

Action Plan Update for Manufacturing and Assembly Facilities

Prepared for

CSA Climate Change, GHG Registries GHG Challenge Registry

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Executive Summary

General Motors has made the goal of reducing environmental impacts of its products and processes a top priority. General Motors of Canada Limited (GMCL) recognizes Canada's international commitments related to climate change. In order to meet these goals, significant changes in the behavioural and consumptive patterns of all Canadians will be necessary. GMCL continues to be committed to the voluntary approach since it will encourage us to explore new and innovative technologies and assist in bringing them to our operations, and to the customer, in the most cost effective manner.

This report is GMCL's third submission to the Canadian Greenhouse Gas Challenge Registry (GHG CR), and would be its twelfth update to the former Voluntary Challenge and Registry Inc. (VCR). The report highlights our progress in reducing greenhouse gas emissions from our facilities. As part of the report, we have shared a number of energy efficiency and conservation initiatives undertaken to help reduce emissions from our operations. In addition to energy efficiency and conservation projects GMCL has realized efficiencies through rationalization of production over this time period. While producing more vehicles today than in 1990, there are fewer plants in operation, which inherently lends to additional energy efficiencies.

For the period 1990 to 2006:

- Total energy consumption has been reduced 48% from 4740 MWh to 2468 MWh.
- Energy intensity normalized to vehicle production has been reduced by 38% for car assembly and by 23% for truck assembly.
- CO₂ emissions associated with GMCL energy consumption have decreased 49% over the period 1990 through 2006 and 58% if CO₂ from purchased electricity is not factored into the total.
- Highlighted Energy efficiency initiatives have saved over 56 million kWh and avoided 33 kilotonnes of CO₂ emissions since 1990.

The automotive industry, and GMCL specifically, have made great strides in reducing greenhouse gas emissions from our products and our facilities and we are committed to seeking further reductions. GMCL has a clear and consistent track-record of disclosing greenhouse gas emissions performance from our facilities and the story has been one of clear and consistent reductions. We believe this report will provide sufficient information to the GHG CR for GMCL to remain a "Gold Champion Level Reporter".

Organization Profile

General Motors of Canada Limited (GMCL) is Canada's largest industrial manufacturer of passenger cars, light trucks, and automobile components. GMCL is the country's largest exporter with a workforce of approximately 20,000 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, exporting approximately 85% of this production primarily to the United States. Total vehicle assembly production for the 2006 calendar year was 794,323 cars and light duty trucks.

Manufacturing Operations

Oshawa, Ontario

Car Assembly Plants 1 & 2 – Chevrolet Impala sedans, Monte Carlo coupes, Buick Allure and Lacrosse sedans and the Pontiac Grand Prix. Plant 1 operates on 3 shifts, while Plant 2 operates on 2 shifts.

Truck Assembly Plant – GMC and Chevrolet extended and crew cab versions of the full-size, four-door, two-wheel and four-wheel drive light duty pickup trucks. The Plant operates on 3 shifts.

Other Manufacturing Plants – suspension components and exterior sheet metal stampings

St. Catharines, Ontario

Glendale Ave (Engine) Plant – V-8 engines, HFV6 engines, V8 Aluminum Blocks, V6 Camshafts and transmission gears.

Ontario Street (Components) Plant – Front wheel transmission final drives, differential gear assemblies, output shafts, miscellaneous transmission components, component assemblies and forgings.

Windsor, Ontario

Transmission Plant – Four-speed electronic, front-wheel drive automatic transmissions and components for other corporate transmissions.

GMCL has a joint venture with Suzuki called CAMI Automotive Inc., located in Ingersoll, Ontario. However for the purpose of this report CAMI was not included as it is only a joint venture.

In addition to the manufacturing and assembly operations which have been included in this report, GMCL also operates four Parts Distribution Centres (PDCs) located across the country (a fifth one was closed in mid 2006) and an administrative building, the Canadian Headquarters (CHQ), located in Oshawa. GMCL also owns and operates a fleet of vehicles used for company business. Emissions from these activities were evaluated and it was determined that they represent approximately 3% of the total greenhouse gas emissions reported from the manufacturing and assembly facilities. For this reason, emissions from these activities have

been, and will continue to be, excluded from GMCL GHG CR and previous VCR report submissions.

1. Senior Management Support

1.1 *Endorsement*

This report represents General Motors of Canada Limited (GMCL) third submission to the Canadian Greenhouse Gas Challenge Registry (GHG CR), and twelfth update to the former Voluntary Challenge Registry Inc. (VCR). We believe baseline tracking from 1990 and securing annual improvements are important elements of environmental leadership in today's Kyoto climate.

Further to GMCL original letter of intent and the submission of our Action Plan dated November 1995, GMCL strongly supports the objectives of the GHG CR's objectives and voluntary approach to reducing GHG emissions. Since GMCL's original letter of intent and Action Plan, GMCL has submitted an annual update every year since 1996.

GMCL has significantly reduced emissions of CO₂ through the commitment, creativity and innovation of its employees. From 1990 through 2006, GMCL's overall emissions of CO₂ from manufacturing facilities have been reduced by 49%. This achievement is based, in part, on the corporation's ongoing focus on the need to conserve energy in order to reduce environmental impact and reduce costs, and also in part on the consolidation and rationalization of facilities across North America. Despite some plant closures, Canadian vehicle production has actually increased by 12% relative to 1990. This focus on conservation has led to the implementation of many large and small energy conservation projects as well as the review and incorporation of energy efficiency technologies in our processes. GMCL encourages all employees to find ways to implement the GM Environmental Principles in their daily responsibilities.

We continue to reduce energy consumption with a goal of a 25% reduction by 2010, compared to 2000 as a base year. This builds on our previous target of a 25% reduction by 2005 compared to a base year of 1995.

GMCL continues to pursue new production opportunities for a number of our facilities. We will endeavour to undertake these new opportunities without increasing total CO₂ emissions. However, if production volumes increase more rapidly than our ability to achieve off-setting energy savings then total energy consumption and GHG emissions may increase. In addition more stringent environmental requirements related to the abatement of volatile organic compounds (VOCs) emissions may actually increase our energy consumption. GMCL is striving for continuous improvement in our facilities' environmental performance.

GMCL continues its commitment to the GHG CR with the submission of our 2006 update. In 2006, we were very proud to be recognized by VCR with our 8th consecutive "Gold Champion Level Reporter" status for our 2005 report. In order to achieve success and assist industry in finding cost-effective ways to reduce our impact on the environment, voluntary initiatives need substantial participation and we hope that momentum gained by GHG CR continues.

Please refer to the cover letter for the President's Statement of Endorsement.

1.2 Commitment to Regular Reporting

Since 1994, GMCL has continued our commitment to annual reporting of greenhouse gas emissions through the former Voluntary Challenge Registry Inc., and since 2005 through the Canadian GHG Challenge Registry. For the past eight years GMCL has been recognized as a "Gold Champion Level Reporter".

1.3 Internal Practices on Climate Change

Voluntary Approaches to Environmental Protection

GMCL believes that greenhouse gas reductions can be achieved by encouraging a gradual shift in behavioural patterns and economic activities to lessen greenhouse gas emitting pursuits. This can be done most efficiently, and with the lowest cost to the Canadian economy and society, by first pursuing voluntary approaches and second broad-based market driven measures.

Command and control measures should be undertaken only where there is overwhelming evidence that they are required and where neither voluntary approaches nor economic instruments have successfully yielded the necessary reductions in greenhouse gas emissions. We strongly support the voluntary approach and believe it must be the cornerstone of Canada's response to the climate change issue. We view the GHG CR, formerly VCR, as a key element in Canada's response to the international climate change challenge.

GM Environmental Management System/ISO 14001

GM has recognized the significant value of a structured environmental management system (EMS). GM has integrated its, multiple, independently applied management systems into a common system that is applicable globally.

GM has defined its global EMS model for its facilities around the International Organization of Standardization (ISO) Standard 14001, an environmental management system comprised of seventeen elements which require an organization to develop policies and procedures to manage its processes, products, and services that interact with the environment. These elements provide a common framework and specification for GM units to understand how their activities interact with the environment and to improve management of these activities in an ongoing cycle. This corporate EMS enables GM to move more efficiently in implementing the GM Environmental Principles (see Appendix) and the GMCL Environmental Policy.

The management of energy is a part of this EMS, and elements of this process have been the framework for our GM Canada energy management operations since the early 1990's. Since 2001 all of GMCL's Ontario manufacturing sites have had their environmental management programs third-party certified in conformance with the ISO 14001 Standard for Environmental Management Systems. The facilities continue to improve their EMS and maintain their certification with regular third-party surveillance audits.

General Motors of Canada Limited Environmental Policy

As a responsible corporate citizen, General Motors of Canada (GMCL) is dedicated to protecting human health, natural resources and the local and global environment, in accordance with the Environmental Principles of General Motors Corporation. This dedication reaches further than compliance with the law to encompass the integration of sound environmental practices into our business decisions. This policy is based on the integration of risk-based, cost effective management practices into site activities with the aim of continually improving environmental performance.

GMCL is committed to assess the environmental impacts of its activities, products or services as a basis for its environmental management programs and to reduce wherever practicable these impacts through the establishment of appropriate objectives and targets.

In particular, GMCL will strive to achieve the following objectives through continued execution of our Environmental Management System:

1. Comply with all applicable environmental laws and regulations, and other requirements.
2. Assign management responsibility for the environment in all areas of our facilities and ensure that all employees are aware of their individual responsibilities for acting in accordance with this policy, while providing effective information and training to encourage individuals to contribute effectively.
3. Practice and promote effective prevention of pollution in accordance with a hierarchy giving top priority to waste prevention at the source, elimination or reduction of wasteful practices, and recycling.
4. Maintain communications with our local community, legislators, regulators and other organizations with an interest in our environmental performance.

In accordance with our Environmental Management System (EMS) requirements, we will regularly review environmental performance and our facilities' objectives and targets to assess progress toward continual improvement. This policy statement will be periodically reviewed to ensure its continuing suitability, be available to the public and communicated to all persons working for, or on behalf of, GMCL.

Arturo Elías
President
General Motors of Canada Ltd.

1.4 Management Systems

As stated earlier, the management of energy is a part of our EMS and elements of this system have been the framework for our GM Canada energy management operations.

One of the key elements in our ISO 14001 EMS is Monitoring & Measurement. Since the 1980's Energy Monitoring, Tracking and Reporting systems at GMCL facilities have evolved from manual meter readings to a fully automated Web-based integrated system.

As a vital tool in our energy conservation efforts, GMCL has used a Web based Utility Monitoring System (UMS) since 2002/2003. The system provides real-time energy consumption information from all of our Canadian plants to the Energy Team Members in each facility. Furthermore, each Canadian manufacturing facility has an energy co-ordinator assigned to review the facility's energy usage and conservation planning. The Regional Utilities Operations Manager oversees GMCL's energy usage and programs.

The UMS provides consolidated consumption, updated every 15 minutes, for various commodities including: natural gas, electricity, steam, compressed air, and water. Reports are regularly used to monitor and track energy conservation initiatives and non-production turn down efforts.

The integration of this UMS has increased our ability to continuously reduce our energy demands. Between 2003 and 2006 energy consumption at GMCL decreased by approximately 15% (excluding the Oshawa Car Plant, see discussion pg 12) and resulted in approximately 21% reduction in our GHG emissions. Transition to this web-based real-time UMS has also been instrumental in reducing our energy expenditures and this system has had a tremendously short pay back period of approximately two months. Monitoring energy this closely permits us to pilot new energy saving initiatives that historically would have been difficult to pursue due to the unquantifiable impacts to production. Now energy conservation activities can be monitored in real time and any potential impact to production identified nearly instantaneously. This prevents actual disruptions to production and gives added confidence to management to tackle new initiatives. In 2005 our UMS was recognized by Natural Resources Canada (NRCan) with an Industrial Energy Innovator award in the category Monitoring, Tracking and Reporting.

The migration to this web-based UMS began slowly at our Oshawa Autoplex facility and gradually expanded to all our Ontario manufacturing facilities including our St. Catharines facilities and our Windsor facility.

Many elements of our EMS have documented procedures/processes, such as the determination of objectives and targets, documentation of programmes, monitoring, and reporting progress to senior management.

As a company GM and GMCL have processes for decision making that involve annual reviews of progress towards goals for corporate and applicable regulatory reporting requirements. GMCL Senior Management reviews progress towards environmental and energy targets on a regular basis, which allows for informed decision making.

