

# 00-01

Sustainability Report

Achieving a sustainable balance through innovation, technology and partnership



GM

## SUSTAINABILITY AND GM

# Executive Statements

### From Our CEO

These are extraordinary times for our world. At General Motors and throughout the automotive industry, we find ourselves dealing not only with global industry consolidation, cutting-edge technology, and unprecedented competition, but also with the uncertainty and confusion that define these times. In such an environment, the world demands more than great products, services, and strategy — it demands vision and new ideas, including the foresight and the resolve to take a leadership role in the growing field of sustainable development.

At GM, we define sustainable development as our commitment to integrate economic, environmental and social objectives into our long-term strategic planning, as well our daily business decisions. We believe sustainable development can be a competitive advantage for us, if we move fast and take a leadership role in applying the principles and lessons of sustainability in all facets of our business around the world.

At GM, we understand that sustainability is a way of doing business. We treat it the way we treat our core values and key corporate benchmarks: we set annual sustainability targets for our operations and measure our progress against those targets. Then we report our progress, using the framework set forth by the Global Reporting Initiative (GRI).

Finally, we make our data easily accessible, posting it on GMability.com. This ensures transparency, allowing our stakeholders to evaluate our performance and provides other businesses with a model applying metrics to their business practices. We think it makes good business sense — after all, what gets measured, gets done.

Like everything we do at GM today, our sustainability efforts are guided by four cultural priorities that describe the way we do business in this new century. At today's GM we:

- Act as one company — leveraging our tremendous global capabilities across the company, in developed and developing nations alike.
- Embrace stretch targets — striving to achieve the best we can.
- Move with a sense of urgency — working to accelerate everything we do, and using speed to our advantage.
- Enhance our product and customer focus — building long-term relationships with our customers by providing the products, services, and corporate practices they demand.

These are the essential elements of GM's performance-driven culture, the qualities that will enable us to pursue a sustainable balance. Doing so is not a one-time exercise. It is an ongoing process that constantly requires us to re-evaluate and improve both our practices and our performance. This report provides insight into both and, in so doing, demonstrates our strong commitment to sustainable development. We invite you to travel with us as we pursue our goals.

#### **Rick Wagoner**

*President and Chief Executive Officer*

### Achieving a Sustainable Balance

At GM, sustainability represents a management framework that drives us to seek continuous improvement in our operations and products.

Those words are more than rhetoric to the men and women of GM. They describe a key element of our business. They extend our vision beyond the bottom line of economics to include social and environmental stewardship. In working to achieve a sustainable balance, we aim for a moving target — a target we believe is reachable through a combination of *innovation, technology and partnerships*. Here are just a few examples of how we are applying that philosophy in our business.

#### **Innovation**

At GM, we believe industry is uniquely positioned to innovate through the application of economic and

human resources. We apply our innovations globally to improve the quality of life of the people who live in the communities in which we work. For example, the town of Ramos Arizpe, Mexico, now enjoys a freshwater lagoon teeming with birds and fish in place of a saline pond, due to the innovative water treatment and usage practices of the GM plant there. In August 2001, that project was recognized internationally with the prestigious Stockholm Industry Water Award. We strive to apply similar innovations daily across the globe in our plants, our processes and our products.

The GM family responded in many ways to the national tragedy that took place in the United States on September 11, 2001. In addition to providing more than 100 vehicles, many GM family members volunteered time, donated blood, and made cash donations. As of October 11, these cash donations totaled more than \$625,000, which has been matched by the GM Foundation. Additionally, the GM Foundation made a \$1 million contribution to the American Red Cross.

### Technology

GM looks to technology as the solution to many problems. For instance, we believe we will eventually be able to use technology to virtually remove motor vehicles from the environmental equation. We are developing hydrogen-powered fuel cell vehicles that emit only water. Some 250 GM fuel cell experts in three locations on two continents concentrate full time on this technology. Our hydrogen-powered fuel cell demonstration vehicle, the HydroGen 1, is a testimony to our efforts. In 2000, we initiated a new program, GM Global Aid, which enables us to quickly direct aid to those in crisis. The program allows our employees across the globe to make contributions to disaster relief efforts, many of which are matched by the GM Foundation.

The GM family responded in many ways to the national tragedy that took place in the United States on September 11, 2001. In addition to providing more than 100 vehicles, many GM family members volunteered time, donated blood, and made cash donations. As of October 15, these cash donations totaled more than \$1 million, which has been matched by the GM Foundation. Additionally, the GM Foundation made a \$1 million contribution to the American Red Cross.

