

*1998 Voluntary Challenge and Registry Update
General Motors of Canada Limited*



***1998 Voluntary Challenge and Registry Update
General Motors of Canada Limited***

Table of Contents

Introduction	1
Manufacturing Operations	1
Commitment to the Environment	2
General Motors Environmental Principles	2
The CERES Principles	3
VCR Action Plan Update	3
Energy Use in Our Facilities	3
Methodology	4
Energy Consumption Mix	4
Vehicle Assembly Production	5
Energy Consumption Per Vehicle Produced	5
Stationary CO ₂ Generation	6
Energy Conservation at General Motors	7
Energy Consumption and GHG Emission Projections	9

Introduction

General Motors of Canada Limited (GMCL) is Canada's largest industrial manufacturer of passenger cars, light trucks, locomotives and automobile components. GMCL is the country's largest exporter with a workforce of 26,000 employees operating vehicle assembly and component fabrication plants, as well as parts distribution, sales and service centres. Today, GMCL has the capacity to manufacture more than one million units annually – generating significant export earnings by shipping approximately 85 % of those vehicles to the United States. Vehicle assembly production for the 1997 calendar year was just under 900,000 units.

Manufacturing Operations

Oshawa, Ontario

Car Assembly Plants – Chevrolet Lumina sedans, Monte Carlo coupes, Buick Century and Regal sedans.

Truck Assembly Plant – GMC and Chevrolet extended cab version of the full-size, three-door, two-wheel and four-wheel drive pickup trucks.

South Fabrication Plants – Batteries, suspension components, exterior sheet metal stampings.

St. Therese, Quebec

Car Assembly Plant – Chevrolet Camaro coupes and convertibles; Pontiac Firebird, coupes and convertibles.

St. Catharines, Ontario

Engine Plant – 5.0L and 5.7L V-8 engines.

Components Plant – Transmission final drive and differential assemblies, rear axles, front suspensions, brake and drum assemblies and components.

Windsor, Ontario

Transmission Plant – Four-speed electronic, front-wheel drive automatic transmissions

London, Ontario

Diesel Division – Diesel locomotives and light armoured vehicles (LAVs)

Commitment to the Environment

“The goal of improved environmental quality around the world is one we share with many. The public – and our employees, dealers and suppliers – expect us to be accountable to the environment. It’s part of being in business. It’s the responsible thing to do.

The linkage of environmental responsibility to our business is clear. Quite simply, environmental success is critical to our business success. GM’s environmental initiatives are driven by the GM Environmental Principles that serve as our philosophy with regard to the environment. They build on past successes – and opportunities – and look to the future.

Our focus remains to demonstrate our commitment to the environment and sustainable development through all of our actions worldwide.”

V. Maureen Kempston Darkes
President and General Manager
General Motors of Canada Ltd.

General Motors Environmental Principles

As a responsible corporate citizen, General Motors is dedicated to protecting human health, natural resources and the global environment. This dedication reaches further than compliance with the law to encompass the integration of sound environmental practices into our business decisions.

The following environmental principles provide guidance to General Motors personnel worldwide in the conduct of their daily business practices:

- We are committed to actions to restore and preserve the environment
- We are committed to reducing waste and pollutants, conserving resources and recycling materials at every stage of the product life cycle
- We will continue to participate actively in educating the public regarding environmental conservation
- We will pursue vigorously the development and implementation of technologies for minimizing pollutant emissions
- We will continue to work with all governmental entities for the development of technically sound and financially responsible environmental regulations
- We will continually assess the impact of our plants and products on the environment and the communities in which we live and operate with a goal of continuous improvement.

The CERES Principles

In February 1994, GM became the first mainstream “Fortune 50” company to endorse a set of environmental principles as developed by the Coalition of Environmental Responsible Economies (CERES). CERES is composed of national environmental groups and socially responsible investors. By endorsing the CERES Principles, GM publicly affirmed not only our commitment to the environment but also the accountability for corporate performance. CERES endorsed GM’s Environmental Principles as consistent with the goals of the CERES Principles.

