REPORT
Regular Council Meeting
1991 November 18

THE CORPORATION OF THE DISTRICT OF BURNABY

ENVIRONMENT AND WASTE MANAGEMENT COMMITTEE

HIS WORSHIP, THE MAYOR
AND ALDERMEN

RE: ALTERNATE FUELS - BURNABY PILOT PROJECT

RECOMMENDATION:

1. THAT Council defer the alternative fuels pilot project but continue to closely monitor the progress in the alternative fuel development and report back to council on any potential applications in the future.

b) that Council continue to participate in emission reduction programs where appropriate and provide the staff training and programs required to meet the proposed Provincial Emissions, Inspections and Maintenance Program to be implemented in 1992; and

c) that the Federal Government be urged to implement emission standards for alternative fuels such as propane and natural gas so that the industry can respond to meet those standards.

R E P O R T

The Environment and Waste Management Committee, at its meeting held 1991 November 12 received and adopted the attached staff report providing an update on recent studies of alternative fuels and their applications in Municipal vehicle fleet.

The Committee therefore submits recommendations for Alternative Fuels - Burnaby Pilot Project to Council for endorsement.

Respectfully submitted,

Alderman D.P. Drummond
Acting Chair

Alderman L. Rankin
Chair

Alderman D. Evans
Member

Alderman D. Lawson
Member

Alderman C. Redman
Member

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TO: CHAIRMAN & MEMBERS, ENVIRONMENT & WASTE MANAGEMENT COMMITTEE

1991 NOVEMBER 05

FROM: DIRECTOR ENGINEERING

FILE: 80-16-01

SUBJECT: ALTERNATIVE FUELS - BURNABY PILOT PROJECT

PURPOSE: To provide the Committee an update on recent studies of alternative fuels and their applications in Municipal vehicle fleet.

RECOMMENDATION:

1. THAT the Environment & Waste Management Committee recommend to Council:

   a) that Burnaby defer the alternative fuels pilot project but continue to closely monitor the progress in the alternative fuel development and report back to Council on any potential applications in the future;

   b) that Burnaby continue to participate in emission reduction programs where appropriate and provide the staff training and programs required to meet the proposed Provincial Emissions, Inspections and Maintenance Program to be implemented in 1992; and

   c) that the Federal Government be urged to implement emission standards for alternative fuels such as propane and natural gas so that the industry can respond to meet those standards.

REPORT

1.0 INTRODUCTION

The Environment & Waste Management Committee, at its meeting of 1991 April 09, received and adopted a staff report on alternative fuels for Burnaby fleet vehicles. The report recommended a short term strategy for alternative fuels which is outlined as follows:

a) approval of the proposed alternative fuels pilot program for a limited number of Municipal vehicles at an estimated cost of approximately $12,000;

b) that staff undertake an evaluation of the proposed program and report back to Council 12 months after the implementation of the pilot program outlining an overall alternative fuels strategy for all Municipal vehicles.

The report was endorsed by the Committee and forwarded to Council for consideration at the regular Council meeting of 1991 April 15. The recommendations were subsequently approved by Council for implementation.

2.0 RECENT STUDIES ON VEHICLE EMISSION CONTROL

At the time of preparing the April 09 staff report, there were very limited emission test results specific to Municipal vehicles available in the Lower Mainland. The purpose of the recommended Burnaby pilot program was to provide the Municipality with the opportunity to evaluate the effectiveness of alternative fuels and to develop an overall strategy.

Since the approval of the report by the Committee and Council, we have received new information from the GVRD and the City of Vancouver related to emission reductions and alternative fuels. It was felt that the results of these studies would benefit Burnaby in its effort to evaluate the effectiveness of the alternative fuels project. The purpose of this report is to provide the Committee with the information for further re-evaluation of the previously recommended pilot program.

2.1 General

In recent years, there has been significant improvement in the Federal exhaust standards. In order to meet these new requirements, the automobile industry has made extensive use of computer controls and fuel injection systems which led to improved and more efficient engine design, and reduction in total exhaust emissions. However, the technology of alternative fuels conversion is not advanced to the stage where these gasoline engine improvements can be fully utilized. Presently, the Federal Motor Vehicle Safety Act regulates the allowable emissions for gasoline and diesel motor vehicles only, and not for other fuels such as natural gas or propane.

Recent tests and evaluation of alternative fuels were based on direct fuel conversion of gasoline vehicles without the benefit of special factory designed engines dedicated for alternative fuels. Therefore, the advanced technology currently employed by gasoline vehicles is not being utilized to obtain optimum emission reductions for alternative fuels operation.

2.2 GVRD Study

Powertech Labs Inc., consultant retained by the GVRD, published a report in 1991 June presenting the findings of a study of vehicle emissions based on alternative fuels operation. The objective of the study was to determine the potential for reducing emissions from the GVRD vehicle fleet, and to recommend strategies for implementation. Emission estimates were calculated based on a pollutants database collected by the US Environmental Protection Agency over the last 20 years.

Alternative fuels such as propane, natural gas, methanol and ethanol were included in the analysis for comparison with gasoline fuel.

The study calculated for vehicles which meet the 1990 Canadian emission standards, that the total emission of carbon monoxide (CO) and nitrogen oxide (NOx) from natural gas fuel is higher than that from gasoline operation. By expanding the analysis to vehicles designed to 1995 California standards, it is projected that further emission reductions for gasoline operation will be realized due to stricter emission controls.

