is not adequate to drive the directive of making the City vehicle fleet carbon neutral by 2020. Because no management level leader has taken an active role in setting and enforcing policies for the alternative fuel vehicle program, departments are not maximizing the use of alternative fuels, and are not coordinating on decisions that would maximize the use of City resources related to the alternative fuel vehicle program. In addition, there is no comprehensive citywide plan to achieve the directive, and cost and funding levels have not been defined.

### **FINDING 1: The City missed opportunities to reduce carbon emissions during 2007-2009 because alternative fuel capable vehicles operated on regular fuels the majority of the time.**

City policy states that department directors, supervisors and drivers are responsible for ensuring the maximum use of alternative fuels. However, Exhibit 1 below illustrates that alternative fuel use was not maximized in 2007-2009. In 2007, the baseline year, 8% of City vehicles were capable of using alternative fuel, while only 3% of fuel used was alternative. In 2008, 49% of City vehicles were capable of using alternative fuel. The maximum alternative fuel capability (the percent of alternative fuel use achieved by using alternative fuel 100% of the time in alternative fuel capable vehicles) was 60%. However, only 16% of fuel used was alternative. In 2009, 52% of City vehicles were capable of using alternative fuel and the maximum alternative fuel capability was 67%. However, only 22% of fuel used was alternative. Beginning in 2008, all diesel vehicles were categorized as alternative fuel capable. Bio-diesel fuel became available in April 2008, while E85 fuel became available in June 2008.

## EXHIBIT 1

### The City is not maximizing use of alternative fuels



Source: OCA analysis of data provided by Fleet Services (unaudited).

NOTE: Maximum capability figures assume 100% availability. However, bio-diesel fuel became available in April 2008, while E85 fuel became available in June 2008. Bio-diesel was not available for the full year of 2008 or 2009.

Two main issues have contributed to the use of regular fuels for alternative fuel capable vehicles; availability and user choice. Bio-diesel accounted for 85% of the City's alternative fuel vehicle use in CY 2009. However, the City did not begin using bio-diesel until April 2008, and it was not available at all times during 2008 and 2009. The City began using E85 fuel in June 2008.

In addition, some City departments have chosen not to use bio-diesel in their vehicles. Fleet Services is currently providing bio-diesel at all City fueling stations except the fuel tanks that serve Austin Fire Department (AFD) and Emergency Medical Services (EMS). AFD and EMS do not want to use bio-diesel in their vehicles due to concerns that the fuel will negatively affect performance. This is because they experienced clogged fuel filters in 2009 which they attributed to using B20 bio-diesel purchased by the City. In addition, Austin Energy leases several diesel trucks that are prohibited from using B20. However, Fleet Services is currently providing B20 bio-diesel at all other City-owned diesel fueling stations.

The City also owns dual fuel capable vehicles that can operate on either alternative or regular fuel. These include propane and E85 capable vehicles. City policy is to operate dual fuel capable vehicles with alternative fuel, using gasoline only as a backup.

However, as Exhibit 2 below demonstrates, these vehicles were operated with regular fuel the majority of the time in 2007-2009.

Some propane-powered vehicles have experienced outages of the propane units. When this occurs, those vehicles operate on regular fuel. The City did not begin purchasing E85 fuel until June 2008. In addition, the number of City fueling stations that provide E85 has been an issue. However, the scarcity of E85 fueling stations alone does not explain the high level of regular fuel use in E85 capable vehicles. Fleet Services stated they will explore adding more E85 fueling locations to meet the increasing need as the number of E85 vehicles increases.

**EXHIBIT 2**

City of Austin dual fuel capable vehicles operate on regular fuel the majority of the time

Vehicle Fuel Type	# of Alt Capable Vehicles	% Regular Fuel Used	% Alt Fuel Used	# of Alt Capable Vehicles	% Regular Fuel Used	% Alt Fuel Used **	# of Alt Capable Vehicles	% Regular Fuel Used	% Alt Fuel Used
	2007 (Baseline)			2008			2009		
ETHANOL 85	76	Ethanol 85 not available		282	92.4%	7.6%	381	83.6%	16.4%
PROPANE	223	67.7%	32.3%	187	64.9%	35.1%	154	78.4%	21.6%

Source: OCA analysis of data provided by Fleet Services (unaudited).