We now annually issue a Corporate Environmental Report (including specific information relating to the activities of GMCL) that follows the CERES report protocol. Our investment in issuing an annual report facilitates internal evaluation of environmental performance, increases employee awareness of GM’s environmental issues, and promotes open discussion with the public on environmental performance.

GM’s quest for continuous improvement has encompassed more than three decades of environmental policy. Throughout GM, our employees continue to use their talents to better understand how our business and our products affect the environment. We’re working hard to identify the environmental challenges and develop solutions.

As a leader of the Canadian automotive manufacturing industry and as a responsible corporate citizen, GMCL is dedicated to protecting human health, natural resources and the global environment.

VCR Action Plan Update

This report represents GMCL’s third update, with data compiled for the 1997 calendar year.

Energy Use in Our Facilities

Energy use in our manufacturing, testing and office facilities is a function of a number of factors: the capacity utilization of each facility; the age and efficiency of the facility; and, weather conditions. GMCL facilities throughout Canada primarily utilize the following forms of energy: natural gas, coal, fuel oil and electricity. This report communicates GMCL’s aggregate level of annual energy consumption and GHG emissions from manufacturing facilities over the period 1990-1997.

CO₂ is the only greenhouse gas (GHG) generated in significant quantities by our stationary sources. CH₄ and N₂O emissions are not significant. This report covers energy consumption and GHG emissions from GMCL manufacturing facilities located throughout Ontario and Quebec, excluding GMCL’s joint venture, CAMI, in Ingersoll, Ontario.

Methodology

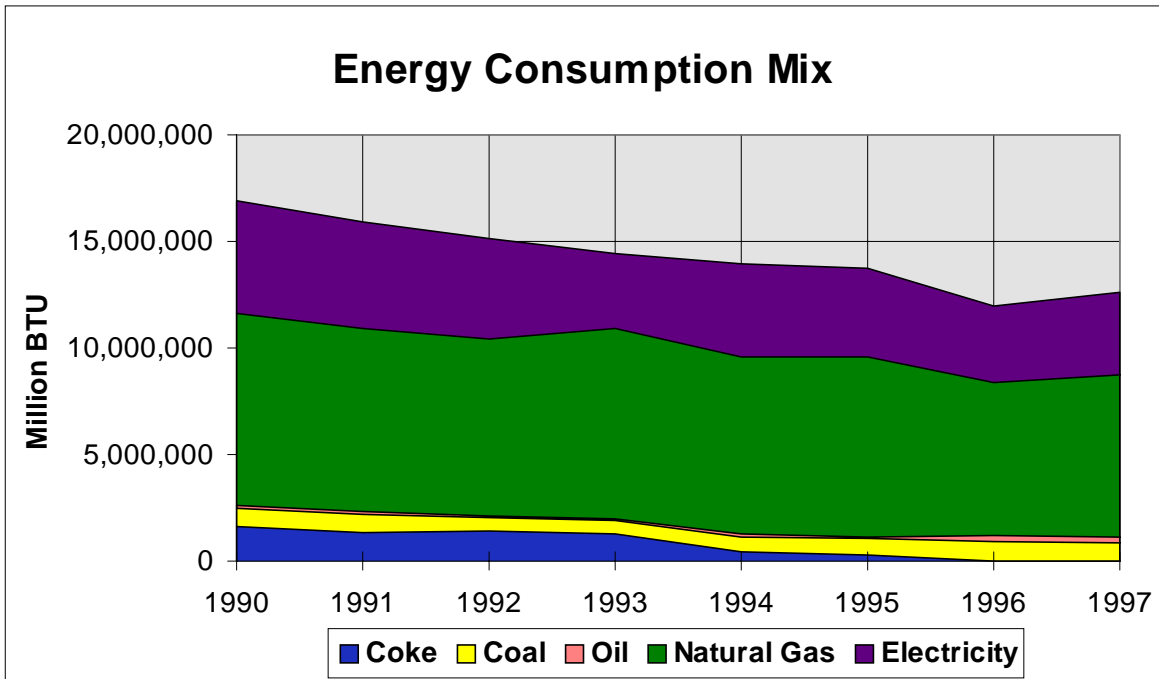
Since GMCL facilities do not directly measure CO₂ emissions, standard emission conversion factors of CO₂ for each utilized form of energy are used. For electricity, CO₂ generation is calculated based on emission factors for electricity production by the public utilities in Ontario and Quebec.