2. Base Year Quantification

2.1 Quantification Target Setting

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 weather conditions; the age and efficiency of the facility and equipment to name a few. GMCL facilities throughout Canada primarily utilize the following forms of energy: natural gas, coal, fuel oil and electricity. This report covers energy consumption and GHG emissions from GMCL manufacturing facilities located throughout Ontario (and a facility in Quebec which has since been closed), excluding GMCL's joint venture, CAMI Automotive, in Ingersoll, Ontario.

We have retained the base year of 1990 for the purposes of this report. The direct GHG emissions were calculated to be approximately 712 kilotonnes CO₂ and 1016 kilotonnes CO₂ including indirect GHG emissions. The direct GHG emissions were calculated based on quantified fuel usage data and appropriate emission factors. It should be noted that GMCL used the published US EPA AP-42 emission factors for this year's calculation of the base year information as well as all the subsequent years. Previously the facility had used a variety of emission factors both published and facility specific but in the interest of continuous improvement, increasing public transparency of our emissions and harmonization of emissions reported between varying government and non government programs GMCL had decided to use a single set of emission factors. The indirect GHG emissions were calculated from electricity usage in Ontario and Quebec and the GHG CR Guide emission factors.

Significant progress has been achieved to date as can be seen in the Section 3.2, Figure 3.1 and Table 3.1.

2.2 Quantification Methodology

Fuel Use and Conversion Factors

Since GMCL facilities do not directly measure CO₂ emissions, emission factors of CO₂ for each form of energy are used. The emission factors given in Table 2.1 are applicable to all reporting years. As respective sources are modifying their emission factors to more accurately account for their operations and GMCL conducts similar activities, previously reported levels may be modified up or down to reflect the new information.

Table 2.1: Conversion Factors for Fuels Used - All Reporting Years

Fuel	Fuel unit	Energy to fuel unit (MWh per fuel unit)	GHG to fuel unit (kg CO ₂ per fuel unit)
Oil	U.S. gal	0.044	11
Coke	Tonne	7.70	3040
Coal	Tonne	7.70	1819
Natural Gas	MCF	0.300	55

A detailed methodology was provided in GMCL's VCR update report dated October 2000 giving an example template of how energy consumption is reported within GM Canada manufacturing facilities. GMCL has modified this methodology as a result of modifying the emission factors used for calculating generation of CO₂. GMCL continues to collect monthly usage information for all utilities at each plant. Monthly information is used to generate an annual total for each fuel type at each facility. This information is converted to MWh using appropriate emission factors as consolidated on the CSA Climate Change GHG Registries website (original source: Canada's Emissions Outlook: Update, Energy Policy Branch, Natural Resources Canada). Data supplied on the website is in GJ or MJ and converted to MWh. Finally, usage information is converted to CO₂ emissions as per the emission factors published by the U.S. EPA in AP-42.

In 1997, manufacturing operations in Oshawa and Windsor were sold to other companies that continued to manage those operations. Energy consumption data for these facilities have been removed for all years and the adjusted baseline has been reflected in previous GMCL Update Reports. Similarly in 1999, Delphi Operations in Oshawa were sold and the operations continued to operate under different management which necessitated the modification of GMCL's baseline. Once again in 2005 GMCL underwent a change in their business portfolio and sold the London Diesel operations which continued to operate under different management. As a result the 2006 year report removed the London operations from GMCL's baseline.

Since 1990 GMCL has realized efficiencies through the rationalization of production. While producing more vehicles today than in 1990, there are fewer plants in operation, which inherently lends to additional energy efficiencies. These plant closures remain in the GMCL baseline and contribute to the overall GHG reductions achieved.

2.3 GHG Emissions Inventory by Gas Type

CO₂ is the only greenhouse gas generated in significant quantities by our direct and indirect emissions, which are shown in Figure 3.1. For our company, CH₄ and N₂O emissions have been found to be negligible. A review of their contribution concluded that the combined addition of both CH₄ and N₂O emissions is less than 1% of CO₂ emissions. For the purpose of this report, CO₂ emissions are interchangeable with CO₂e emissions.

For example:

Natural Gas

A comparison of the kilogram carbon dioxide equivalents emitted/cubic meter for methane and nitrous oxide to the kilogram carbon dioxide emitted /cubic meter for natural gas combustion illustrates that their contribution is negligible when compared to carbon dioxide emitted/cubic meter. The emission factors used were provided in Table 3 of the Canadian GHG Challenge Registry Guide to Entity & Facility-Based Reporting, Aug. 2005 (GHG CR Guide).

Sample calculation:

Emission factor for CH₄ (0.000037kgCH₄/m³) x GWP (21) = 0.00077kgCO₂e/m³

Fuel Source & GHG	Emission Factor (kg CO ₂ e/m ³)	% of CO ₂ Emission Factor
Nat Gas - CH ₄	0.000777	0.04%
Nat Gas - N ₂ O	0.01023	0.54%
Nat Gas - CO ₂	1.891	100%

Heavy Fuel Oil - #6

Similarly, the non-CO₂ direct emissions were negligible for heavy fuel oil #6. The emission factors used were provided in Table 3 of the GHG CR Guide.

Emission factor for N₂O (0.00012kg N₂O/L) x GWP (310) = 0.01984kgCO₂e/L

Fuel Souce & GHG	Emission Factor (kgCO ₂ e/L)	% of CO ₂ Emission Factor
Heavy Oil #6 - CH ₄	0.00252	0.08%
Heavy Oil #6 – N ₂ O	0.01984	0.64%
Heavy Oil #6 - CO ₂	3.09	100%

2.4 Quantification Method by Gas Type

The method of base year quantification for CO₂ is described in Section 2.2.

2.5 Indirect Energy Emissions

For indirect emissions from electricity, CO₂ generation is calculated based on emission factors for electricity production by the public utilities in Ontario and Quebec. Initial GMCL submissions held indirect emissions from electricity in Quebec constant at 0.014 MWh per tonne of CO₂. In the spirit of continuous improvement several years ago we recalculated all the indirect emissions from our Ste. Therese facility using the conversion factors supplied in Table 4 of the GHG CR Guide. The emission rate goes up and down depending on the mix of green power, fossil fuel and nuclear energy used. Historical emission factors used for our calculation of indirect emissions from electricity produced in Ontario and Quebec are given in Table 2.2. Values for 2005 and 2006 have not been published yet therefore GMCL has carried the 2004 value forward for 2005 and 2006 until better information is available.

Table 2.2: Emission Factors Provided by GHG CR to Convert MWh to tonne CO₂

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ON	0.223	0.208	0.203	0.150	0.127	0.143	0.150	0.202	0.264	0.261	0.295	0.302	0.304	0.297	0.241
PQ	0.034	0.015	0.044	0.020	0.021	0.016	0.015	0.007	0.031	0.018	0.011	0.015	0.009	0.022	0.022

The variation in emission factors provided by the GHG CR results in variation in our calculated greenhouse gas emissions. If, instead of varying the emission factor each year, it is assumed that the 2004 emission factor applies to all previous years, GMCL would have seen a 50% reduction in greenhouse gas emissions from 1990-2006. Table 2.3 shows the impact of varying the emission factor per the emission factors provided by GHG CR website in 2006. As Figure 3.4 illustrates, the approach of varying the emission factors presents the most accurate annual releases, however it makes year over year comparisons difficult to assess because improvement in energy conservation may be overshadowed by the impact of changing emission factors associated with varying the mix of electricity sources.

Table 2.3: Impact of Varying the OPG Emission Factor

	1990 Emissions (kilo-tonnes)	2006 Emissions (kilo-tonnes)	% Change from 1990- 2006
Constant Emission Factors	1,041	515	50%
Variable Emission Factors	1,016	515	49%

3. Results Achieved

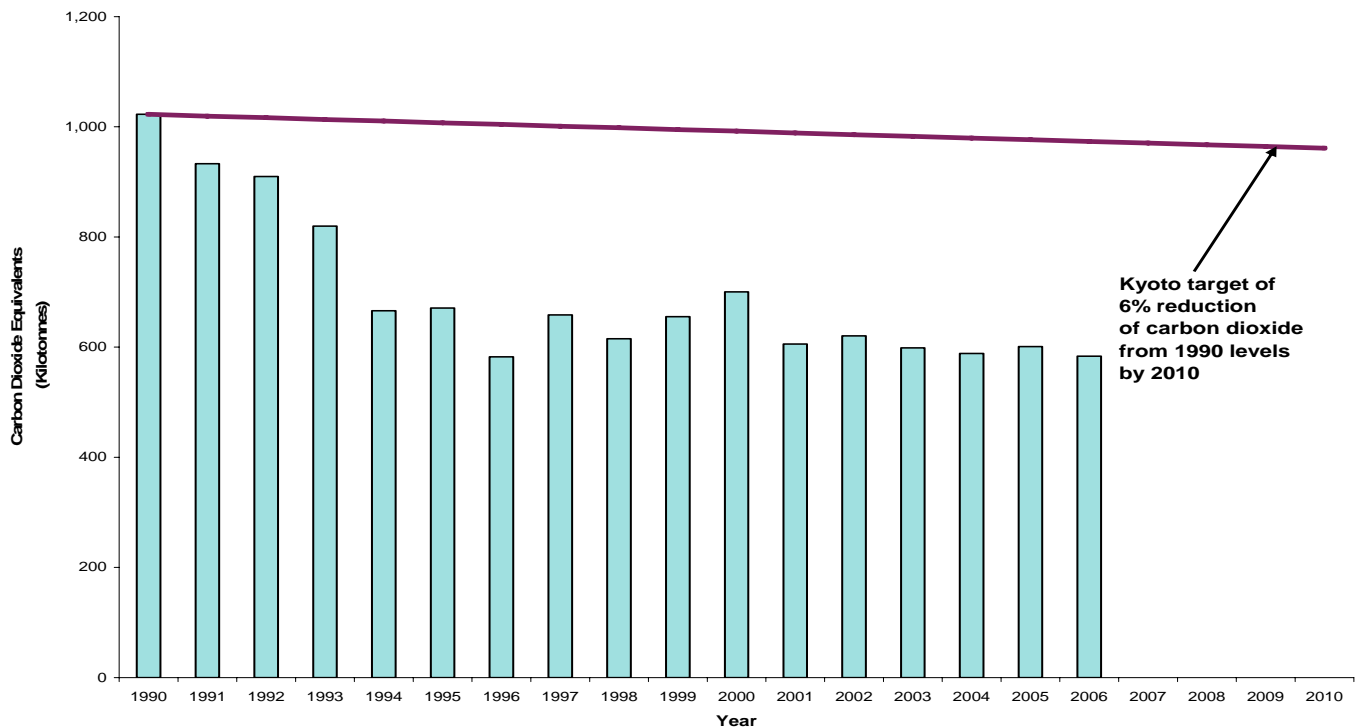
3.1 Reported Results

GMCL is committed to reporting GHG emissions for the most recent reporting year, 2006. All of the 2006 data has been added in the updated tables and figures throughout this report and include all years since our base year 1990.

3.2 All Reported Results Since Base Year

A significant reduction in GHG emissions can be seen in the provision of data for all years since the baseline year of 1990 in Figure 3.1.

Figure 3.1: CO₂ Generation Including CO₂ Generated from Electricity Consumed



3.3 Tonnage Emissions Inventory

Figure 3.1 above illustrates the results of total 2006 CO₂ equivalents, including direct and indirect emissions. Table 3.1 demonstrates the reduction of both direct and indirect GHG emissions since 1990. This decrease between 2005 and 2006 can be attributed in part to the stop of production at the Oshawa Truck plant during the month of September 2006 for a significant retooling initiative as they migrated their production platform to the next generation pick-up truck. The retooling activities allowed GMCL to shut down the Truck paint shop which consumes a significant amount of the total energy for the facility. However the other construction activities in the body and final assembly areas prevented significant energy reductions which impacted GMCL's energy consumption per unit produced metric.