\*\* NOTE: Ethanol 85 fuel became available in June 2008.

CNG use has been constrained due to the limited operational range for vehicles using CNG and the fact that the City has only one CNG fueling station. Fleet Services stated that they plan to increase the availability of CNG fueling stations over the next two to three years.

As a result of limited CNG use, the City is incurring costs for CNG it is not using. Fleet Services entered a ten-year CNG fueling agreement in February 2008. Under the terms of the agreement, the City must pay for a minimum amount of CNG each year whether it uses that much or not. The City is currently using substantially less than the minimum requirement and will continue paying for unused fuel if actual CNG usage does not increase. The City owns six CNG powered vehicles that consume the majority of the fuel used. By comparison, the City’s CNG fueling station has 28 fueling posts. The City has the right to terminate the contract without paying a penalty by giving 30-days notice.

As stated earlier, department directors, supervisors and drivers are responsible for ensuring the maximum use of alternative fuels. However, management is not currently prioritizing enforcement of the policy. To the extent alternative fuels are not used, the City is not getting maximum value from the alternative fuel vehicles purchased for the fleet. In some cases, these vehicles are more costly than regular fuel vehicles. In addition, the City is missing opportunities to reduce carbon emissions.

**FINDING 2: Council set broad guidelines for achieving a carbon neutral fleet, but management has not developed a comprehensive plan based on these guidelines.**

Council Resolution 20070215-023 tasked the City Manager's Office with setting policies, procedures, timelines and targets as necessary to make the entire City fleet of vehicles carbon neutral by 2020 through the use of electric power, non-petroleum fuels, new technologies, mitigation, and other measures as necessary. However, this type of long-term planning has not taken place to this point. Instead, individual departments make decisions on alternative fuel vehicle purchases without coordinating on a citywide basis to maximize the use of City resources.

There is currently no management level leader responsible for comprehensive planning for alternative fuel vehicle use. The Austin Climate Protection Plan (ACPP) staff only provides support to departments through emission analysis, promotion and education services, and reporting the results of alternative fuel use. Fleet Services makes fuel purchases and provides guidance to departments on alternative fuel vehicles purchases, but does not direct departments on what vehicles to purchase. City policy is to purchase the most fuel efficient vehicle that meets the performance requirements for the intended purpose. However, it is up to each department to make a judgment on vehicle purchases. In addition, changes in technology affect purchasing decisions from one year to the next.

Without a comprehensive strategy for how to incorporate existing and new technology into the alternative fuel vehicle decisions, there is an increase in the risk that the City will be unable to achieve a carbon neutral fleet. This also increases the risk that the City is spending more than necessary to meet its goals.

**FINDING 3: No cost benefit analysis has been completed related to the directive of achieving a carbon neutral fleet.**

City departments need guidance from management for issues such as the financial exposure the City is willing to incur to make the fleet carbon neutral and the value placed on the reduction of carbon emissions in order to make decisions on how to achieve the directive of a carbon neutral fleet. This guidance has not been provided

**Resolution 20070215-023 contains no financial parameters or spending limits for meeting the directive of a carbon neutral fleet.** Also, City management has not defined acceptable cost and funding levels. Therefore, City departments have no guidance on how much spending is acceptable to achieve the directive. In addition, ACPP does not report the incremental costs incurred by departments for purchases of either alternative fuel vehicles or the fuel itself. Fleet Services stated that guidance on cost issues has not been communicated to them for inclusion in their decision making process related to vehicle and fuel purchases.

Fleet Services stated that the budgets of the individual departments, which are approved by City Council, provide financial controls over spending related to alternative fuel vehicles. However, it is not clear whether Council or City management is aware of the costs being incurred for alternative fuel vehicles since this information is not stated separately in budget documents.