Energy Consumption Mix

Total energy consumption for GMCL for the 1990-1997 period are presented below on Chart 1. GMCL has achieved a 26% reduction in energy consumption over this period.

Note: In 1997, manufacturing operations in Oshawa and Windsor were sold to other companies which continue to operate them on an ongoing basis. Energy consumption data for these facilities have been removed for all years.

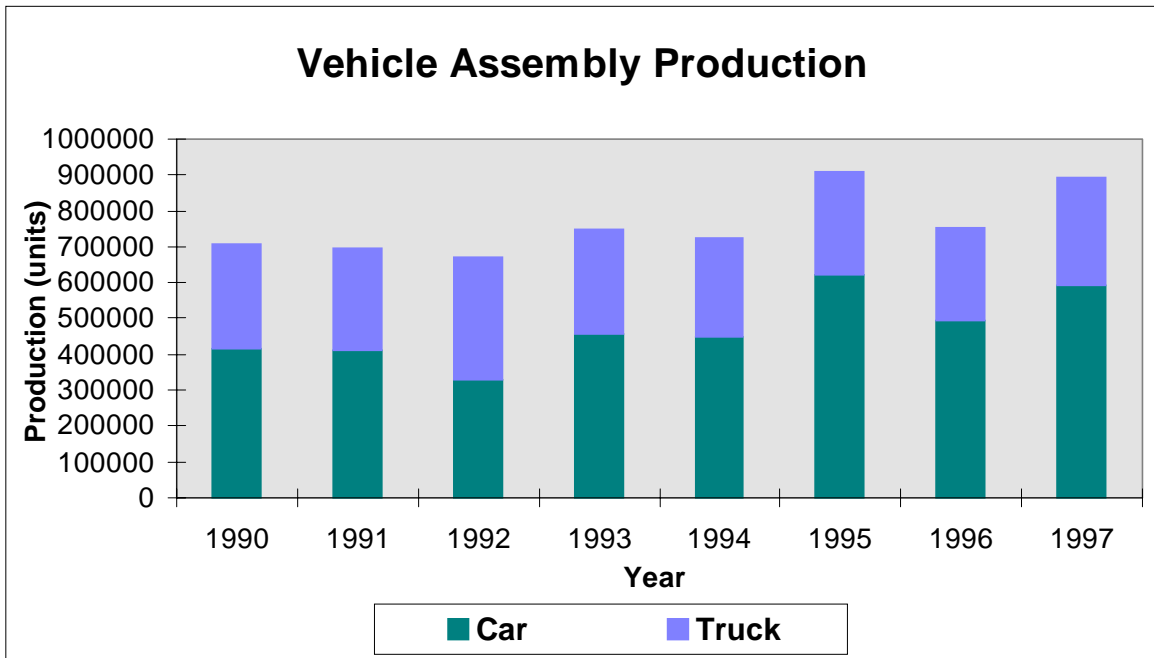
CHART 1:



Vehicle Assembly Production

In 1997, assembly operations accounted for just under 70% of GMCL's energy consumption. How these operations perform on a consumption per unit basis is an essential indicator of our overall energy consumption performance. Chart 2 presents annual vehicle production, which has increased 21% over the 1990 through 1997 period.