Working against our energy conservation efforts and the truck plant retooling month as we attempted to decrease CO₂ emissions was the Car Assembly plant new paint shop commissioning. The construction for this paint shop began in 2004 and was completed in 2006. The new phosphate/elpo portion of the paint shop was completed in 2005 and significant production volume began passing through the new shop in July 2005 while the remaining topcoat processes continued to operate in the existing paint shop. In effect from July 2005 through September 2006 the Oshawa car plant facility operated two paint shops simultaneously which did impact their energy consumption and therefore CO₂ generation. The Car Assembly plant was successful in managing the conversion to the new facility from an energy consumption and CO₂ generation perspective as demonstrated by a modest 1% increase in CO₂

emissions between 2005 and 2006 despite running both facilities for 9 months of the year. The Car Assembly facility expects CO₂ emissions to begin declining in 2007.

Table 3.1: CO₂ Generation for GMCL Manufacturing Facilities (kilotonnes)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
On-site Generation	712	652	661	646	522	518	440	458	379	402	418	342	347	328	319	319	319
Including Electricity	1016	925	911	820	659	663	570	645	605	647	685	579	607	581	526	535	584

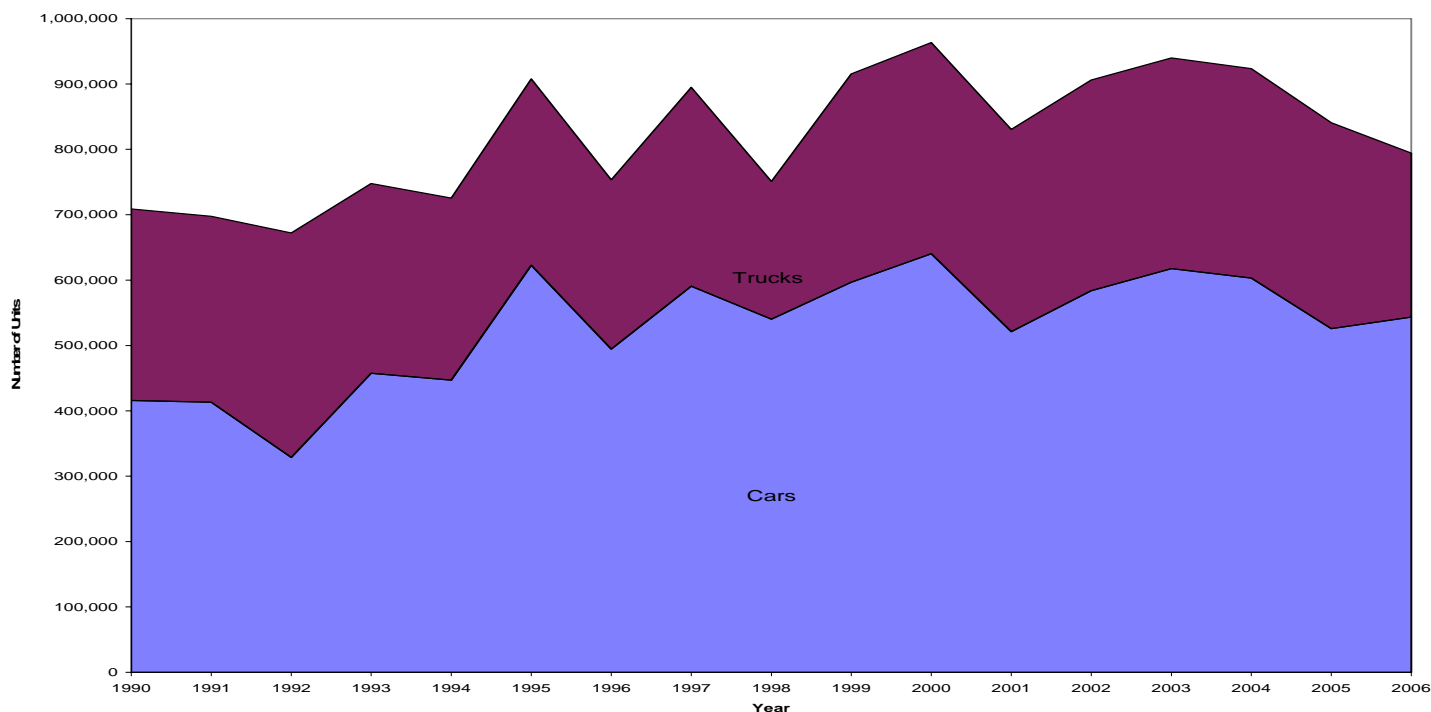
3.4 Emissions Inventory Since Base Year

Figure 3.1 CO₂ Generation Including CO₂ Generated from Electricity Consumed clearly demonstrates our GHG emission reductions since 1990. This is even more significant given our increases in Vehicle Assembly Production.

Vehicle Assembly Production

Vehicle assembly data given in Figure 3.2 reflects the production in Car and Truck Assembly Centres in Oshawa, Ontario and previously from Ste. Thérèse, Quebec and the Scarborough Van Plant since 1990. Annual vehicle production has increased 12% for the period 1990 through 2006 down from the 19% production increase reported last year between 1990 and 2005 as a result of the Truck Assembly Centre ceasing production for the entire month of September.

Figure 3.2: Vehicle Assembly Production



Energy Consumption and CO₂ Generation Normalized to Vehicles Produced

In 2006, automotive assembly operations accounted for 75% of GMCL's energy consumption. How these operations perform on a consumption per unit basis is an essential indicator of our overall energy consumption and CO₂ generation performance. The energy consumption per vehicle dropped by 38% for car assembly operations and by 23% for truck assembly, for the period 1990 through 2006. The CO₂ production per vehicle dropped by 32% for car assembly operations and by 19% for truck assembly, for the period 1990 through 2006. Detailed information is given in Table 3.2.

Figure 3.3 shows the kilograms of CO₂ produced per vehicle for assembly operations and the equation of a linear trend line (year 1 = 1990). The fitted line slope indicates a consistent performance of annual reductions from baseline of CO₂ intensity per vehicle although the actual yearly value for 2005 and 2006 are higher than 2004 driven in large part by the Oshawa Car Assembly CO₂ generation numbers which were influenced by the construction and start up of the new paint shop and the significant retooling initiative at the Truck Assembly Plant in September 2006. GMCL expects the CO₂ emissions per vehicle value to begin decreasing again in 2007.

Figure 3.3: CO₂ Generation at Assembly Plants Normalized to Production

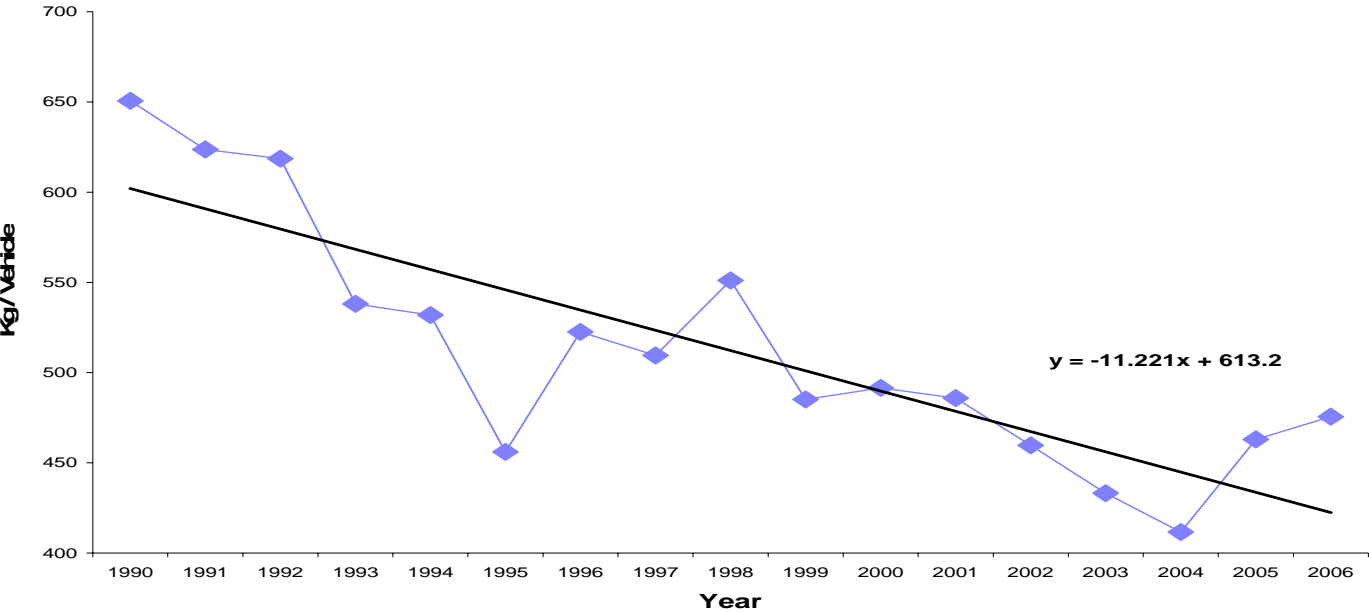


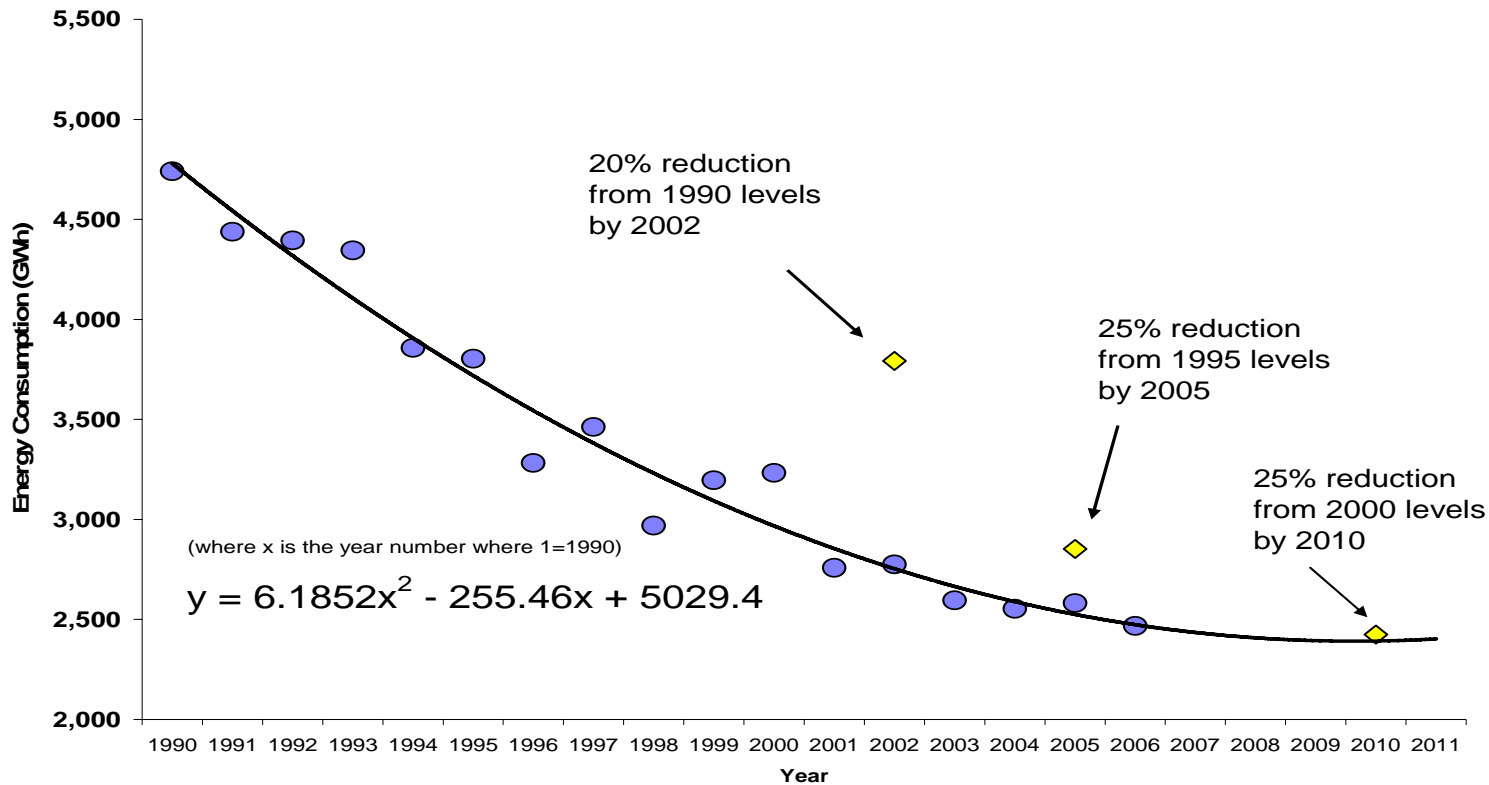
Table 3.2: Energy and CO₂ Intensity per Vehicle Produced

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Vehicles (thousands)	709	697	672	748	725	908	753	895	751	915	963	830	906	940	923	841	794
EC: Energy Consumption (GWh)	2,431	2,315	2,246	2,351	2,312	2,431	2,260	2,478	2,113	2,291	2,359	1,980	2,013	1,887	1,881	1911	1844
Normalized EC (MWh/vehicle)	3.43	3.32	3.34	3.14	3.19	2.68	3.00	2.77	2.81	2.50	2.45	2.38	2.22	2.01	2.04	2.27	2.32
CO ₂ Emissions (kilotonnes)	461	435	416	402	386	414	394	456	414	444	474	403	417	407	380	389	378
Normalized CO ₂ Emissions (kg/vehicle)	651	624	619	538	532	456	523	510	551	485	492	486	460	433	412	463	476

3.5 Comparison with Previous Targets

As reported in our 2006 report GMCL's goal to achieve a 25% energy consumption reduction by 2005 from a 1995 baseline was achieved. Figure 3.4 shows that GMCL reduced energy consumption by 32% since 1995 despite adding an entire third shift to one of our Oshawa Car Assembly Plants and initiating the construction of the new car paint shop.