### Partnerships

As the challenges we face increase in complexity, we continue to seek partners to collaborate with on solutions. We support Mothers Against Drunk Drivers (MADD) in its efforts to help rid America's highways of drunk drivers. Our partnership with SAFE KIDS helps parents install child safety seats properly in their vehicles. This partnership was also the catalyst for GM's trap-resistant trunk kit. A partnership with the United Auto Workers (UAW) has provided more than 100,000 child safety seats to low-income families. We team with organizations like the American Red Cross, United Way, and Salvation Army to provide disaster relief. We provide funding for the GM Cancer Research Foundation, which recognizes the achievements of scientists in cancer research. We partner with local governments and businesses to ensure that our surplus properties are returned to productive use. We have partners in the areas of fuel and energy research working on new fuel formulations, fuel infrastructure and on-board vehicle fuel storage options. We have joined with The Nature Conservancy (TNC) to restore and preserve the Brazilian rainforest and to measure the positive impacts of these activities. Our partnerships extend across the globe.

### Summary

We understand that a commitment to stewardship is of little consequence if targets are not set and results quantified. We also believe it is important that our promises be held up to public scrutiny. To that end, our report is posted annually on GMability.com. Only when similar metrics and transparency exist across companies around the globe will we be able to measure the aggregate effects of such stewardship. GM is proud to have been among the first to publicly report our targets and our results. We invite our stakeholders to monitor our progress on-line.

#### Rod Gillum

*Vice President Corporate Relations and Diversity*

#### Denny Minano

*Vice President Environment and Energy, Chief Environmental Officer*

## Corporate Profile

### General Motors Corporation

Founded in 1908, and trading under the name General Motors (NYSE: GM), we are the world's largest vehicle manufacturer; designing, building and marketing cars and trucks worldwide. In 2000, we earned \$4.5 billion from net sales and revenues of \$184.6 billion. We currently employ 386,000 people worldwide.

We sell vehicles in more than 200 countries, and have assembly, manufacturing, distribution or warehousing operations in 53 countries. In 2000, we sold 8.6 million cars and trucks, accounting for 15.1% of the world vehicle market - more than any other automaker.

Our vision positions us as the world leader in transportation products and related services. At General Motors we aim to maintain this position through enlightened customer enthusiasm and continuous improvement driven by the integrity, teamwork, innovation and individual respect and responsibility of our employees.

Following the 1998 consolidation of our automotive businesses and the subsequent formation of GM Automotive, our organization was separated into four regions summarized below.

- General Motors North America (GMNA)
- General Motors Europe (GME)
- General Motors Asia Pacific (GMAP)
- General Motors Latin America, Africa and the Middle East (GMLAAM)

Our largest market remains our home region, GM North America (GMNA), which includes the U.S., Canada and Mexico, and where we have 27.7% market share. In the U.S. alone we are entering our 74th year as market leader with 27.8% of the market. Worldwide, our automotive products are sold under the following brands:

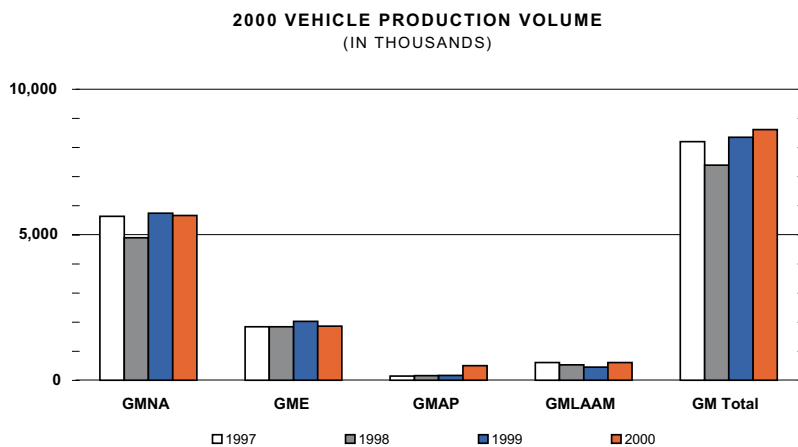
Buick, Cadillac, Chevrolet, GMC, Holden, Hummer, Isuzu, Oldsmobile, Opel, Pontiac, Saab, Saturn and Vauxhall.