**There have been no financial studies completed to provide a possible range of costs for achieving a carbon neutral fleet.** Financial and Administrative Services Department (FASD) personnel stated that changes in technology and fuel price volatility can make a formal financial study outdated in a very short period of time. Therefore, the emphasis in the alternative fuel vehicle program has been on incorporating developed and proven technologies that Fleet Services can adequately support within the resources available.

Fleet Services personnel stated that they have been collecting incremental cost data related to alternative fuel vehicles but have not reported the data to departments for use in the decision-making process. Fleet Services stated this is because nobody has requested the information. We requested the incremental cost data but Fleet Services could not quickly provide it because they had not created database queries to elicit the information.

**The City has not established a financial value for carbon reduction to help guide the spending decisions of affected departments.** FASD and ACPD personnel stated that this is because there is no nationally accepted standard for assigning a value to each ton of carbon eliminated. They stated that there is no market for carbon offsets similar to the one that exists for nitrogen oxide. Both FASD and Fleet Services personnel stated that it would be useful to have guidance on the value of carbon reduction.

Departments have made vehicle purchase decisions on an ad hoc basis due to lack of guidance from management on acceptable costs for alternative fuel vehicles. This increases the risk that the City is spending more than necessary to meet its goals.

**FINDING 4: Fleet Services is not providing monthly fuel consumption reports to departments as called for in City policy.**

Fleet Services is tasked with providing monthly fuel usage reports to department directors for their information and review. However, Fleet Services has not developed the capacity to produce fuel usage reports since implementation of the M5 database system in 2008. Fleet Services stated that it is developing the fuel usage report and expects it to be available later this year. Having this data will allow departments to better manage fuel consumption and vehicle use.

**FINDING 5: ACPP reporting is not adequate to inform decision makers or hold departments accountable for meeting the directive of a carbon neutral fleet.**

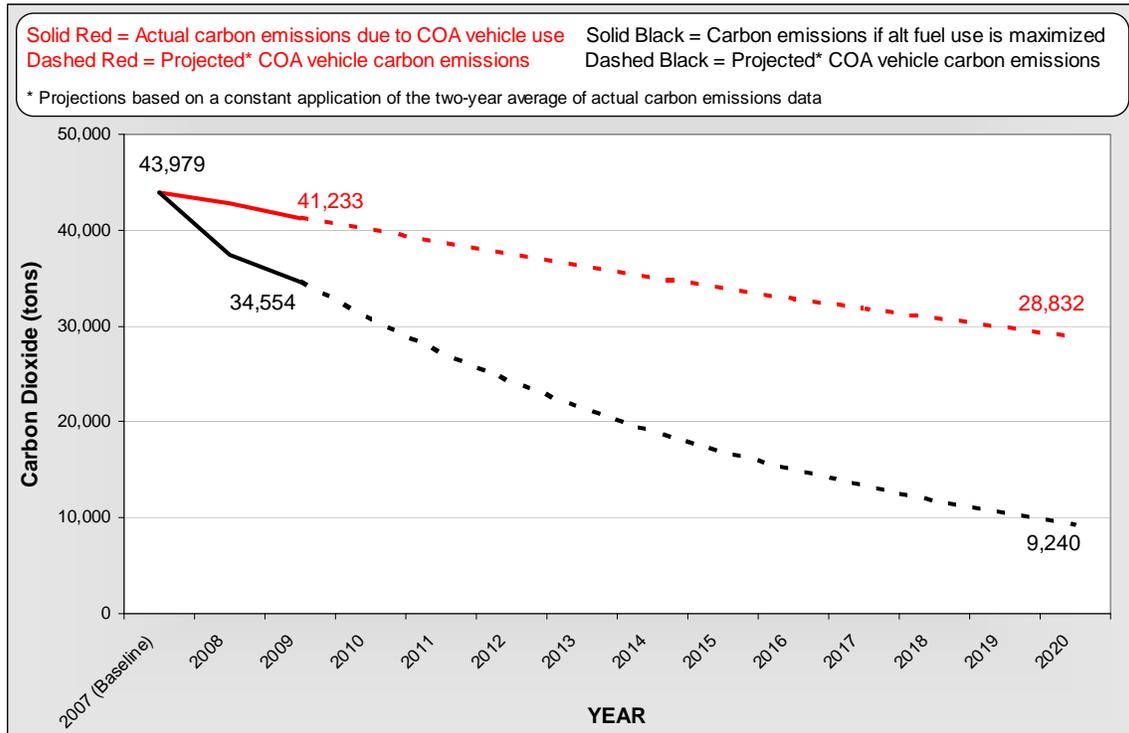
Stakeholders should have enough data to assess the performance of the Austin Climate Protection Plan. However, ACPP reports only carbon emission reductions based on the actual use of alternative fuels by City departments. ACPP has not been required to report on potential reductions that could be achieved if the use of alternative fuels was maximized. Reports also do not include cost data related to the purchase of alternative fuel vehicles or alternative fuels. This lack of information reduces the effectiveness of reporting as a tool to hold departments accountable for maximizing carbon emission reduction.