Figure 3.4: Energy Consumption at GMCL Facilities compared to previous targets



3.6 Results Below Base Year Levels of CO₂e

Section 3.5 describes the improvement in total energy consumption between 1995 and the 2005 target date. In addition GMCL has achieved a 48% reduction of total energy consumption from 1990 base year to 2006. Sections 3.3 and 3.4 describe the reductions in CO₂ emissions, equalling 49% since 1990. The reduction in CO₂ can also be seen in Figure 3.1: CO₂ Generation Including CO₂ Generated from Electricity Consumed.

3.7 Verifiable Results

The calculations for this report were done internally and are verifiable against energy invoicing from suppliers. The calculations of greenhouse gas emissions were carried out using publicly available emission factors and are also verifiable. In addition, the on-site external utility specialist is a third party who has regular access to the energy data to make recommendations for potential conservation initiatives.

3.8 External Verification

GMCL was a member of the VCR Champions in Action program. In June 2003 the GMCL 2002 Action Plan Update underwent a Peer Review by the Champions in Action members.

Continuous improvement recommendations made during the Peer Review have been incorporated into this Action Plan Update. Furthermore, our energy efficiency projects are verified by a third party and both data and emission calculations are reviewed internally for verification.

GMCL is currently in the process of evaluating a system that will involve the third party verification of collected data.

3.9 Emission Reduction Offsets

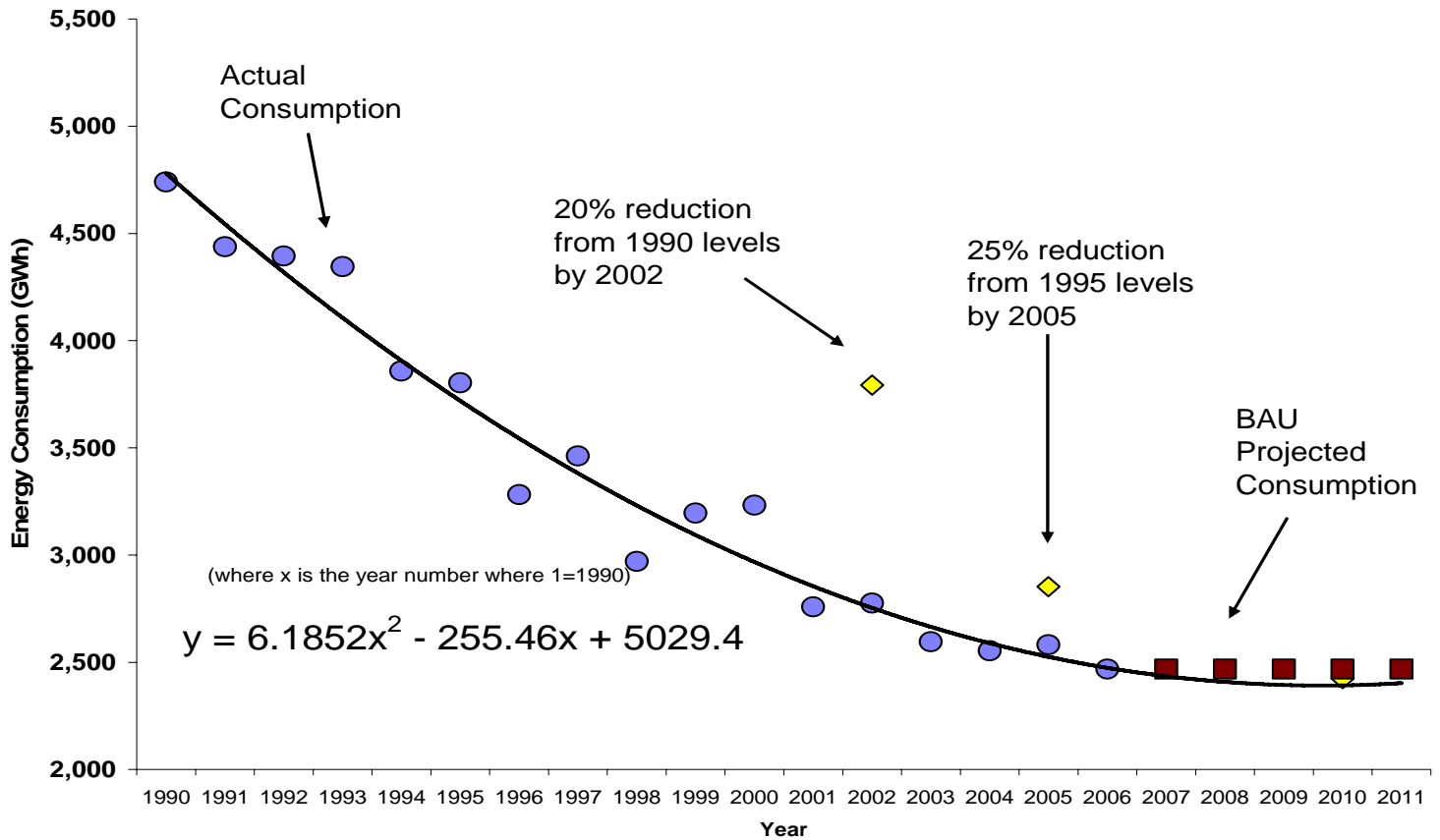
In addition to significant direct reductions in GHG emissions from our manufacturing facilities, GMCL has undertaken an offset initiative. Close to 50,000 trees and shrubs have been planted at several GMCL locations including the McLaughlin Bay Wildlife Reserve in Oshawa, Ontario and the Glendale Engine facility in St. Catharines, Ontario. GMCL will continue to track the number of trees planted and report out on offset values when we reach a “critical” number such that there is substantial impact to the bottom line of greenhouse gas emissions

4. Business-as-Usual Projection

4.1 Basis for Business-As-Usual Projection

Based on past performance that includes emission reduction efficiencies, GMCL has estimated projected energy consumption assuming the same fuel source mix, emission factors and continued energy efficiency programs, including indirect energy consumption (electricity) in Figure 3.4. If there were no ongoing energy efficiency program, GMCL would anticipate that energy consumption would remain unchanged. This is illustrated in Figure 4.1.

Figure 4.1: Business-As-Usual Projection – Energy Consumption

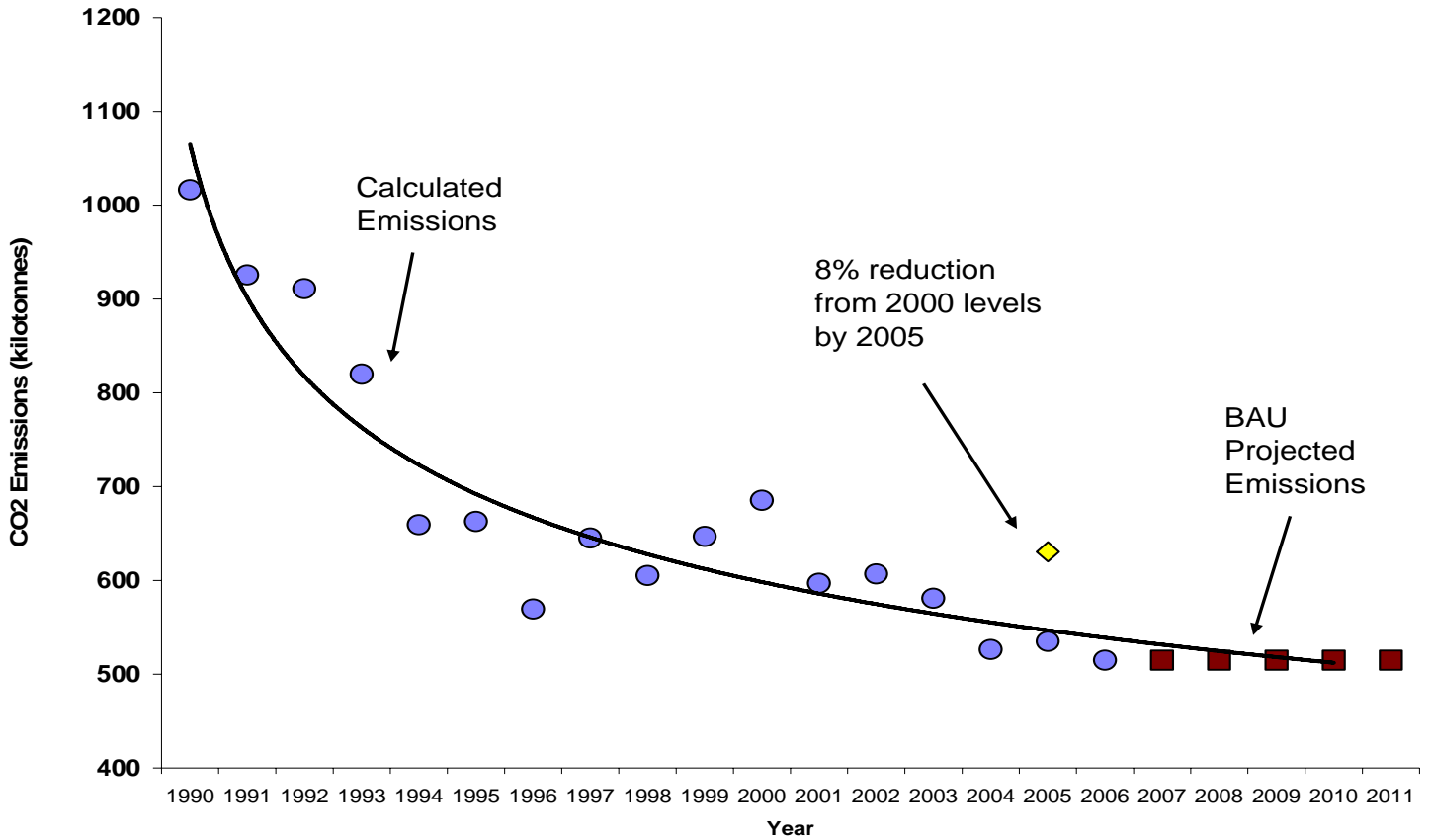


4.2 Business-As-Usual Projection - CO₂e

Based on past performance that includes emission reduction efficiencies, GMCL has estimated projected emissions, including indirect energy emissions in Figure 4.2. The Business-As-Usual Projection assumes the same fuel source mix, emission factors, and no change to the CO₂ emissions as a result of production levels or weather conditions.

Meeting GMCL's energy and CO₂ emission targets are key enablers to the corporation achieving its 25% reduction in energy consumption by 2010 as compared to 2005 baseline.

Figure 4.2: Business-As-Usual Projection – CO2 Emissions



4.3 Major Sources of GHG emissions

Facilities Energy Input by Fuel and Source

The major sources of GHG emissions are the various energy inputs or fuel sources. The total energy input into facilities is broken down, by source, in Figure 4.3. Table 4.1 shows the values of these fuel source numbers. GMCL has achieved a 48% reduction in energy consumption over this period.