Additional information on our brands is available on our corporate website, [www.gm.com](http://www.gm.com).

Automotive operations aside, we have a diverse portfolio of interests and subsidiary operations ranging from financial services, through telecommunications to locomotive production (click links below to view description of business and 2000 highlights).

- Hughes Electronics Corporation
- General Motors Acceptance Corporation
- Allison Transmission Division
- GM Locomotive Group

As part of our global strategy, we have forged major alliances with Fiat S.p.A., Fuji Heavy Industries Ltd. (the parent company of Subaru), Suzuki Motors Corp., and Isuzu Motors Ltd. We are also committed to strong technology collaborations with Toyota Motor Corp. and Honda Motor Co. In January 2000, we expanded our portfolio of brands by purchasing the remaining 50% of Saab Automobile from its joint venture partner, Investor AB of Sweden. As the next century begins, we are also investing aggressively in high technology and e-business both within our global automotive operations and through initiatives such as e-GM, GM BuyPower, and OnStar.



## Where We Operate

As one of the world's largest companies we have interests in many countries across the globe. The countries in which we have sales, assembly, manufacturing, distribution or warehousing operations are listed below. Click on a region below to find out more about our operations in the countries listed.

### North America (GMNA)

- Canada
- Mexico
- United States

### Europe (GME)

- Albania
- Austria
- Belgium
- Bosnia
- Bulgaria
- Croatia
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Greece
- Hungary
- Republic of Ireland
- Italy
- Macedonia
- Netherlands
- Norway
- Poland
- Portugal
- Romania
- Russian Federation
- Slovak Republic
- Slovenia
- Spain
- Sweden
- Switzerland
- Turkey
- United Kingdom
- Yugoslavia

### Asia Pacific (GMAP)

- Australia
- China
- India
- Indonesia
- Japan
- Korea
- Malaysia
- New Zealand
- Philippines
- Singapore
- Taiwan
- Thailand

### Latin America, Africa, and Middle East (GMLAAM)

- Africa-RMO
- Argentina
- Brazil
- Chile
- Colombia
- Ecuador
- Egypt
- Israel
- Kenya
- Nigeria
- Paraguay
- Peru
- South Africa
- Tunisia
- Uruguay
- Venezuela
- Middle East-RMO

## Ownership

We are a publicly traded company, listing our stock on the following exchanges: • New York Stock Exchange, Inc.

- Chicago Stock Exchange, Inc.
- Pacific Stock Exchange, Inc.
- Philadelphia Stock Exchange, Inc.
- Montreal Stock Exchange
- Toronto Stock Exchange
- Borse Frankfurt am Main (Frankfurt on the Main, Germany)
- Borse Dusseldorf (Dusseldorf, Germany)
- Bourse de Bruxelles (Brussels, Belgium)
- Courtiers en Valeurs Mobilières (Paris, France)
- The London Stock Exchange

## Customer Diversity

Diversity in the marketplace is a key priority. We are intensifying the way we market our divisions and vehicle brands to our customers. In the past, we emphasized our individual brands. Currently, the corporate brand push communicates our quality, safety and innovations before directing customers to the individual vehicle divisions our customers have known for decades.

## Significant Corporate Accomplishments for 2000

### GMNA

Our North American division designs, manufactures and markets vehicles in the United States, Canada, and Mexico. Excluding our financing and insurance operations, we have 206 facilities, 31 of which are vehicle assembly plants. The rest are powertrain and metal fabrication plants, parts warehousing or office facilities. Our cars and trucks are marketed in North America under the Cadillac, Buick, Oldsmobile, Pontiac, Chevrolet, GMC, Saturn, Saab and HUMMER brands. In 2000 our North American division employed 212,000 people and had sales of 5.7 million vehicle units. 2000 saw the launch of eight new models and seven new engines/transmissions, helping us to retain market share leadership of 27.7%. In 2000, net sales and revenues for GMNA were \$112.7 billion, accounting for 61.1% of our global total. Adjusted earnings for the year totaled \$4.4 billion.

### GME

In Europe, our family of brands includes Opel, Vauxhall, Saab, Cadillac and Chevrolet. We have sales operations in 30 countries and 23 production and assembly facilities in 14 countries. 2000 saw the launch of five new models and sales of over 1.85 million vehicles, resulting in a market share of 9.3% in the combined Western and Central European vehicle market. In 2000, our European operations employed 88,500 people. Net sales and revenues were \$25.4 billion, accounting for 13.7% of our global total, adjusted losses for the year totaled \$257 million.

