

General Motors of Canada Limited

1908 Colonel Sam Drive,
Oshawa, Ontario L1H 8P7

December 5, 1996

Ms. Sue Kirby
Voluntary Challenge and Registry Office
Natural Resources Canada
Energy Sector
Ottawa, Ontario
K1A 0E4

Dear Ms. Kirby:

Subject: 1996 General Motors of Canada Limited - Action Plan Update

Please find enclosed the 1996 General Motors of Canada Limited - Action Plan Update. Also enclosed, please find an electronic copy (Microsoft Word Version 6.0c format) on disc.

This update complements our original Action Plan as submitted November 6, 1995. This update contains consumption and energy efficiency improvement information through to the end of calendar year 1995.

If you have any questions, please contact me at (905) 644-1996 or via facsimile (905) 644-3830.

Sincerely,

Bryan Swift
Manager,
Government Relations

1996 Voluntary Challenge Registry Update

General Motors of Canada Limited

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1996 Voluntary Challenge Registry Update General Motors of Canada Limited

Introduction

General Motors of Canada Limited is Canada's largest industrial manufacturer and largest exporter with a workforce of almost 35,000 employees across Canada. GM's products represent over 10% of Canada's total manufacturing shipments. As a result of the original AutoPact, subsequently the FTA and NAFTA, General Motors operates with the production and sale of finished vehicles fully integrated on a North American basis. Favourable exchange rates and supporting infrastructure have contributed to the development of significant new vehicle production capacity in Canada well in excess of Canadian market demand. The integration of the North American automobile market allows GM plants in Canada to have North American product mandates. With 1995 calendar year production of 907,833 units in Canada, compared with sales of 381,786, GM manufactured in excess of two vehicles for every vehicle GM sold in Canada. Since 1986 GM has invested over \$7 Billion in upgrading its Canadian facilities to ensure they remain efficient, competitive and able to continue to provide secure employment.

Participation in the VCR is consistent with our Corporate Environmental Principles. GM first articulated its commitment to a safe and healthy environment as a corporate policy more than three decades ago. In 1991, the GM Board of Directors adopted the GM Environmental Principles, which affirm GM's views about the nature of its corporate environmental responsibilities worldwide. In February 1994, GM became the first Fortune-50 company to endorse the principles of the Coalition for Environmentally Responsible Economies (CERES). CERES is composed of environmental groups and socially responsible investors. By endorsing the CERES principles, GM publicly affirmed its commitment to the environment and its accountability for corporate performance. CERES acclaimed GM's environmental principles as consistent with the goals of the CERES principles.

Improved energy efficiency is also a cost management issue. Within General Motors, plant comparisons are carried out as a means to ensure optimal efficiencies in energy utilization in the manufacture of cars and trucks. Critical to the success of GM, in light of heightened global competition, is the efficient use of energy in all of our facilities. Reducing energy consumption in the production of cars and trucks translates directly into reduced production costs and improved competitiveness. Although energy costs do not represent a large portion of overall production cost, by virtue of the scope of operation, GM is a significant consumer of electricity and other forms of energy in Canada. As a player in the highly competitive global automotive market, all savings are significant.

General Motors strongly supports the voluntary approach as established by Natural Resources Canada's Voluntary Challenge Registry (VCR) and believes that it must be the cornerstone of Canada's response to the climate change issue. As necessary, effective economic instruments should be the next step to augment voluntary approaches. Command and control measures should be undertaken only where there is overwhelming evidence that they are required and where voluntary measures and economic instruments have been attempted but have failed to yield the necessary results.

Action Plan Update
Energy Use in our Facilities

Total energy consumption which is dependent on facility size, weather conditions, production volume and production mix is depicted below. Overall consumption has decreased by 19.6% for the period 1990 through 1995.

Vehicle production volumes are illustrated in Chart 1 for the period 1990 through 1995.

Chart 1
Vehicle Assembly Production

Chart 2 describes the Energy Consumption Mix of energy sources used in the manufacture of passenger cars and light duty trucks

Chart 2
Energy consumption Mix

Forecasting future emissions represents a significant challenge, because of the extremely competitive nature of the automobile industry. Much depends upon factors that are uncontrollable. Facility emissions are tied directly to production. If production increases, energy consumption and therefore emissions, will increase. Factors affecting production include consumer demand for automobiles, consumer preference (i.e. between makes, models, size and efficiency), and competition for work between GM business units. The uncertainty surrounding each of these factors prevent development of a global greenhouse gas forecast. Forecasting emissions on a per-production unit basis lessens some of the obstacles associated with global forecasting for a manufacturer such as GM. The amount of energy consumed per vehicle produced is illustrated in Chart 3. The average energy consumption for vehicles produced (cars and trucks) has been reduced by 11% from a 1990 baseline through 1995.

Chart 3
Energy Consumption Per Vehicle Produced

Chart 4 depicts the amount of CO₂ generated directly as a result of on-site activities. On-site generation of CO₂ has decreased since 1990 by 28%. Chart 5 depicts corresponding CO₂ emissions avoided through our energy efficiency initiatives.

