

Fuel Sense: Making Fleet and Transit Operations More Efficient

Organization

City of Edmonton

Status

Started 2000, ongoing

Overview

Fuel Sense is a four-hour training program on fuel efficiency practices that combines practical and classroom training to realize fuel efficiency gains in the City of Edmonton's fleet and transit operations.

The program instructs drivers to operate vehicles for maximum fuel efficiency while considering operational needs. Participating drivers learn techniques such as reducing idling time and planning more efficient routes. A computerized fuel dispensing system tracks the fuel usage of individual drivers to allow Fuel Sense to measure results at regular intervals.

Fuel Sense targets municipal employees who log the highest fuel consumption in City vehicles. To date, 800 municipal operators have been trained in Fuel Sense with the group averaging a 12% efficiency gain.

To date, Fuel Sense has successfully reduced annual fuel consumption by over 10%, or by over 200,000 litres a year. This translates into a savings of \$175,000 (based on 60 cents per litre) and an estimated reduction in GHG emissions of 310 tonnes in annual fleet operations.

Budget: \$45,000 annual operating costs

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Resources

- City of Edmonton (www.gov.edmonton.ab.ca)

Community context

The City of Edmonton owns and operates a large fleet of vehicles for municipal operations, including light and heavy duty trucks, cars and buses for Edmonton Transit. Edmonton Transit's fleet alone includes over 700 diesel buses and 26 non-diesel community buses.

Municipal fleet operations in Edmonton currently account for 3% of total emissions in the City of Edmonton.

To achieve operational savings and reduce the overall environmental impact of fleet operations, the City began exploring methods of modifying driver practices and implementing training programs beginning in 1999. At the time, the City's Fleet Safety department provided a variety of staff driver training programs, but none that focused on the combination of defensive and fuel-efficient driving techniques.



One of Edmonton Transit's 700-plus diesel buses

Policy context

The City of Edmonton is an active partner in FCM's Partners for Climate Protection program, a national GHG reduction program that seeks to achieve a 20% GHG emissions reduction in partner municipal operations by 2008.

As part of their commitment to this program, City Council approved both an Environmental Strategic Plan and a Corporate Greenhouse Gas Plan in 1999. Both promoted proactive corporate initiatives to reduce GHG emissions, in particular those from City operations including the municipal fleet.

In response to these plans, Edmonton's Asset Management and Public Works Department and its Fleet Safety section developed the Fuel Sense program to help improve the efficiency of the City fleet vehicles operations by modifying driver practices through a driver education training program.

"Council encourages anything that is seen as doing the environment a favour," say Brian Payne, Edmonton's Supervisor of Fleet Safety and one of the principal architects behind the fuel sense program.

Rationale and objectives

The development of Edmonton's Fuel Sense program was created in response to the City's commitment to reduce corporate greenhouse gas (GHG) emissions and its desire to reduce fleet operations costs, particularly fuel expenses.

As a member of the Federation of Canadian Municipalities (FCM), the City of Edmonton is committed to the organization's Sustainable Communities program and is a founding member of FCM's Partners for Climate Protection campaign. As part of the commitment to this campaign, City Council approved a GHG reduction plan that seeks to reduce emissions from municipal operations by 20% by 2008.

In combination with the environmental imperative, the City of Edmonton was affected by increasing fuel costs. In 2000 alone, the City of Edmonton experienced a 40% increase in fuel prices. With that trend expected to continue, a major budget deficit was predicted for city vehicle operations.

The program's objectives include:

- Achieving a 5-10% reduction in the overall corporate fuel usage
- Maintaining fuel cost reductions through reduced consumption
- Reducing community-wide GHG emissions
- Training one thousand of the highest fuel-user drivers working for the City of Edmonton in fuel-efficient driving techniques
- Attaining 100% support and participation from the senior management team, department management teams and all targeted drivers

In addition to these shorter-term objectives, several longer-term objectives and goals were developed, including:

- To develop partnerships with like-minded organizations and groups, such as the Alberta Motor Association and other municipalities
- To expand the program to include all drivers of city-owned vehicles

- To promote the program to all City residents as an opportunity to address high fuel costs and reduce automobile-related air emissions

Actions

Fuel Sense is a fuel efficiency training program for fleet operations drivers that combines practical and classroom training to realize fuel efficiency gains. The training program is included as part of regular municipal fleet driver training programs and in Edmonton Transit's driver training programs.

Fuel Sense teaches participant basic driving techniques that help achieve a vehicle's maximum fuel efficiency. The program focuses on driver skill development and works to eliminate habits that lead to poor energy consumption and excessive GHG emissions, such as excessive idling and variable speed driving.

The Fuel Sense Program was first operated as a 10-month pilot program beginning in October 2000. After hiring an instructor to oversee the project, the next task was the identification of those municipal employees that did the most driving in their jobs.

Initially, approximately 1,000 corporate employees were identified as drivers logging the highest fuel consumption in city vehicles, and were targeted for Fuel Sense training. These potential participants were then invited to take part in the voluntary training program.

In the Fuel Sense program, drivers attend a four-hour training session that includes two hours of classroom instruction and two hours of on-road instruction on a special closed street course.

In the classroom session, employees learn about:

- The impact GHGs have on the environment and the global climate
- The potential cost savings associated with efficient driving techniques
- The correlation between speed, revolutions per minute (RPM) and fuel efficiency.