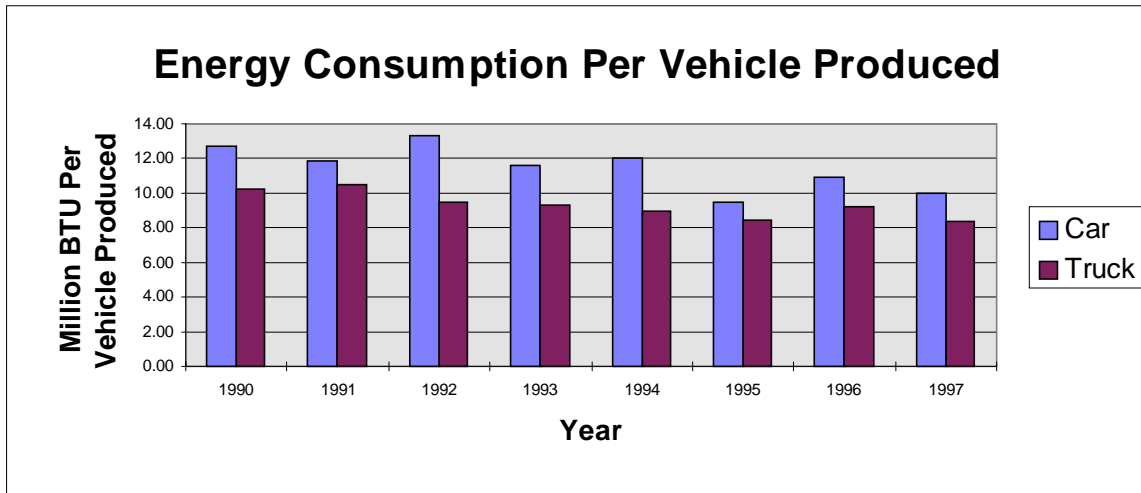
CHART 2:



Energy Consumption Per Vehicle Produced

Energy consumption per vehicle produced data for our assembly operations is presented below in Chart 3. Energy consumption per vehicle produced has dropped 22% for car assembly operations, and 18% for truck assembly, for the period 1990 through 1997.

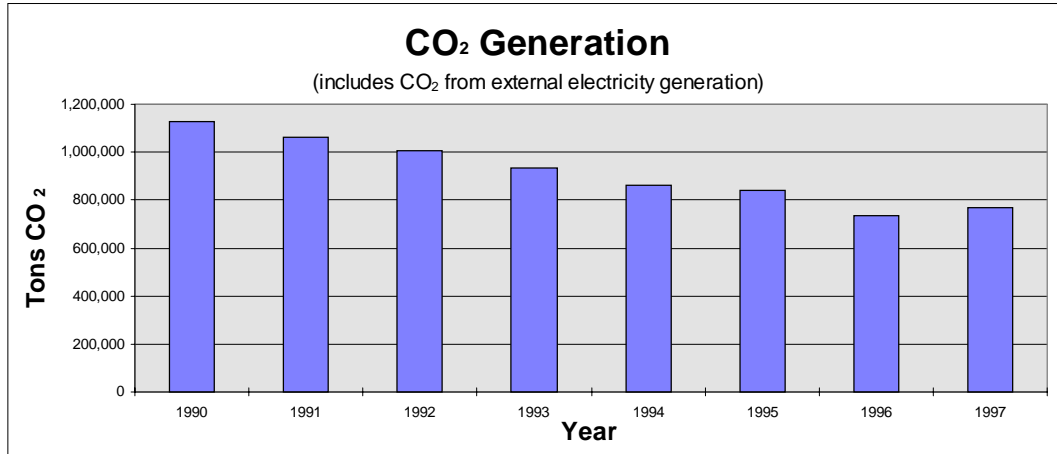
CHART 3:



Stationary CO₂ Generation

CO₂ emissions associated with GMCL energy consumption have decreased 32% over the period 1990 through 1997. CO₂ emission data is presented below on Chart 4.

CHART 4:



Energy Conservation at General Motors

General Motors Corporation (GM) formal environmental policies are embodied in the GM Environmental Principles (see page 2). These principles establish the framework for GM's resource conservation activities. Within this framework, several significant initiatives are underway to address materials reduction, reuse, recycling, and energy and water conservation.