**ACPP does not report the potential reductions in carbon emissions that could be achieved by maximizing the use of alternative fuels.** In their 2009 report, ACPP reported a figure for actual carbon emissions reduced due to the use of alternative fuels. Using a similar dataset from Fleet Services, we calculated carbon emission reduction figures based on actual usage and on possible usage if alternative fuel use is maximized. From the 2007 baseline to 2008, actual carbon reduction was 1,148 tons (3%) compared to a possible reduction of 6,546 tons (15%). From 2008 to 2009, actual carbon reduction was 1,598 tons (4%) compared to a possible reduction of 2,880 tons (8%). Having this information gives stakeholders a much more complete picture of the City's performance in reducing carbon emissions.

Exhibit 3 below demonstrates the potential difference between the emissions reduction the City is currently achieving, and the possible reduction if alternative fuel use is maximized. Based on the 2008 and 2009 data, we projected emissions reduction on a straight line basis to 2020, the date by which the City fleet is required to be carbon neutral. Having information of this type available to the City Council, departments and the public would provide greater transparency and accountability in terms of the outcomes of the Austin Climate Protection Plan. ACPP is not required to report anything other than the actual results achieved by City departments.

### EXHIBIT 3

The City of Austin's carbon reduction capability is not being maximized



Source: OCA analysis of data provided by Fleet Services and ACPP (unaudited).

NOTE: Maximum capability figures assume 100% availability of alternative fuels. However, bio-diesel fuel became available in April 2008, while E85 fuel became available in June 2008. Bio-diesel was not available for the full year of 2008 or 2009.

As Exhibit 3 shows, even with full utilization of alternative fuel vehicles, the City will not achieve a zero carbon emission fleet. Additional strategies such as mitigation and other measures will also be required to move the City to having a carbon neutral fleet.

#### **ACPP does not report on the cost of transitioning the City fleet to alternative fuel.**

ACPP is not required to report the incremental costs incurred by departments for purchases of either alternative fuel vehicles or the fuel itself. Therefore, a person reading the report has no basis for comparing cost to benefits achieved, or determining what the City may be spending to achieve the goal of a carbon neutral fleet. Cost information is important both to the City Council in making policy decisions, and to management in determining whether resources are being used efficiently. It is also important in terms of transparency to the citizens who are ultimately funding the climate protection plan.

ACPP's reporting is used to inform stakeholders on the progress of the Austin Climate Protection Plan, and to hold departments accountable for achieving goals. The data as currently reported is not complete enough to hold departments accountable or to be an effective control to help achieve the goal of a carbon neutral fleet.

**FINDING 6: ACPD is not providing supervisory review for the reported emissions figures.**

Data reported to stakeholders by ACPD should be accurate in order to increase accountability and the likelihood of achieving program goals. ACPD personnel use subjective judgment in filtering alternative fuel vehicle data received from Fleet Services for inclusion in the annual report. Despite that, the individual who prepares the emissions figures said that the results are not reviewed prior to reporting them. In addition, during our work we were unable to validate the 2009 emissions reporting data because ACPD personnel no longer had the supporting data for the emission computation.

Also, ACPD personnel accept data from Fleet Services without doing any data reliability testing. Fleet Services stated that the mileage data in its M5 database is only 85-90% accurate due to errors in manual data entry of mileage readings by City personnel. Also, during the course of our work, we requested a data extract from the M5 database from Fleet Services. The results differed from a data extract previously produced by Fleet Services because different queries were used to extract the same information.