### GMLAAM

Our operations in Latin America, Africa and the Middle East (GMLAAM) are broken down into two distinct sub-regions — Latin America (LAO) and Africa and Mid-East Operations (AMO). Despite a variety of economic challenges experienced in both regional market on an industry basis, LAAM remains the fastest-growing region in the world. We lead the in markets in Chile, Colombia, Ecuador, and Venezuela and have dominated Latin American truck sales for 12 consecutive years. Our Latin American Operations sell almost exclusively under the Chevrolet brand with the exception of medium and heavy-duty trucks sold under the GMC brand in Brazil. Our Africa and Middle East operations import and assemble a range of North American, European and Asian based products, including a significant volume as a result of our partnership with Isuzu. GMLAAM operations employed 24,000 people in 2000 and our overall market share was 16.3%, helping us retain our number one

rank in the region. Net sales and revenues were \$5.7 billion, accounting for 3.1% of our global total. Earnings for the year totaled \$26 million.

#### **GMAP**

In the Asia Pacific region, we continued to build a strong base for growth by expanding our manufacturing presence, forging strong alliances and tailoring products to local market needs. In China, our joint venture with Shanghai Automotive Industry (Group) Corporation (SAIC), China's largest manufacturer of passenger sedans, began regular production delivering Buick sedans in early 2000. With an investment of over \$1.5 billion, Shanghai GM is the largest Sino-U.S. joint venture and the largest single investment by an American firm in China. Also in China, our new Jinbei GM joint venture with China Brilliance Automotive will commence operations in 2001 to produce sport-utility vehicles and pickup trucks. The \$230 million Shenyang based facility produced its first Chevrolet Blazer SUV in December 2000. Regular production began in May 2001. Another state-of-the-art plant in Rayong Province, Thailand began production of the Opel/Chevrolet Zafira in May 2000.

In 2000, Holden captured a 20% share of the Australian vehicle market. The Holden Commodore maintained its position as the number one selling car in Australia for the fifth consecutive year.

Our Asia Pacific operations employed 11,000 people in 2000 and had regional sales of 47.3 million vehicle units, which represented our market share of 3.7%. Net sales and revenues were \$3.6 billion accounting for 2% of our global total. Losses for the year totaled \$233 million.

#### **GMAC Financial Services**

General Motors Acceptance Corporation is a wholly owned subsidiary, operating under the brand name GMAC Financial Services. In addition to automotive financing, its major businesses are insurance, mortgage and commercial finance. GMAC, with more than 29,000 employees in 36 countries, has extended more than \$1 trillion in credit to finance 146 million cars and trucks since its inception in 1919. GMAC has financed the purchase or leasing of almost 44% of our worldwide vehicle sales. GMAC earnings in 2000 totaled \$1.6 billion on net sales and revenues of \$23.7 billion, accounting for 12.8% of our global total.

#### **Hughes Electronics Corporation**

Hughes Electronics Corporation is a world-leading provider of digital television entertainment, broadband services, satellite-based private business networks and global video and data broadcasting. Hughes is comprised of three main units. Hughes Network Systems manufactures and supplies private satellite-based business networks, wireless telephone systems and personal communications systems (PCS) and dominates the market with a 55% market share. DirecTV provides digital quality, direct-to-home television entertainment programming to nearly 11 million customers worldwide. PanAmSat, of which Hughes owns 81%, is the world's foremost provider of commercial satellite services operating a global fleet of 21 satellites. In 2000, Hughes employed 8,500 people and returned an adjusted loss of \$303 million on total adjusted revenues of \$10.7 billion.

#### **Allison Transmission Division**

Allison Transmission Division continues to lead the world in design, manufacture and sales of medium- and heavy-duty automatic transmissions for commercial trucks, buses, off-highway and military equipment. Allison Transmission's market share extends to 80% of all medium- and heavy-duty commercial automatic transmissions produced and sold worldwide. In 2000, Allison Transmission employed 4,260 people, was awarded 11 patents and achieved record unit shipments.