Figure 4.3: Facility Energy Input by Fuel Source

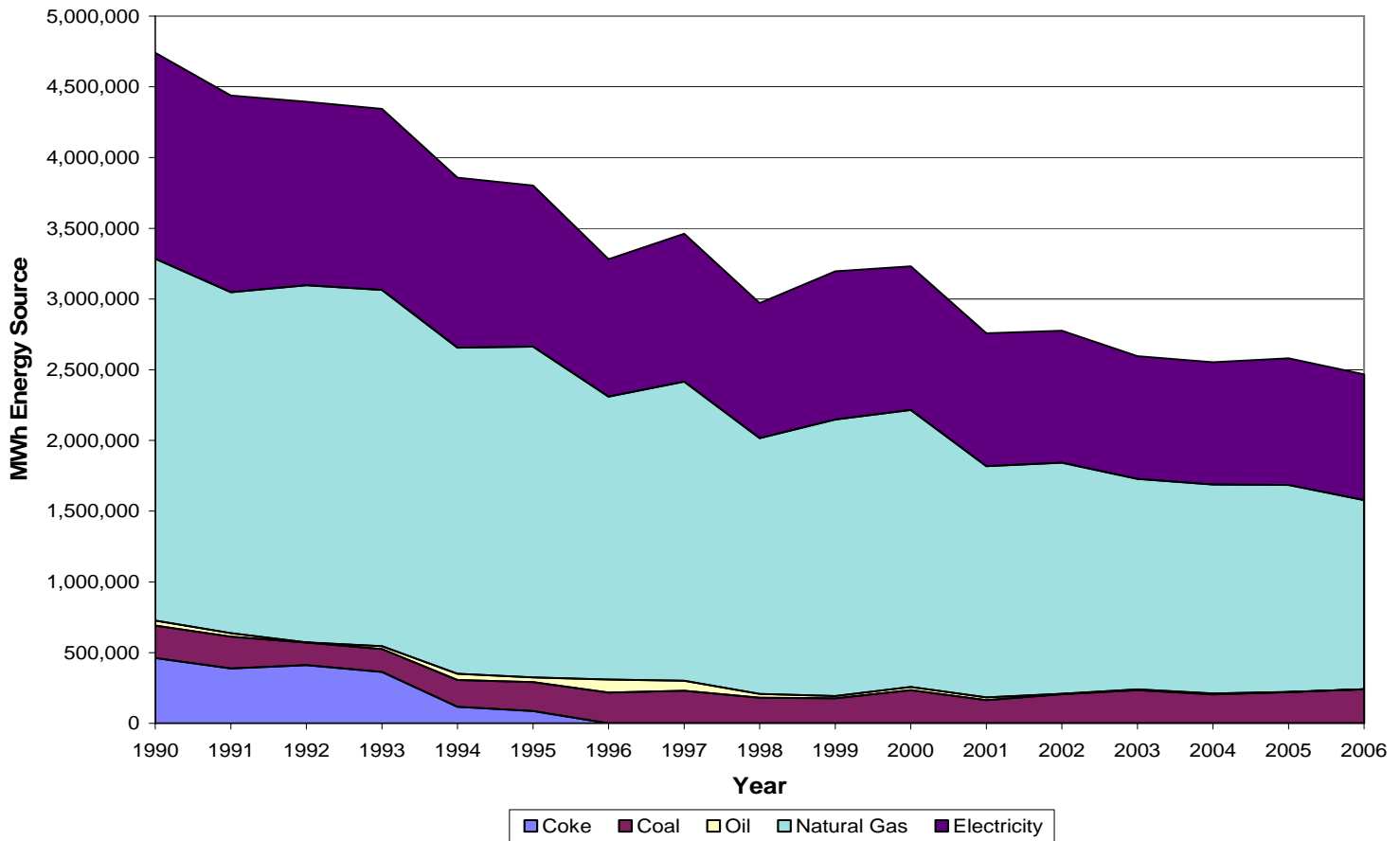


Table 4.1: Facilities Energy Input by Fuel Source (MWh)

	1990	2006
Natural Gas	2,559,034	1,336,692
Electricity	1,455,377	889,860
Coal	229,669	241,338
Oil	34,423	0
Coke	461,996	0
Total	4,740,499	2,467,889

GHG Contribution by Energy Source

The total CO₂ generated by facilities is broken down, by fuel source in Figure 4.4. Table 4.2 shows the absolute values of these CO₂ numbers. GMCL has achieved a 49% reduction in total

direct and indirect CO₂ generated over this period, and a 58% reduction if indirect CO₂ generated is not included. The CO₂ generation over the period takes into account changes in the mix in source generation of electrical power of supplied electricity from Ontario and Quebec.

Figure 4.4: Facilities CO₂ Generation by Fuel Source

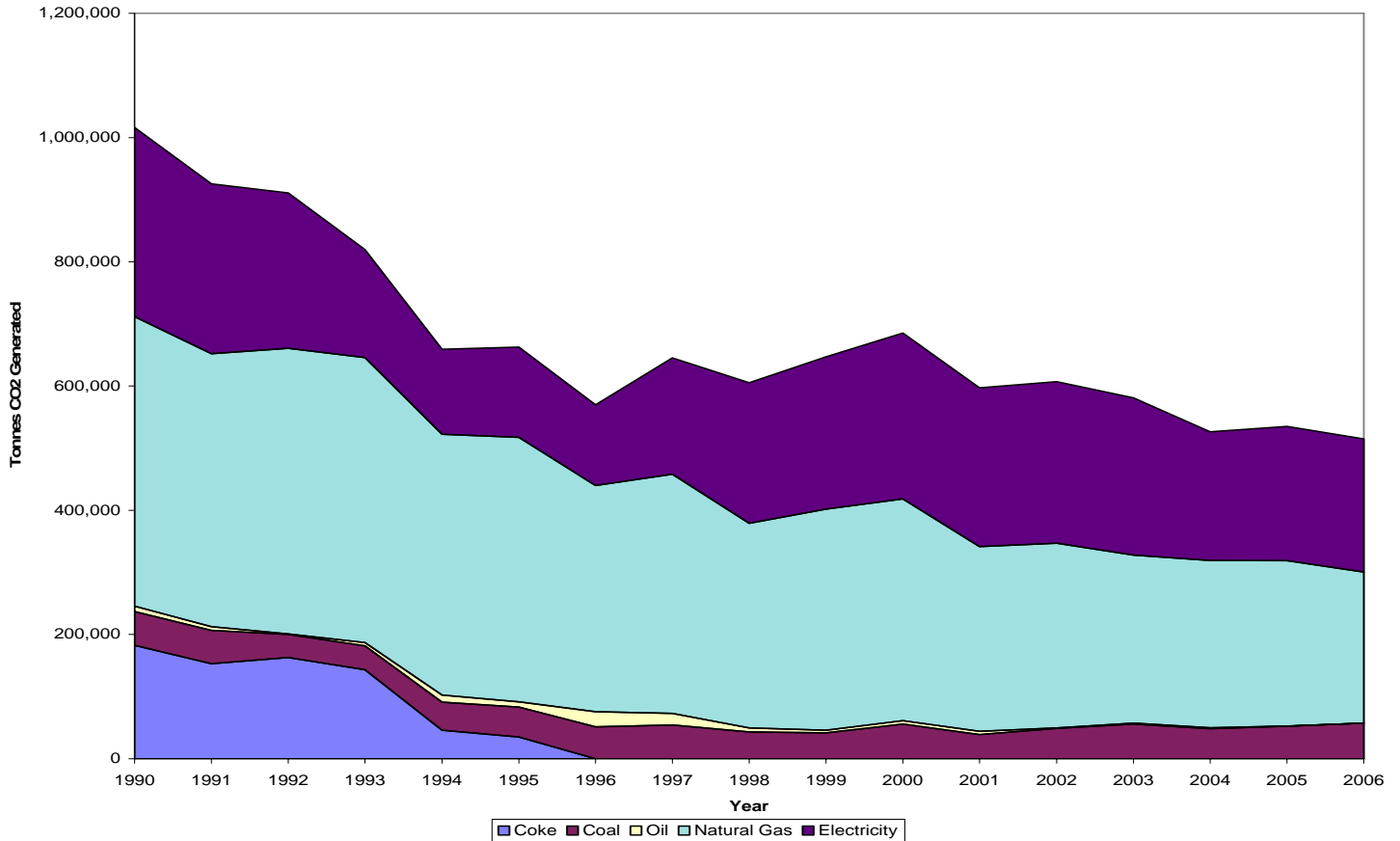


Table 4.2: Facilities CO₂ Generation Fuel Source (tonnes)

	1990	2006
Natural Gas	466,018	243,421
Electricity	304,568	214,456
Coal	54,285	57,043
Oil	8,917	0
Coke	182,516	0
Total	1,016,303	514,920

4.4 *Indirect Energy Emissions*

Please note that indirect energy emissions were included in Section 4.2 Business-As-Usual CO₂ Emission Projections.

4.5 *Energy Emissions Specified by GHG type*

Please note that the Business-As-Usual direct emissions were given for CO₂ in Section 4.2. It was determined that non-CO₂ emissions are negligible. Please see Section 2.3 for the documented explanation.

5. Target Setting

5.1 *Commitment to Target Setting*

GM has been committed to voluntary target setting, and continues to be, as described in Section 5.2.

5.2 *Target and Target Setting Process*

GMCL has set energy reduction targets for our operations since 1974. In 1997, GM established aggressive goals for facility resource conservation and pollution prevention with a management objective to work toward a 20% reduction in energy usage with a baseline year of 1990, by the year 2002, which was achieved. GM Corporate then set a goal for a 25% reduction in energy usage, with a baseline year of 1995, by the year 2005. GMCL reduced energy consumption by 32% since 1995 despite adding an entire third shift to one of the Oshawa Car Assembly Plants.

In 2003, a new goal was initiated by General Motors to reduce CO₂ emissions globally by 8% by 2005 in comparison to the baseline year of 2000. GM achieved a 12.5% reduction by 2005.

Energy efficiency is a key element of GM's energy strategy, which includes five distinct areas: rates; conversion; control; conservation; and operations. Activities are being targeted to reduce energy usage at each plant, focusing particularly on paint processes. Significant progress is also being made in the design of energy-efficient manufacturing and facility systems.

5.3 *Projected Targets to 2010*

Consistent with General Motors Global targets, GMCL has set a target of a 25% reduction in energy consumption by the year 2010 compared to a baseline of 2000. Significant reductions have been achieved between 2000 and 2006 and GMCL is on target to meet and exceed this current target.

In addition to the above target, GMCL has set a voluntary objective and target to reduce energy consumption by 230 GWh by 2011 from a baseline of 2005 which represents approximately a 9% reduction.

5.4 Target Review and Update Process

Reviews at GMCL track the energy consumption by facility at a minimum on a monthly basis. Annual reviews of progress toward and beyond the goals are carried out for corporate and applicable regulatory reporting requirements. GMCL Senior Management reviews the progress towards environmental and energy targets on a regular basis. The submittal of the annual GHG CR, formerly VCR report is one tool used in this review process. In particular GMCL plans to formerly review the energy targets in 2007/2008 as a result of potentially significant production reductions at both the Oshawa Car, Truck and St Catharines Glendale Avenue facilities. Once the impact of these reductions is understood GMCL will evaluate its target in line with our commitment to setting aggressive targets and monitoring and measuring our results.

6. Past Actions

6.1 Estimated Impacts

This report contains a selection of GMCL's energy savings projects for 2006 in Table 6.1. The energy savings are from GMCL manufacturing facilities located throughout Ontario. The chart shows energy saved for each project and the total yearly savings, in MWh and in tonnes of CO₂ Avoided. Site utility managers and energy coordinators continue to identify numerous other energy savings projects through opportunities in heat recovery, HVAC, and process improvements.