In 1997, GM established aggressive goals for facility resource conservation and pollution prevention. One management objective is to work towards a 20% reduction in energy usage (baseline year 1995), by the year 2001. Energy efficiency is a key element of GM's energy strategy which includes five distinct areas: rates, conversion, control, conservation and operations

The Fuel Conversion activity is aimed at maximizing the use of environmentally safe and sustainable energy sources through the conversion of coal and oil fired boilers to natural gas. Prior to switching fuels, an evaluation is conducted to determine the feasibility of eliminating steam loads altogether. GMCL converted two of its coal fired burners, at the Oshawa, Ontario manufacturing complex, to natural gas. The first conversion in Oshawa took place in 1985, the second in 1990.

Controls Initiatives – the installation of a strategic energy management system – is another key element of GM's energy strategy. In 1997, GMCL installed energy management systems in the Windsor, Ontario, Transmission Plant, and the Oshawa, Ontario, Car Assembly Plant Paint Facility.

Installation of energy-efficient lighting is another key energy initiative across the Corporation. GM of Canada plans to complete a major lighting retrofit project in the Oshawa Car Assembly Plant by November, 1998. By utilizing more efficient, high quality and state of the art lighting products, the project will both improve the quality of plant lighting, and save energy. The new high bay lighting (General Lighting) in the Car Body Plant, called Metal Halide lighting, provides better lighting levels with 46% less energy, provides a more even distribution of lighting across work surfaces, and provides a better color rendition index score (85% of the natural day light, compared to 65% for the old fluorescent lighting). The new Line Lighting, T8 fluorescent lighting, provides the same light output with a better color rendition index score (85%), and consumes 38% less energy.

Site utility managers and energy coordinators continue to identify numerous other energy savings projects through opportunities in heat recovery, HVAC, and process improvements. Some of the other energy conservation initiatives completed in 1997 by GMCL facilities are:

Location: Windsor, Ontario: Transmission Plant
Project: Implementation of an Energy Management System
Description: Installation of a computer system which automates the start-up and shut-down of production processes and building lighting/heating systems.
Energy Savings: Electricity: 2,889 million BTU
Gas: 3,387 million BTU

Location: St. Catharines, Ontario: Components Plant
Project: Direct Aeration of Oil Recovery Storage Tanks
Description: Compressed air had been generated and supplied by the Powerhouse. Air of this quality and expense is not required for this application. Blowers were installed at the treatment unit to produce and add air directly to the process.
Energy Savings: Electricity: 8,850 million BTU

Location: Ste. Therese, Quebec: Car Assembly Plant
Project: Ambient Air Temperature Reduction
Description: The plant ambient air temperature was reduced by 3 °F to 68 °F from 71 °F.
Energy Savings: Natural Gas: 7,640 million BTU

Location: Ste. Therese, Quebec: Car Assembly Plant
Project: Compressor Replacement
Description: Refurbish and install a 3,000 CFM compressor, to replace a 6,000 CFM compressor, for use during non-production periods.
Energy Savings: Electricity: 13,400 million BTU

Location: Oshawa, Ontario: Car/Truck Assembly Plants, Fabrication Operations
Project: Compressed Air Audits – Air Leak Repairs
Description: All Oshawa plants completed compressed air audits and subsequently performed required leak repairs.
Energy Savings: Electricity: 9,870 million BTU

Energy Consumption and GHG Projections

The highly competitive and global nature of the automobile industry prevents us from publishing detailed projections of future energy consumption and GHG emissions. Facility emissions are correlated with production levels. If production increases, energy consumption and therefore emissions, will increase. Factors affecting our production plans include consumer demand for automobiles, consumer preference (i.e. between makes, models, size and optional equipment content), and competition between facilities for product allocation. GMCL is striving for continuous improvement in the environmental performance of our facilities.