During the on-road instruction employees test their knowledge and practices on a special 10-kilometre closed street course. A pre-test establishes a benchmark of performance for each driver who then completes the course with the trainer. Individualized coaching is provided where necessary.

The vehicles used on the street course are equipped with on-board computers, one of which captures RPM and speed information. "There is a direct correlation between that and fuel efficiency," says Payne. "Drivers who maintain a consistent RPM tend to be more productive than those that are on and off the throttle constantly."

A second computer is connected to a fuel flow gauge to permit the trainer to compare fuel consumption for each driver before and after training. The trainer is also able to monitor day-to-day fuel consumption for different drivers using the City's computerized fuel dispensing system that tracks the fuel usage of individual drivers.

So far, feedback on the program has been very positive, with 95% of drivers rating the training as excellent. As reported in a FCM/CH2MHILL review of the program, "for many drivers, using efficient driving techniques is a much more relaxed way to cover their routes."

Mr. Payne agrees with the observation. "It proves that there's always something new to learn," he says, adding, "The best drivers always realize the impact they potentially have behind the wheel and never fail for a second to remember that safe driving is important."

The lessons learned by drivers also appear to be sticking. Drivers retested a year after completing their initial training boast an average improvement over their first scores of 1.5%. Although this improvement may seem minimal, it not only demonstrates an excellent retention rate amongst drivers, but also translates into significant fuel savings when extrapolated over the entire fleet.

Results

The Fuel Sense program quickly achieved most of its objectives after only its first year of operation. A more comprehensive review conducted in December 2003 confirmed the following results:

- Over 800 drivers trained
- \$175,000 saved annually (based on 2003 fuel prices – 60 cents per litre)
- 310 tonnes (estimated) of GHG emissions avoided annually
- Fuel volumes consumed per kilometre dropped overall by approximately 5.5%, or a gain in fuel efficiency of 1.8 litres/100 km
- Driver fuel consumption savings of up to 15%, regardless of the type of vehicle

As more drivers are trained in Fuel Sense principles, it is estimated that annual fuel cost savings could well be over half a million dollars.

In 2002, the Fuel Sense program received an FCM-CH2M HILL Sustainable Community Award.

Participants

Fuel Sense has been delivered to both Edmonton Transit and drivers from the City of Edmonton through an interdepartmental partnership with the City's Fleet Safety division and Edmonton Transit.

To date, requests for information have been received from municipal and provincial governments across Canada, the Alberta Trucking Association and the Alberta Motor Association.

Resources

Fuel Sense training is considered as a supplement to the normal driver training courses that all City operations employees undergo. As a result, all program costs were absorbed by the Fleet Safety section.

The Fuel Sense program's first-year start-up costs were \$60,000. Annual program related costs are estimated at \$45,000.

"There was another fuel price increase [in 2002]," says Bryan Payne, Edmonton's supervisor of fleet safety, "and we were able to deflect a large percentage of the increase through the savings of the drivers."

Lessons learned

One of the key lessons learned in Fuel Smart was how easily the entire process can be transferred to other types of operations. Bryan Payne, Edmonton's Fleet Safety Supervisor, believes that the success of Fuel Sense rests on its practicality. "The program is based on simple techniques," he says, "but it was bringing it together the way have that makes the program successful. The bottom line is achievable by anyone."

Other lessons learned include:

- **Communicate results regularly.** Communicating results regularly to driver and Council is important. Drivers benefit from follow-up communication and are motivated to continue their lessons if they are kept apprised of the results. Council, on the other hand, needs to be kept informed of program efficacy and efficiency to support the growth of the program and its applications in new areas.
- **Coordinate training sessions with community events and seasonal workloads.** Although most of the training occurred without a hitch, program coordinators did have to reschedule some re-testing in respect of higher seasonal workloads during the spring and summer months. Originally, driver re-testing occurred three months after initial training. It now takes place one year after to allow greater flexibility in scheduling the re-test, to better test driver retention and to help sustain staff commitment to the program.

Initial implementation of Fuel Sense for Edmonton Transit also experienced some delays, primarily because of the unique demands made on Edmonton Transit resources in the summer of 2001. At that time, Edmonton was hosting a number of national and international track and field events which placed special demands on Edmonton Transit.

Next steps

Given the success of the Fuel Sense program, the City of Edmonton and Edmonton Transit are seeking to gradually expand the program into other fleet operations areas.

Currently the City has partnered with Natural Resources Canada, Office of Energy Efficiency, to help develop an urban transit fuel-efficiency training program based on Fuel Sense. In addition, the program may be expanded to in the following ways:

- Using Fuel Sense as a model for a “train the trainer” program for private companies with significant fleet operations and which already have a driver training program in place, but are also concerned about fuel costs and the effect on the environment.
- Expanding Fuel Sense to accommodate external driver training requests, including defensive driver training.
- Developing of a multimedia component of the Fuel Sense program to increase accessibility beyond the normal channels of delivery.

Finally, the monitoring and identification of high potential candidates for Fuel Sense training is gradually being enhanced through the installation of on-board vehicle technology that measures day-to-day fuel consumption, driving habits and routes. “Part of our commitment is to reinvest in on-board technology,” says Mr. Payne. “We’re working towards a one-system communication tool.”