#### **GM Locomotive**

The GM Locomotive Group is comprised of the Electro-Motive Division and GM Defense. Under the GM Electro-Motive brand we design, market, manufacture and service freight and passenger diesel-electric locomotives, diesel marine and power generation products for use worldwide. Electro-Motive, founded in 1922, has delivered nearly 56,000 locomotives to more than 70 countries around the globe. In 2000, Electro-Motive employed 3,500 employees and controlled 47% of the world market.

Under the GM Defense brand we design, market, manufacture and service light armored vehicles, armored vehicles, gun turrets, and military trucks for use by military operations worldwide. Employing 1,850 people, GM Defense has locations in the U.S., Canada, Switzerland, and Australia. This network of strategic partners facilitates our large presence in the global market, offering a wide array of products and support services to military customers. 2000 saw our largest ever order and almost doubled net income.

## About This Report

At GM, sustainability represents a management framework that drives us to seek continuous improvement in our operations and products in a way that integrates economic, environmental and social aspects into both our daily business decisions and future planning activities.

This is General Motors' third sustainability report providing information on our performance across these aspects of sustainability. Our reporting has evolved since the publication of our first environmental, health and safety report in 1994, and now includes information formerly presented in that report, as well as our former annual philanthropic report. For the second year running, in the spirit of conservation and to further demonstrate our commitment to the preservation of natural resources, the report is fully Internet-based, with only limited numbers of an executive summary being produced in print.

Our previous sustainability report was issued in October 2000, covering 1999 performance. This report is global in scope, except where noted, and covers environmental, social and economic performance for reporting year 2000. Management progress and individual sustainability initiatives are included up to time of publication.

This report is coordinated through contributions of information and data from employees throughout General Motors. Unless otherwise noted, the report presents data for the 2000 calendar year, the most current data available. Unless otherwise noted, all data are normalized by production. Data reported may change due to updated information received after publication. As a result, occasional variances may appear in comparisons from year-to-year. Data for 1998 has been restated as a result of the Delphi Automotive Systems spin-off.

This report follows the Global Reporting Initiative (GRI) Guidelines for Sustainability Reporting. The Guidelines have been developed for voluntary use by organizations reporting on the economic, environmental, and social dimensions of their activities, products and services. The GRI guidelines were the result of a multi-stakeholder, international collaboration. We are proud to have been closely associated with their development, since their inception in 1997, as a member of the a GRI Steering Committee and as a pilot company. For more information or to view the guidelines, see [www.globalreporting.org](http://www.globalreporting.org).

We remain committed to the CERES principles, which we endorsed in 1994, and aim to continue to meet the reporting requirements outlined by CERES alongside the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines.

The report is divided into five main sections. This section, GM and Sustainability, gives information on the company, the key issues we, as the largest automotive manufacturer in the world, face in the 21st century, key performance indicators outlining our performance in 2000, and our vision and strategy for making General Motors a more sustainable corporation.

The remaining four sections, split into environment, economic, social and product information, detail our management approach in these areas, the highlights and challenges we face, and details on our performance for year 2000.

About the site design: The black and white color theme illustrates the key word "balance" in the report's title, Balance through Innovation, Technology and Partnership. The rings suggest a number of images: the globe, wheels, and sustainable mobility.

## Further Information

### On-Line:

Our corporate website provides comprehensive and detailed information on many aspects of our business. In February 2001, we launched an interactive web portal designed to present comprehensive information on our commitment to sustainability and the actions we are taking to achieve our goals in this area. The web site, [www.gmability.com](http://www.gmability.com), was specifically designed to further our commitment to transparency and public accountability, as well as to:

- Create an opportunity for people worldwide to understand the impact of GM and our employees
- Include information or provide a portal to the following areas: community relations, corporate social responsibility and sustainability, diversity, environment, philanthropy, safety, trade, e-commerce, public policy



issues, and sustainable mobility

- Leverage our "corporate responsibility assets" (products, plants, partnerships, people, programs, policies)
- Outline our position on current issues
- Provide those confronting global social responsibility issues with answers and direction
- Link corporate and personal responsibility by allowing a user to find out what they can do in the various areas by indicating their location of interest

**Off-Line:**

Contact us with your queries and questions using the following details: send us a fax, write or email.

GM Corporation

300 Renaissance Center

P.O. Box 300

MC 482-C27-B22

Detroit, MI 48265-3000

USA

Facsimile: 313.665.0746

ATTN: GM Sustainability Report

Email: [http://www.gm.com/contact\\_us/](http://www.gm.com/contact_us/)

## Vision and Strategy

### Technology, Innovation and Partnership

**General Motors' Vision**

Our future success is dependent, in part, on technology, innovation and partnerships. It is essential that we manage the economic, environmental and social issues we face in an integrated manner with these factors in mind.