Table 6.1: Energy Efficiency Projects for 2006

Plant	Project	MWh Savings	Type	CO2 Avoided (tonnes)
Oshawa Truck Assembly Centre	Steam trap survey/repair	2638	Direct (Steam)	1554
	Paint Blow-off conversions from compressed air to electric fans	3719	Direct (compressed air)	2191
	Convert in-line tote mixer from compressed air to electric	4296	Direct (compressed air)	2532
	E-Coat knife gate valve to allow 3 & 4 recirc pump weekend shutdown	1294	Indirect (electricity)	792
Oshawa Car Assembly Plant	Prime booth temperature setback	4005	Direct (natural gas)	2360
	Interlock feather duster fans to the line	5690	Indirect (electricity)	3353
	Exhaust reduction	10990	indirect (electricity)	6476
	CUC free cooling	3829	Indirect (electricity)	2256
St. Catharines Glendale Ave. (Engine)	Fine bubble aeration, steam trap survey/repair, disconnect unnecessary lighting, supplemental heating	5122	Direct and Indirect	3018

St. Catharines Ontario Street (Components)	Fine bubble aeration, steam trap survey/repair, disconnect unnecessary lighting, HEPA recirculate, remote start/stop OMC, unit heater t-stats	11444	Direct and Indirect	6743
Windsor Transmission	natural gas reduction projects: weekend process exhaust shutdown, interconnection of chilled water loop for steam shutdown during summer shutdown, general exhaust shutdown	3377	Direct (natural gas)	3237
TOTAL		50916		30001

Electricity Consumption Efficiency Projects & CO₂ Savings

Over the years GMCL has made great gains in reducing energy consumption through the implementation of energy efficiency projects similar to those detailed in Table 6.1. Figures 6.1 and 6.2 illustrate the energy savings implemented from the selected projects each year along with the corresponding CO₂ emissions avoided for the energy savings achieved.

There are obviously fluctuations from year to year on the amount of savings achieved from the energy efficiency projects. These fluctuations can be attributed to many issues such as a downturn in economy resulting in less capital investments or “capturing the low hanging fruit” at each facility. Overall, GMCL’s energy reduction projects and energy efficiency initiatives have significantly reduced CO₂ emissions.

Figure 6.1: Energy Efficiency Projects – Energy Reductions

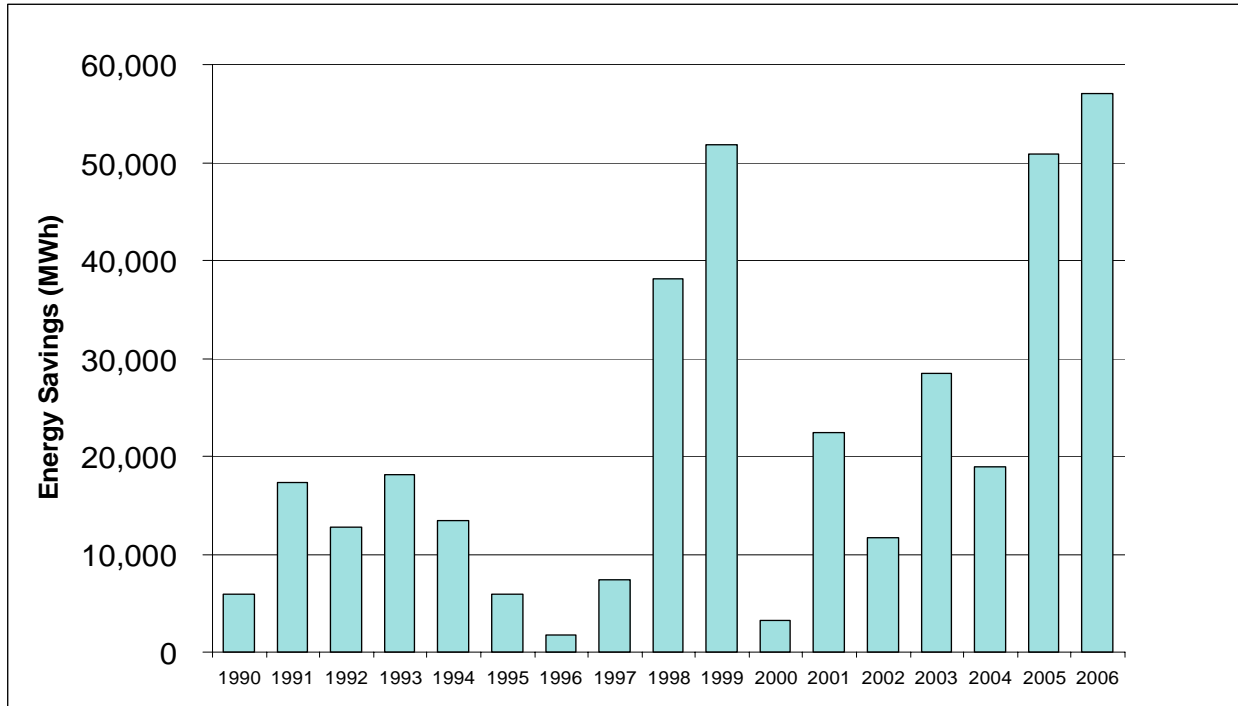
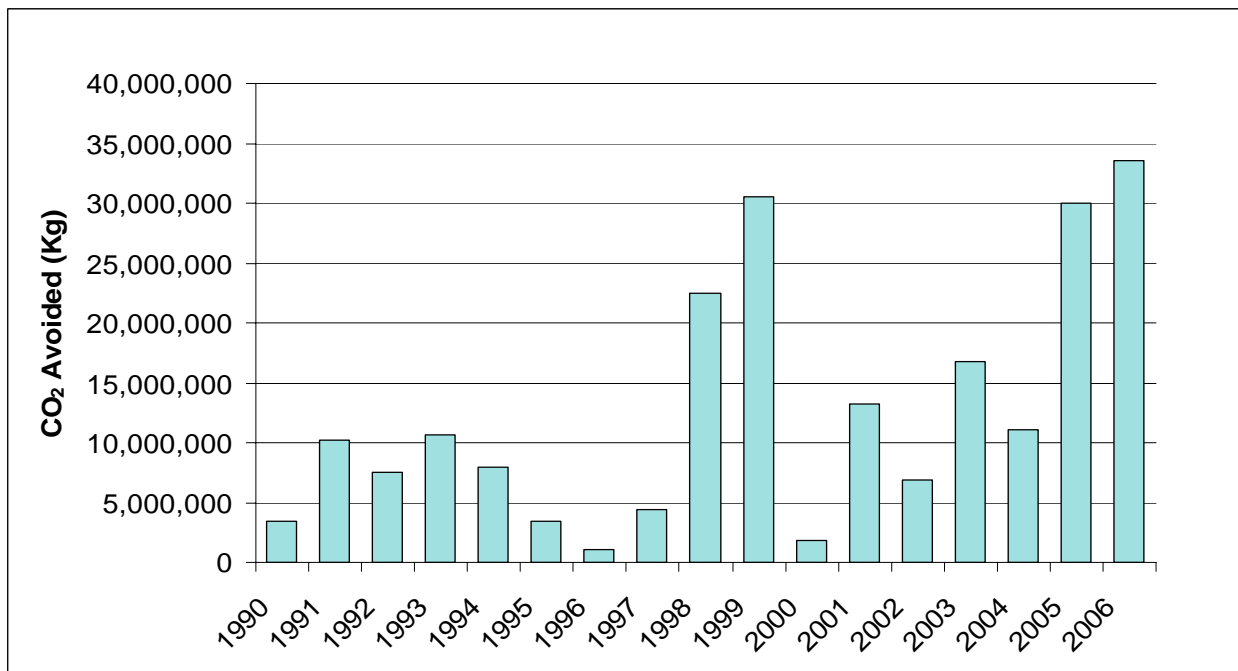


Figure 6.2: Energy Efficiency Projects - CO₂ Reductions



6.2 *Impacts of Key Projects*

Table 6.1 lists the individual impacts of key projects.

6.3 *Sum of Key Projects Impacts in tonnes CO₂ equivalent*

Table 6.1 provides the sum of key projects in tonnes CO₂.

6.4 *Impacts of Key Projects in CO₂ equivalent*

Table 6.1 lists the individual impacts of key projects in tonnes CO₂.

6.5 *Non-Production Load Reductions*

It is very difficult for the automotive industry to make adjustments to production periods in order to better balance electricity usage, for example, by shifting to non-peak hours. In fact, several of our facilities operate 24 hours a day, five or six days a week to meet the customer demand. As a result, GMCL has focused efforts on making the best of the non-production time that is experienced throughout the year. Several of the energy efficiency projects that have been implemented to date are targeted at installation of automatic shutoff equipment, computer automation, and other energy reduction initiatives during non-production periods.

GMCL facilities have begun this initiative as a means to motivate personnel to reduce energy consumption during non-production periods such as shutdowns, weekends, and even during lunch, break or between shift periods reducing greenhouse gas emissions and utilities operation expenses. Similar to our 2005 summer shutdown period, the 2006 summer shutdown period saw substantial work being completed in the plants to facilitate new model year product and changeovers and therefore did not result in higher non-production load reductions.

Figure 6.3 shows a representative sample (one of our manufacturing facilities that works 24 hrs a day) of the results that our continued efforts to reduce load during non-production have made. The load profile in Figure 6.3 is for the month of July 2003 and clearly illustrates the dramatic decreases experienced on weekends and during the Summer Shutdown (first 2 weeks of July). Unfortunately it is not possible to reduce the load to zero as weekends and shutdowns are often the only times available to get regular maintenance and major project work completed.

Figure 6.4 illustrates the annual electricity savings and Figure 6.5 illustrates the associated CO₂ emissions avoided by the Oshawa Autoplex through a focused effort on non-production load energy reductions. The energy reductions, and associated CO₂ avoidance, were less substantial from 2003 through 2005 relative to those levels seen pre 2003 in large part because the amount of non-production downtime at the Oshawa Autoplex had decreased. In late 2002 the Oshawa Car Assembly Plant added a third shift to their Plant 1 production which tipped the balance of production at the entire Oshawa Autoplex to a more even three shift operation. In 2006 the annual electricity savings were once again over 30 million kWh. This was not the result of reducing production and therefore increasing the amount of time of non production load but rather a significant effort to reduce non production load using the UMS. For the first time since measurements began in 1990 GMCL was able to achieve a non production load of approximately 27.5MW. GMCL believes a further reduction can be achieved in 2007.

Figure 6.3: Sample Electricity Load Profile

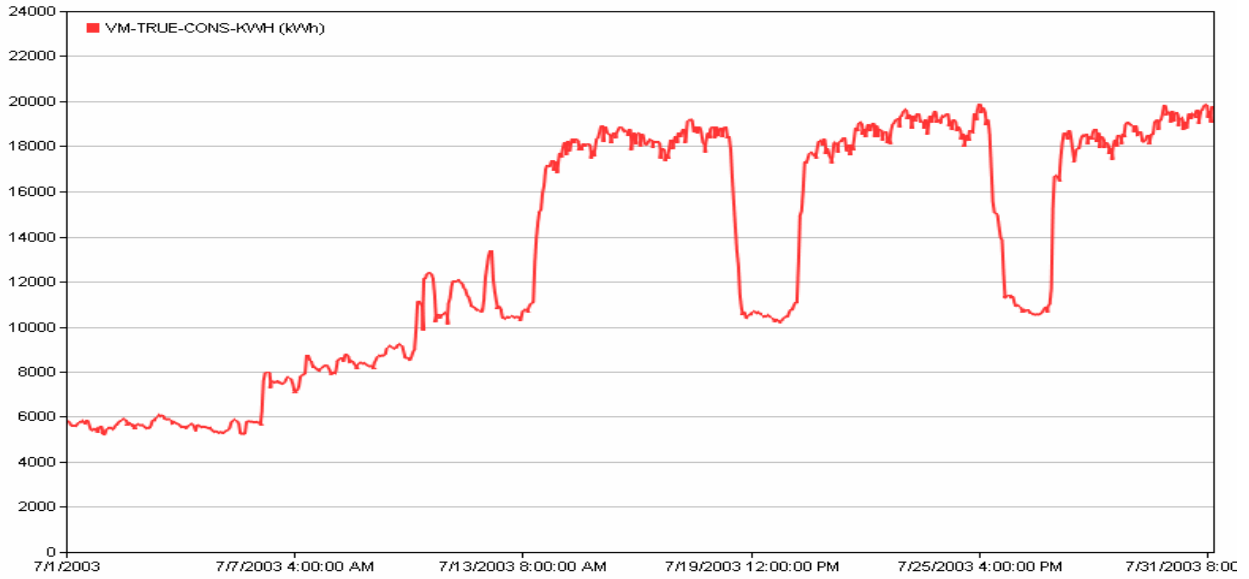


Figure 6.4: Oshawa Autoplex Annual Non-Production Load Reduction (KWh)