ACPD stated that it is working with Communications and Technology Management (CTM) and Fleet Services to automate the process of emission computation using M5 data. Phase one of the automation is targeted for completion in June 2010.

ACPD's reporting is used to inform stakeholders on the progress of the Austin Climate Protection Plan, and to hold departments accountable for achieving goals. If this data is not accurate, reporting will not be an effective control to help achieve the goals of the program.

**FINDING 7: The City received nearly all tax credits and refunds to which it was entitled for alternative fuel use during the period under review.**

As part of our work on this project, we hired an outside consultant with expertise in fuel tax issues to review tax filings related to alternative fuel purchases. The consultant determined that the City had received all tax credits and refunds to which it is entitled, with the exception of approximately \$47,000 in federal excise tax refunds related to compressed natural gas purchases for the City's fueling station.

The consultant stated that federal and state excise taxes appear to be applied properly to purchases of unleaded gasoline, E85 ethanol, diesel and bio-diesel. Finally, they stated that the City is properly obtaining federal excise tax credits for ethanol purchases from the vendor.

## Recommendations:

### In order to provide reasonable assurance that the City will achieve the goal of a carbon neutral fleet by 2020:

01. The City's Chief Sustainability Officer (CSO) should be empowered to set and enforce policies for alternative fuel vehicle use.

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**MANAGEMENT RESPONSE:** Concur

The Office of City Manager has indicated that the Chief Sustainability Officer is a new position and much of the substance of how the officer will actually perform is still being determined. The Office of the City Auditor's recommendations will be considered in the process of defining the functions of that position.

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02. The CSO should develop a comprehensive plan to achieve a carbon neutral fleet that incorporates the following:
  - a. Objectives
  - b. Performance measures
  - c. Financial measures
  - d. Intermediate targets and milestones
  - e. Authority
  - f. Accountability
  - g. Data reliability
  - h. Internal reporting
  - i. Stakeholder reporting

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**MANAGEMENT RESPONSE:** Concur

The Office of City Manager has indicated that the Chief Sustainability Officer is a new position and much of the substance of how the officer will actually perform is still being determined. The Office of the City Auditor's recommendations will be considered in the process of defining the functions of that position.

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**APPENDIX A**  
**MANAGEMENT RESPONSE**

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# City of Austin

P.O. Box 1088, Austin, Texas 78767-1088

Fleet Services Division 1190 Hargrave Street, Austin, Texas 78702

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## M E M O R A N D U M

TO: Ken Mory, City Auditor

FROM: Gerry Calk, Fleet Officer

DATE: May 21, 2010

SUBJECT: Alternative Fuel Vehicle Audit

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Thank you for allowing me to review the Draft Audit Report of the Alternative Fuel Vehicle Audit dated May 25, 2010. I would like to make a few comments regarding the findings of the report.

**Finding #1. The City missed opportunities to reduce carbon emissions during 2007 – 2009 because alternative fuel capable vehicles operated on regular fuel the majority of the time.**

There were several factors that have had an impact on the availability and utilization of alternative fuels;

**BioDiesel:** The City began the transition to the use of BioDiesel (B20) fuel in April of 2008 by converting one fuel site at a time. This transition required that the bulk fuel tank at each fueling site be emptied, cleaned, and then refilled with B20. This process was not completed for all sites until late July 2008. Thus BioDiesel was not available for use for the entire year. Additionally, in late March and early April 2009, the City received several deliveries of bad BioDiesel fuel that caused significant operational problems with vehicles. In order to resolve the issue, it was necessary to suspend ordering BioDiesel for several months, empty and re-clean all bulk tanks and begin a limited test of this fuel to ensure that operations would not be negatively impacted. The tests were conducted from October 2009 until March 2010.