The study also evaluated the need for an effective emission control maintenance program. The Province is proposing to implement an Emissions, Inspections and Maintenance Program which will come into effect in 1992 June for vehicles under 5,000 lbs. and for all vehicles 2 years thereafter. It is estimated that with the implementation of the Provincial program and the new gasoline engine technologies, emission reductions of 38% and 50% by years 1995 and 2000 respectively, will result without resorting to alternative fuels.

2.2 Cont.

Based on the results of the study, the report concluded that the use of alternative fuels may not be an effective solution to the emissions reduction initiative and reductions in emission can be achieved without switching to alternative fuels. It should be noted that the analyses were based on direct conversion of gasoline vehicles which are not designed for optimum alternative fuels operation.

2.3 City of Vancouver

Propane has been used exclusively as an alternative fuel for the City of Vancouver vehicle fleet since the 1970's. Presently, propane accounts for approximately 1/3 of the total city fleet vehicles fuel consumption and its application is mostly in police vehicles and dump trucks. Most of the police vehicles are of earlier models without the benefit of the latest engine technology. According to the City, the alternative fuel program has saved significant fuel costs over the last 20 years. The use of natural gas was evaluated by the City and found not practical due to problem with fuel tank size and operating range.

Recent study and tests carried out by the City as part of the alternative fuel evaluation program led to the following conclusions:

. For 1989 full size vehicles the total emissions from propane fuel is 6 times more than for gasoline.

. Emissions from 1989 gasoline vehicles are 3 times less than from 1987 gasoline vehicles.

. Exhaust emissions are significantly improved for new models of gasoline vehicles due to advanced engine technology and design.

Although the tests were conducted for specific classes of vehicles, the results generally confirm that advances in the gasoline engine technology have reduced the exhaust emissions and produce less pollutants.

In the latest report from the Vancouver Engineering Department to the City Council, it recommended that further emission tests of propane and gasoline fuelled vehicles and trucks be carried out to validate earlier tests and the use of propane versus gasoline be reviewed after the tests are complete. It also recommended that all full size vehicles, vans and trucks up to 6,500 Kg be fuelled by gasoline, diesel or propane, depending on the age of the vehicles, application and the life cycle economics.

The City currently has in place many maintenance programs to reduce emissions and operating costs. In concert with the goal of reducing exhaust emission and the Provincial Emissions, Inspection and Maintenance Program, City Council further approved the expansion of the City engine inspection and maintenance program to the entire vehicle fleet including vehicles over 5,000 lbs. within two years to reduce exhaust pollutants.

3.0 CONCLUSIONS

The staff report submitted to the Environment & Waste Management Committee in 1991 April recommended a pilot project be undertaken to evaluate the effectiveness of alternative fuels and develop an overall strategy for its implementation.

Based on the latest information received from the GVRD and the City of Vancouver on this subject, a general conclusion can be reached that the use of alternative fuels such as propane and natural gas on late model vehicles does not reduce the total exhaust emissions. Advances in gasoline engine and fuel injection design, and strict Federal exhaust emission standards have placed gasoline into the same range of exhaust emissions as propane and natural gas. The extensive research and studies have provided staff with sufficient information to evaluate the effectiveness of alternative fuels without proceeding further with the previously proposed pilot project.

Most of the full size vehicles used by the City of Vancouver are for the Police and Fire Departments and are of older models. Burnaby Municipal vehicle fleet is comprised of mostly late model vehicles utilizing new engine technology. Therefore, from the viewpoint of emission reduction objective, there is little or no benefit to be gained by converting newer vehicles from gasoline to alternative fuels operation.

In concert with the Province's objective of improving air quality in the Lower Mainland area, Burnaby has initiated training programs for staff mechanics on new vehicle maintenance works required to meet the upcoming Provincial Emissions, Inspections and Maintenance Program standards. Funding is also included in the 1992 Operating Budget for the purchase of new emission testing equipment to permit Burnaby staff to perform the maintenance activities required. Staff are supportive of the proposed program and would continue to urge the Government to work with auto makers for the development of dedicated factory design alternative fuel vehicles to meet future emission standards and energy conservation objectives.

From an energy conservation and cost saving viewpoint, Burnaby is one of the leading municipalities in the Lower Mainland in maintaining an optimum vehicle replacement program. New safer and cleaner vehicles are purchased based on optimum life cycle. Evaluations are carried out by staff to select the optimum vehicle size for specific operating condition to conserve fuels, hence reducing air emissions.

The recent studies conducted by the GVRD and the City of Vancouver were based on extensive research and testing and have provided Burnaby with sufficient information to evaluate the effectiveness of alternative fuels at this time. On the basis of the available data, it is recommended:

a) that Burnaby defer the alternative fuel pilot project but continue to closely monitor the progress in alternative fuel development and report back to the Committee on any potential applications in the future;

b) that Burnaby continue to participate in emission reduction programs where appropriate and provide the necessary staff training and programs required to meet the proposed Provincial Emissions, Inspections and Maintenance Program to be implemented in 1992; and

c) that the Federal Government be urged to implement emission standards for alternative fuels such as propane and natural gas so that the industry can respond to meet those standards.

W. C. Sutherland
DIRECTOR ENGINEERING

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