Chart 4
CO₂ On-Site Generation

Chart 5
CO₂ Emissions Avoided KWh Saved (Cumulative)

Achieving Continuous Improvement in GM's Facilities

GM continues to search for new ways to reduce energy consumption, driven by the combined incentive of reducing production costs and environmental impacts. Energy audits of GM facilities continue with energy coordinators in place in every facility supported by use of strict purchasing specifications for energy efficiency. The successful implementation of innovative technologies, such as solar walls and thermal ice storage systems to shift peak electrical loads, have helped increase the awareness of new energy-saving opportunities throughout the company.

Slab Heating Control Project

The Slab Heating Control Project will ultimately result in modification to the controls on seventy-eight (78) electrically heated receiving dock slabs and ramps throughout the Oshawa Autoplex and make them more energy efficient. These highly utilized receiving points require slab heating to keep them free of snow ice to facilitate safe truck unloading for just-in-time deliveries. A survey indicated that while a large number of these heaters have automatic controls that are supposed to automatically respond to the presence of cold temperatures and snow, these controls are consistently unreliable and consequently are placed in "manual", resulting in excessive electrical usage and costs. Efforts have been made in the past to monitor these controls and turn them off when not needed but experience shows that these efforts are labour intensive, time consuming and have been less than successful.

Pad heaters could be monitored centrally. Any malfunction in an individual pad heater would be readily identifiable and maintenance forces dispatched for prompt repair.

The cost of the control revisions was estimated at \$140,000. Project completion will provide significant savings in reduced power cost.

Through the establishment of a central monitoring system for all ramp points, a significant improvement in energy efficiency has already been obtained with further savings forecast.

Employees as a Source of Innovation

GM utilizes ideas from employees for additional energy savings. Communications and awareness initiatives include an energy newsletter, energy workshops, technology transfer seminars and an annual conference where energy coordinators across GM of Canada meet and exchange ideas. Annual energy efficiency competitions and awards motivate individual business units to achieve greater energy savings, and all employees have been challenged by the President and General Manager, Maureen Kempston Darkes to meet or exceed a target of 1% reduction in energy consumption per year for the period from 1990 to the year 2000.

Beyond our Facilities

Specific energy initiatives are undertaken each year. A General Motors of Canada "Energy Awareness Week" conducted in the Spring each year allows us to inform and educate our employees of the benefits associated with energy efficiency with a particular emphasis on the home environment.

In addition, General Motors continues to actively support local community green initiatives. An example is the City of Oshawa's - Green CAP "Conservation Action Program" which is focussed on conservation of energy in Oshawa residences. The program involves home audits and identification of savings opportunities.

Tree planting and marsh management activities are continuing in the McLaughlin Bay Wildlife Reserve. Over 35,000 trees have been planted in the Reserve not only to ensure a habitat, but also provide a degree of carbon sequestration.

Further Increasing the Energy Efficiency of the Vehicles We Build

GM is a full line manufacturer of automobiles and light duty trucks offering consumers products to suit all tastes. Overall fuel economy is primarily determined by the mix or assortment of vehicles that consumers demand.

As a result of new vehicles being substantially more fuel efficient than those being retired, through December 1994, from a base in 1988 the annual improvement for automobile and light duty truck on-road fuel efficiency has been 2.4%. To continue addressing issues in this area the MVMA representing Chrysler, Ford and GM, and the AIAMC representing the importers, have been active in three areas with NRCan based on commitments established in the 1995 Fuel Efficiency MOU. Under the auspices of GIMVEC (Government Industry Motor Vehicle Energy Committee) working committees have been established to deal with Communications, Energy Data and Technology issues. Specific initiatives have already been completed relating to consumer awareness and data collection.

Automakers' efforts continue within the context of a total systems approach to greenhouse gas reduction, that considers the road system, vehicle design, fuel and owner issues as important components of a solution. Although improvements in vehicle design have contributed to CO₂ reductions, influences such as:

- stable fuel pricing (resulting in lower cost per kilometre driven)
- population increases and urban growth (possibly without suitable transit alternatives)
- general societal desire for increased mobility
- consumer preference and demand for light duty trucks/sport utility vehicles
- delays in the implementation of broad I/M programs
- lack of MMT free fuel in Canada to support second generation on-board diagnostics (OBD-II) systems have and in future will influence potential reductions.

GM will continue to invest in research and development activities aimed at further increasing the fuel efficiency of its automobiles. OBD-II systems are an example of technology capable of providing a fuel savings on new vehicles. OBD-II systems look for any deterioration of a vehicle's powertrain operation providing detailed diagnostic information for technicians. Once MMT-free gasoline is widely available to Canadian consumers, fully functional OBD-II systems will be made available which may enhance real life fuel efficiency.

Chrysler, Ford and General Motors are pursuing research to commercialize technologies intended to provide ultra fuel efficiency within the Partnership New Generation of Vehicle. The purpose of the research partnership is to focus on technologies that will provide a leap beyond the current incrementalism in providing for reduced fuel consumption. Technologies being explored include fuel cells, gas turbines, lithium ion batteries, ultracapacitors, power electronics, mass reduction and further manufacturing enhancements for implementation in vehicles in the future.