**Propane (LPG):** During this same time frame (07-09) there were several factors that affected the City's use of Propane. The most significant problem on Ford propane capable vehicles was a failure of the Compuvalve in the propane system. This made it impossible for the vehicle to use propane until this part could be replaced, and there were no replacement parts available from any source. Since these units were bi-fuel capable, departments continued operating them on gasoline. Fleet Systems Division has since incorporated the use of newer technologies to overcome this problem.

**Ethanol E85:** The City began purchasing E85 capable vehicles in 2008 and has increased the number of E85 capable vehicles in the fleet at a steady rate each subsequent year. All gasoline powered vehicles are purchased with this capability, whenever such an alternative exists. Hybrids and APD's BMW motorcycles are an example of where there is no opportunity to obtain an E85 capable version.. In order to begin dispensing ethanol fuels from a facility, an upgrade is required. The City converted the first facility and began using the fuel in June 2008. The fourth such site conversion was completed in November 2009, which increased the City's use of this fuel tenfold. The City is currently using in excess of 16,000 gallons per month of E85.

**Hybrids:** This finding does not take into account the elimination of fuel use, or the electric powered force used in hybrid vehicles as an alternative. Among cities that report statistics to the ICMA, Austin ranks number one in the number of hybrid vehicles used in the fleet. As of April 2010 there were 184 hybrids in the COA fleet.

**EXHIBIT 1:** While this exhibit displays the gross statistical information on annual consumption figures, it assumes that there was always an opportunity to use alternative fuel in each capable vehicle even though the circumstances cited above had eliminated that opportunity for various periods of time. It also fails to consider the impact that hybrids had as an alternative to less fuel efficient vehicles. Finally, had the data been expanded to include year to date 2010 alternative fuel usage, it would have shown a significant increase in alternative fuel usage as a percentage of total fuel usage as the various circumstances cited above were overcome.

**Finding #2: Council set broad guidelines for achieving a carbon neutral fleet, but management has not developed a comprehensive plan based on these guidelines.**

Finding #2 asserts that each Department is left without guidance in making vehicle purchase decisions and makes such decisions using only subjective judgment. The process whereby replacement vehicles and additional vehicles are selected to be purchased each year involves both department and Fleet Services Division (FSD) staff from start to finish. FSD staff members meet with department representatives, go over operational requirements, present new technological possibilities, discuss various alternatives including cost and environmental impact of each, and make final recommendations on purchases. This process ensures that the most environmentally acceptable, cost effective, operationally viable unit is selected. This selection is then signed by the Department Director and countersigned by the Fleet Officer. FSD then processes these through the purchasing process. Where a department may choose to pursue a purchase of a replacement vehicle not recommended by the Fleet Officer, a third signature by an Assistant City Manager is required before the purchase request is processed for acquisition.

**Finding #3: No cost benefit analysis has been completed related to the directive of achieving a carbon neutral fleet.**

Finding #3 suggests that FSD has not been tracking incremental cost data on alternative fuel vehicles, and was unable to provide this data. While it is true that no query exists to elicit this data in a summary report format, the data is available for use insofar as it is applicable to any current or future decision making process. Due to the rapid growth in technology of fuels, batteries, engines, vehicle configurations, and other carbon reduction strategies, and the changing market availabilities of alternative fuels, vehicle types, etc. past incremental data is not very relevant in making upcoming alternative fuel vehicle choices.

**Finding #4: Fleet Services is not providing monthly fuel consumption reports to departments as called for in City policy.**

Administrative Bulletin 09-01 “Fuel conservation Policy” states as follows:

**Reporting and enforcement**

Fleet Services shall track consumption as well as other related data and provide reports to departments for review. Departments will be responsible for providing Fleet Services a distribution list for reports.

Fuel consumption is tracked and the information is available to departments via the FSD web site on an ongoing basis. The Administrative Bulletin does not prescribe a format or medium for presenting these reports. Departments can obtain detailed individual vehicle fuel consumption data, fueling transaction data, departmental summary data, consumption by fuel type data, current

FY to date fuel data, etc. from the web site on an ongoing real-time basis. Managers can also see City wide roll-up data on bar graphs that show year to date and trend data on various fuel types, by department, etc. This gives departments the ability to define and extract various sets of data and view it as it fits the current need in any decision making process.