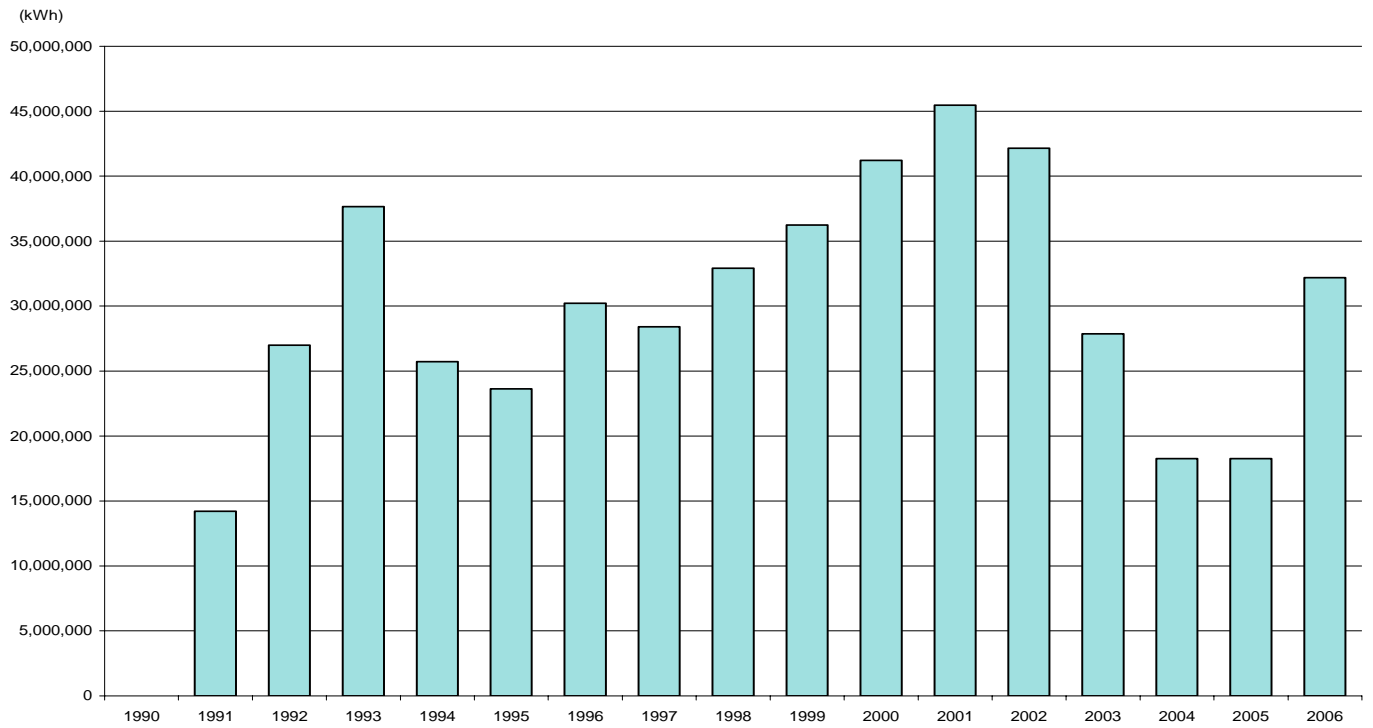
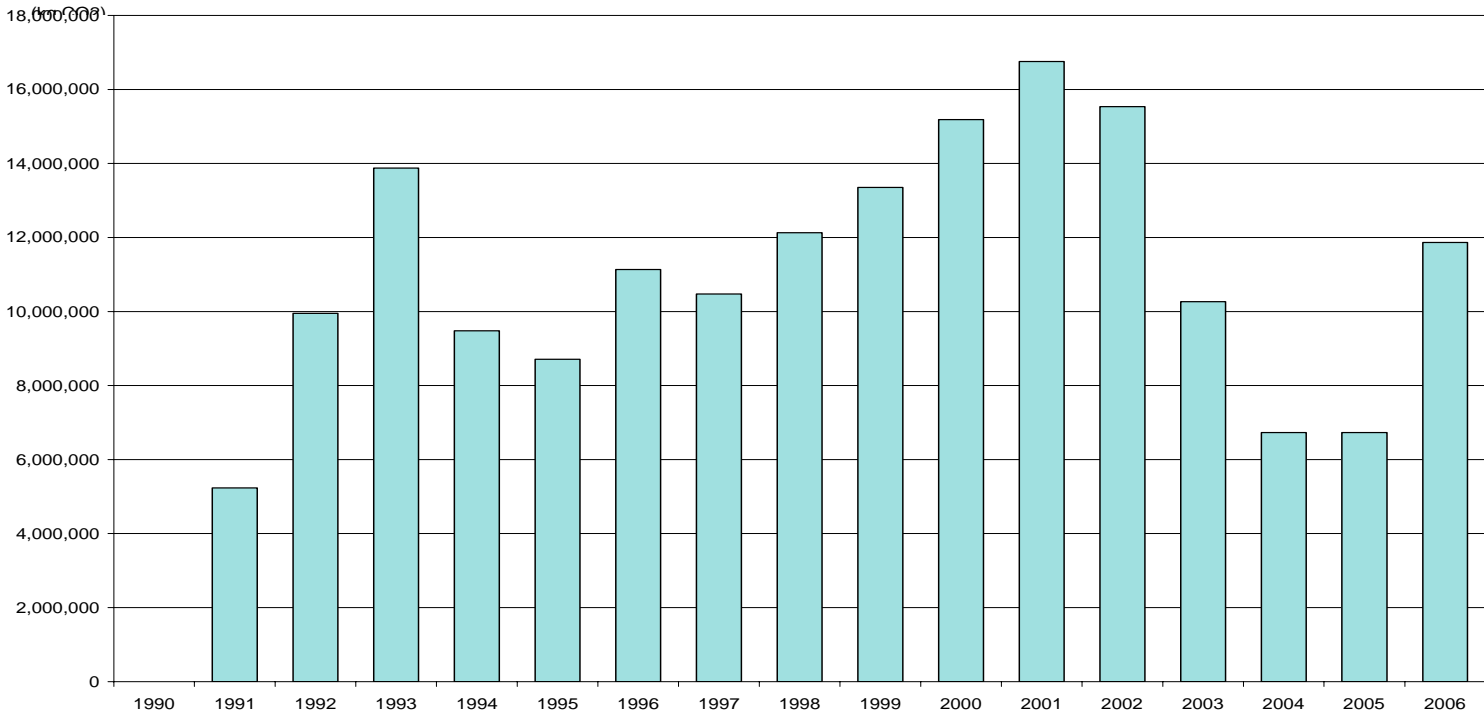


Figure 6.5: Oshawa Autoplex Annual Non-Production Load Reduction (kg CO2 Avoided)



7. Potential Future Actions to Achieve Targets

7.1 Potential Reduction Projects

GMCL has full-time energy conservation specialists in our facilities to assist in identifying opportunities for further energy reductions. The energy conservation specialists conduct surveys, monitor, analyze and report out on energy consumption for each facility.

This report contains a selection of proposed GMCL energy efficiency projects for 2007 and beyond in Table 7.1.

Table 7.1: Proposed Energy Efficiency Projects for 2007 and Beyond

Plant	Project	MWh	Type	CO2 Avoided (tonnes)
Oshawa Truck Assembly Centre	Final bake oven exhaust reduction	2453	Direct	1445
	Remaining steam trap repair program	3571	Direct	2104
	Oven air indate snokels?	1473		868
	Standalone rooftop HVAC unit controls	1912		1127
	ESPI implementation	12500		7365
Oshawa Car Assembly Plant	Compressed air reduction to 80 psi on weekends	1078	Direct	635
	Reduce relative humidity from 55% to 50%	7175	Direct	4228
	Steam trap repairs	2575	Direct	1517
	Optimize oven & RTO Sunday start up	1470	Direct	866
St Catharines Glendale Avenue (Engine)	Ventilation system upgrades to maximize recirculation	1563	Direct	921
	Ramp locker room and cafeteria heating	1250	Direct	737
St Catharines Ontario Street (Components)	Install thermostats on unit heaters and w/rad	1375	Direct	810
	Forge heating reduction	500	Direct	295
TOTAL		10668		6466

7.2 Sum of Impacts of Potential Projects

Table 7.1 provides an estimate of the sum of the impacts of key projects.

7.3 Individual Impacts of Potential Projects

Table 7.1 provides estimates the impacts of individual key projects.

7.4 Sum of Impacts of Potential Projects in tonnes CO₂ equivalent.

Table 7.1 provides an estimate of the sum of the impacts of key projects in tonnes CO₂ equivalent.

7.5 Individual Impacts of Potential Projects in tonnes CO₂ equivalent

Table 7.1 provides estimates the impacts of individual key projects in tonnes CO₂ equivalent.

7.6 Categorization of Projects

Table 7.1 provides the emission type categories as either Direct or Indirect.

8. Education, Training and Awareness

8.1 Climate Change Issue Explained to Employees

Our employees guide their day-to-day activities with the GM Environmental Principles in mind. GMCL also uses other tools to communicate with employees on environmental issues and on climate change specifically. Each of GMCL's manufacturing facilities has newsletters that are distributed to local personnel. These publications often contain environmental awareness information. These publications have included information on reducing energy usage both at the workplace and at home. GMCL's Intranet website has a section dedicated to the environment with links to GM's Worldwide Facilities Group (WFG) Energy and Utilities Services. This section includes a significant amount of material describing energy conservation initiatives that have been implemented at our facilities, and techniques that our employees can use to reduce the energy requirement and environmental impact associated with their work on site. Finally, all our employees have access to the internet and therefore our www.gmcanada.com site where we have posted information on the Environment including a summary of our energy use and links to the GHG CR web site, should employees wish to read our annual updates in detail.

8.2 Communicate Response to Climate Change

As a corporation, GM's has developed a position on climate change that indicates our recognition of the need to determine how to operate in ways that promote economic growth and comprehend the needs of the environment and society, without compromising those needs in the future. GM's position is as follows:

The basic challenge is to meet the world's growing demands for energy necessary to sustain economic growth while also addressing long-term concerns about the environment. GM believes the development and global implementation of new, cost effective energy technologies in all sectors such as hydrogen fuel cells, is the most effective way to improve energy efficiency and reduce greenhouse gas emissions. This approach is best facilitated by relying on voluntary initiatives and market-oriented measures, not government mandates. In addition to developing new technologies and processes, GM continues to monitor, manage and reduce greenhouse gas emissions from its facilities and products and is taking steps to achieve near-term reductions. GM also continues to support scientific research to improve the understanding of the possible long-term effects of economic growth and other human activities on the climate system.

GMCL has a strategy to communicate our position on climate change through a number of important forums. We communicate on a regular basis with various levels of government, as well as members of the public through various meetings and speaking engagements by senior company executives. For example in 2005 GMCL president Michael Grimaldi delivered several important speeches that discussed climate change and GM's response such as a speech delivered in May 2005 at the EECO 2005 conference which focused on environmental and energy issues in the Great Lakes economic region of Canada and the United States. Mr. Grimaldi also gave speeches in 2005 to launch Car Heaven which is an initiative we sponsor to help the turnover of the on road fleet of vehicles by helping remove older vehicles with incentives to help in the purchase of newer vehicles that are more fuel efficient and run cleaner. In 2006 GMCL was very focused on our company Turnaround message but even in these tough

times executives continued to highlight GMCL's commitment to the environment in speeches to the automotive dealer community and through a speech delivered at the Renewable Fuels Summit in December 2006.

GMCL has undertaken concrete activities in Canada to assist in determining the appropriate response to climate change concerns such as participating in a voluntary industry agreement in Canada to address GHG emissions within appropriate national/regional contexts. In 2005 the automotive industry signed a memorandum of understanding to reduce GHG emissions by 5.3 MT by 2010.