**EXHIBIT 3:**

Exhibit 3 illustrates the gap between what the City is achieving in carbon reduction efforts through 2009 and what the City could achieve by maximizing use of alternative fuels in the existing fleet, and then extrapolates that data out to 2020. While the profile correctly depicts the past history from the baseline of 2007 through 2009, it is only a snapshot of data related to the infancy stages of the City's alternative fuel usage. It also does not take into account any technological advances that are more than likely to occur within the next few years that could have a significant impact to the results.

cc:            Marc A. Ott, City Manager  
                Leslie Browder, Chief Financial Officer  
                Jeff Knodel, Deputy Chief Financial Officer

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## MEMORANDUM

**TO:** Kenneth Mory, City Auditor  
**CC:** Marc Ott, City Manager  
**FROM:** Ester Matthews, Director, Austin Climate Protection Program  
**DATE:** May 20, 2010  
**SUBJECT:** Alternative Fuel Vehicle Audit

Thank you for giving me an opportunity to review the draft version of the Alternative Fuel Vehicle Audit. I look forward to any improvements in our record keeping that this audit may produce.

One missing element from the audit is a reference to the City of Austin's Hybrid fleet. In an update report delivered to the City Manager in November of 2007, the Fleet Manager stated that "the best current proven technologies available are Hybrid electric." Hybrids are considered an alternative fuel in that electricity provides much of the energy needed for in-town driving, and the fossil fuel savings is a direct reduction in greenhouse gas emissions from our fleet. In 2008, 4% of the City fleet was hybrid-electric.

In Finding 1, there is no mention of the issues Fleet has had to overcome in purchasing clean biodiesel. Fleet and the Austin Climate Protection Program (ACPP) were aware that there would be some resistance from departments in using biodiesel, so the move toward 20% biodiesel was carefully planned. However, purity issues encountered with the fuel that was purchased, and this contributed to a lower usage number. Most recently, the 20% biodiesel blend that we are receiving is of very high quality and should be acceptable to almost all of our Fleet Managers.

Finding 2 implies that there has been no long-range planning toward a carbon neutral fleet. We believe that planning was addressed in the 2007 Report to the City Manager. The Report stated:

- In conjunction with Austin Energy we have determined the best current proven technologies available are:
  - For automotive applications – The best is Hybrid electric followed by E85 (85% ethanol, 15%unleaded). When plug in hybrids become available they should supplant the current hybrids available. We are working with vendors of total electric applications that appear to be viable. There have been several applications identified for inserting and testing these vehicles.

- For light to medium truck applications – The best is E85 followed by propane then diesel trucks using B20 (20 % biodiesel and 80% TxLed. B20 will be available at all COA fuel sites by the first quarter of '08.
- For heavy equipment – By March of '08 all diesel fuel dispensed will be B20. That coupled with the tier II emission reduction standard engines produced after '07 will substantially reduce diesel emissions from form all COA diesel engines. CNG should begin in February at SWS. Once the infrastructure is in place future purchases are possible where it is applicable. We are limited by vehicle size and parking location as well as the number of vehicles that can be fueled at this location. Experience will dictate how we can expand CNG fueling. We are also testing electric hybrids for heavy applications.

The final sentence in Finding 5 states that the data as currently reported is not complete enough to hold departments accountable. However, the data has been made available to the departments in their individual inventories, and emission reductions are addressed in the Departmental Climate Protection Plans. These plans were created during FY 2010, and the individual departments will be responsible for implementing and updating the plans on an annual basis through the Climate Action Reporting System (CARS) that is being developed by CTM.

Finding 6 mentions that ACPP personnel had to use subjective judgment in filtering vehicle data. This statement was based on our experience trying to create fleet inventories with a database that is not easy to interpret and is not always accurate.

ACPP is charged with assisting City departments in the implementation of the Climate Protection Policy but that we are not able to require them to do so. To ensure the best opportunity for implementation, we asked that the Departmental Climate Protection Plans be signed by the Department Director and appropriate Assistant City Manager. It is our hope that the departments will implement the goals that they set out in their plans and help move the City to the 2020 goal of carbon neutrality.