GM has developed an implementation plan for reducing energy usage and GHG emissions across the global footprint of its facilities and products. For example:

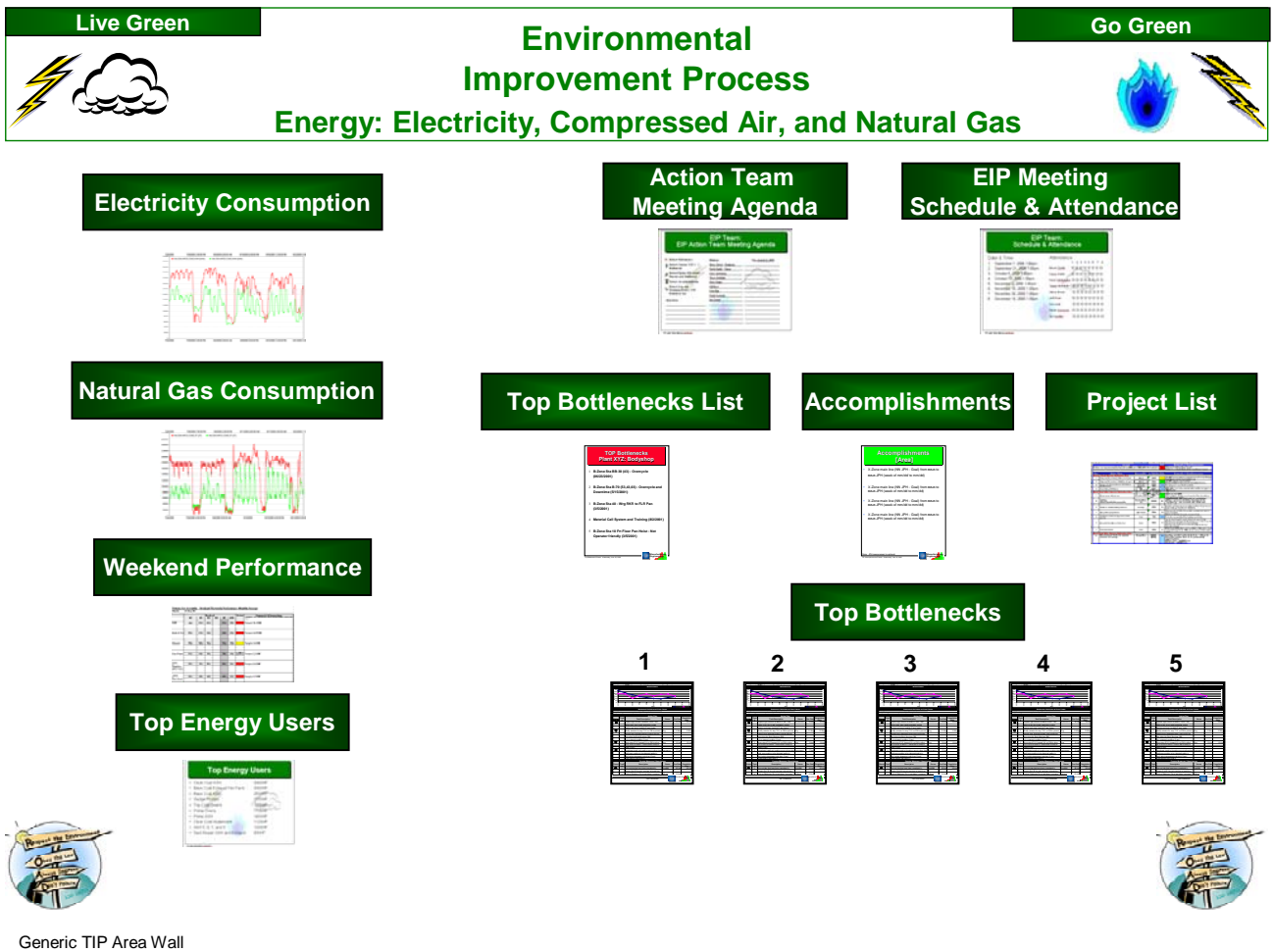
- continuously improving the fuel efficiency of "conventional" internal combustion engines by the application of new innovative technology enhancements and other continuous improvements. (eg. Gasoline direct injection, displacement on demand engines, lightweight materials and aerodynamic improvements)
- Offering hybrid propulsion systems for mass transit applications and rolling out a series of hybrid applications for various car, light truck and SUV models.
- Collaborating on the development of a hydrogen fuel infrastructure
- Supporting the development of an ethanol infrastructure and research on production of ethanol from biomass.

8.3 Opportunities for Individual Action

GM Canada Energy Awareness Communications

In order to get thousands of employees more engaged in energy management at the facility it is important to monitor energy usage and communicate often with employees in order to give constant feedback. In 2006 the Oshawa Car Plant helped initiate a new visual management method to motivate employees to continue to make energy reduction a priority. A continuous improvement process was created for energy use. The format and process was based on a process used to improve throughput in manufacturing, but applied to energy use. Energy consumption and performance are displayed on a large board that is located in a high traffic area on the shop floor, and is updated on a bi-weekly basis. The boards also track energy reduction initiatives and action items are assigned to members of a cross functional team, which typically includes maintenance, engineering, production, housekeeping, and facilities personnel. The team meets and reviews the board every two weeks. Each area, Paint, Body, Trim and Chassis, have implemented this process. The accomplishments are also listed as positive motivation. This initiative, developed in Oshawa, has been recognized as a best management practice by General Motors and is being rolled out at all GM plants in North America. This process is the main method used to achieve the corporate set target to reduce energy consumption by 5.5% per vehicle in 2007 relative to 2006. A typical Environmental Improvement Process board is depicted in Figure 8.1.

Figure 8.1: Environmental Improvement Process Board Template



GMCL also communicates with employees on a variety of subjects via email messages. Environmental topics are frequently addressed, including the need to conserve energy in the workplace to reduce costs and reduce environmental impacts. As previously discussed, newsletters on energy awareness are circulated on a regular basis throughout the year. Practical tips are often cited for reducing energy usage. A sample is given in Figure 8.2.

In addition to communications that encourage employees to save energy at work, GMCL has also communicated an awareness program concerning energy efficiency at home; an example of this is given in Figure 8.3.

Figure 8.2: Communication to Employees on Energy Conservation



GM Canada Communications

Energy Conservation Message

Helping the environment we live in, is everybody's responsibility, whether at home or at the workplace. Eliminating energy waste to conserve our natural resources is a fundamental element of GM's environmental policy. All of GM manufacturing facilities now have developed their plant specific "Sufficiency Plan", to ensure that our energy conservation efforts are focused on keeping the non-production (Holidays, Weekends and between shifts) energy usage to a minimum.

Please Consider the Following for Your Plants and Offices:

- Turn off all non-essential HVAC equipment.
- Turn off all non-essential lighting.
- Ensure that any computer controlled equipment (HVAC, Lighting....etc.) will not come on automatically as normally scheduled.
- Where applicable, contact your local TSC/EMS coordinator(s) with production/equipment requirements for your area.
- Turn-off fans, air conditioners, computers, monitors, printers, photocopiers, coffee makers.
- Ensure that all doors and windows are closed.
- Shut down production equipment (tools, personal pedestal fans, conveyors, pumps.....etc.).
- Disconnect any air tools and isolate air line branches to air powered equipment.

Please ensure that all the equipment to be shut-off are considered with personnel and equipment safety in mind.

If you would like to use GM Canada Communications to send out a message or if you have any comments or questions please contact Employee Communications by using the "Reply" button on this screen or by calling us.

Figure 8.3: Communication to Employees on Saving Energy at Home



GM Canada Communications

Waste Reduction Week Energy Conservation

Did You Know.....

- It takes 20 well-tuned cars to produce the same amount of pollution as one badly tuned car. Cars should be serviced regularly to help reduce air pollution.
- About 20% of the energy used in residences goes for heating water.
- For each degree you lower your thermostat in the winter, you can save about 3 percent on your heating bill.

Energy Conservation Tips:

- Turn down the temperature on your hot water tank.
- In the winter, run your ceiling-fans counter-clockwise to force hot air downward. In the summer, run them clockwise to circulate cooled air.
- Cook with the microwave, toaster oven and electric skillet – all use much less energy than their traditional, full-size counterparts. For example, microwaves cook in one-quarter of the time and use 30-70% the electricity of an oven.
- Refrigerators and freezers work best when they are full. Use extra items to fill them even if they don't need to be kept cold.
- Defrosting frozen foods in the refrigerator helps the refrigerator stay cool.
- If you have a TV that uses a remote to turn it on, part of the TV is actually on all the time. To turn this type of TV off completely, plug it into a socket that is controlled by a light switch, and to use that light switch when you turn off the set.
- Energy-saver bulbs (compact-fluorescent) give as much light as conventional bulbs, but use less energy. Even though they have a higher initial cost, they are longer lasting and can cut the cost of lighting by 50%!

Resources:

Waste Reduction Week in Canada, Volunteer and School Activity Handbook, www.wrwcanada.com
Region of Durham "2001 Blue Box Recycling Collection Schedules", www.region.durham.on.ca
Gov. Gary Locke, State of Washington Energy Home Page, www.governor.wa.gov/energy/energy.htm

If you have any comments or questions please contact Employee Communications by using the "Reply" button on this screen or by calling us.

8.4 Incentives for Emission Reductions by Employees Outside of Work

Section 8.3, Figure 8.2 is an example of the communications to employees regarding energy conservation at home.

8.5 Supplier Incentives for Emission Reductions.

GMCL encourages our external business partners to undertake responsible environmental management.

GM recognizes that our suppliers are critical to our reputation for environmental performance and quality. Each supplier's creativity, and product and process knowledge are important in helping GM achieve its environmental goals. In Canada, GMCL organizes meetings with the Supplier Council and, on an annual basis, the assembled group is informed about the issue of climate change and the need for GM's supplier organizations to reduce energy consumption and track GHG emissions. The supplier community has been informed about the GHG Registry and encouraged to participate and establish baselines for their individual operations.

Our Supplier Development team assists our Suppliers in identifying waste of many types. This is accomplished by conducting a waste identification audit that includes a section that specifically targets energy waste. Such items include air leaks, inappropriate use of compressed air, lack of operational controls or use of inefficient energy sources. The results of these audits are reviewed with the Supplier and suggestions are made to assist them in reducing such waste.

GMCL's dealers and retailers are also a critical part of GM's overall reputation. Our dealers are encouraged to implement environmental management programs. GMCL makes the dealers aware of provincial and federal environmental regulations with which they must comply via a waste management guide. To further reduce waste, GMCL has a parts refurbishment program with its dealers. GMCL also regularly undertakes presentations and other communications to dealers on issues of interest, including energy and environmental issues, to assist in educating and informing the dealer body.

8.6 Customer Incentives for Emission Reductions

GMCL, through all of the vehicle owner's manuals, directly shares information for the public on the need to maintain their vehicles properly and ensure that all emission control technology is functioning as it was designed. Manuals also offer information to the public about the need to complement vehicle technology with appropriate fuels to ensure that emissions performance is optimal.

Additionally, GMCL actively participates in the production of the annual Fuel Consumption Guide in conjunction with the Federal Government. This reference ensures that consumers have the necessary information to help choose the most fuel-efficient vehicles that meet their personal and functional needs.

8.7 Influence of external contacts

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 Responsibility Report (including specific environmental 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 are working hard to identify the environmental challenges and develop solutions.

GMCL is a participating member of the Canadian Industry Program for Energy Conservation, CIPEC, and we work closely with our industrial sector in promoting energy conservation. We have hosted energy conferences at our sites to exchange technical information and to share successful energy reduction projects with other companies.

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.

8.8 Undertake public education

GM undertakes a number of activities that endeavour to educate the public about climate change.

In May of 2001, GMCL was approached by a local principal of a high school situated near a scenic wetland area. The vision was to develop a School of Environmental Studies and an appropriate curriculum through partnerships with GM, Friends of the Second Marsh and Earthforce. The results of this collaboration were two innovative courses, "Watershed Monitoring and Management" (Gr. 11) and "Industry and the Environment" (Gr. 12). These courses received Ontario Ministry of Education approval in January of 2002 and will be the only ones of their kind offered in Ontario.

GMCL collaborated with the school on the implementation of the grade 11 course which is now being taught. The second course, Industry and the Environment, will teach grade 12 students the balance between economic growth and environmental protection including topics such as energy conservation and climate change.

GMCL's corporate website contains valuable information about climate change and our effort to reduce environmental impacts to help inform the public. The website also offers advice to the public about how they can minimize their impact on the environment by maintaining their vehicles properly and conserving fuel. Furthermore, the GM Corporate website provides

additional information on our initiatives and accomplishments, as well as our global CO₂ emissions at <http://www.gmresponsibility.com>

9. Appendix

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:

1. We are committed to actions to restore and preserve the environment.
2. We are committed to reducing waste and pollutants, conserving resources and recycling materials at every stage of the product life cycle.
3. We will continue to participate actively in educating the public regarding environmental conservation.
4. We will pursue vigorously the development and implementation of technologies for minimizing pollutant emissions.
5. We will continue to work with all governmental entities for the development of technically sound and financially responsible environmental regulations.
6. 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.