- Technology is the most efficient way we can address many current issues, such as fuel efficiency and climate change. It is through our products that most of the impacts arise and through which many of the solutions can be reached. Our strategy is to accelerate the development and deployment of new technology while at the same time improving existing technology.

- Innovation is not a new priority for GM. In our increasingly competitive global industry, marked by excess capacity and a growing number of strong global competitors, innovation is critical to our future success. Innovation provides us with the tools needed to develop new ways of doing things, such as new concepts of mobility, as well as new ways of working, both as a company and with others.

- Partnerships with stakeholders and others are also an important part of doing business. We recognize that we must continue our long history of building strong partnerships with our employees, industries, governments, markets, communities, and others in order to be responsive to the needs and concerns of our various stakeholders. These partnerships are needed in order to create a sustainable future.

Technology has been a key feature of GM's success — right from the start. We are leaders in introducing new technology to the mass market — from early innovations such as the self-starter, electric windshield wiper, shatter-proof safety glass, electric rear turn signals, fully automatic transmissions and sealed beam headlights, to

Our vision is to be the world leader in transportation products and related services. In order to achieve this vision, we recognize that many issues must be addressed and many goals attained. It is imperative that economic, environmental and social objectives be integrated into our daily business objectives and future planning activities so that we can become a more sustainable company.

more recent innovations, including the catalytic converter, air bags and the EV1 electric car.

We will be focusing our efforts on improving fuel economy and reducing carbon dioxide emissions, while also reducing exhaust emissions. In the near-term, this will be achieved through improvement of the internal combustion engine with technologies such as the Saab Variable Compression Engine and Displacement on Demand; providing more vehicles that can run on alternative fuels — such as Vauxhall's range of **DualFuel** LPG/gasoline vehicles that have achieved an 80% OEM market share in the U.K.; and introducing **hybrid** vehicles which offer environmental benefits for **larger commercial vehicles** as well as for cars. Our strategy is to introduce these technologies where they can provide the maximum benefit.

In the longer term, we believe the best way to reduce vehicle emissions is through fuel-cell technology, initially powered by fossil fuels and, as the infrastructure develops, powered by hydrogen, which will eliminate exhaust emissions. We will need to continue with the fast pace of innovation in this field and also work closely with governments and other organizations to ensure that the benefits of hydrogen are realized as soon as possible.

Emissions and fuel efficiency are just two of the areas where we will be using technology to improve our products. New models will make the most of information technology. The OnStar system, a GM first, is a unique blend of cutting-edge technology and attentive personal service that provides an unparalleled level of safety, security, and information. We will continue to introduce other features that improve safety and provide added functionality. This does, however, present us with a challenge. Additional technology means additional weight, which has a negative impact on fuel efficiency. Customer satisfaction is vital to our continued success and we must rise to the challenge of providing additional features and safety while at the same time making strides in improving fuel economy and reducing emissions.

Our strengths lie in providing innovative technology as outlined above, but we can also play a part in developing a societal vision — one that considers the full impacts of mobility. Our partnership with the World Business Council for Sustainable Development (WBCSD) and others on the **Sustainable Mobility project** has provided a renewed focus on these wider issues and their implications for the automobile industry. We will continue to work towards a common vision and look for new opportunities to work with others in this area.

Innovation is not limited to our products. Innovative production processes are also important in reducing the environmental impact of our plants. We are concentrating on resource efficiency, doing more with less. Instead of "waste," we talk of "resources", and we make every effort to use them sparingly and reuse them whenever possible. This focus has eliminated the use of many materials and has resulted in innovative new uses for waste. For example, we have reduced non-recycled non-product output (all material not incorporated into the finished product) by 42% in our North American operations over the past three years. Our goal is to find new solutions and make the most use of our global reach through ensuring that best practices are shared and implemented throughout all our plants.

We will also be innovative and progressive in the way we work with our people. We have a strong set of core values that are laid out in our Winning with Integrity guidelines that guide employee conduct and we support the Global Sullivan Principles.

A key strength of GM is the diversity of those whom we are involved with around the world. We want to continue to make the most of that diversity. We have developed a strong set of policies and practices that are designed to enable each and every person to contribute fully, whether as an employee, supplier, dealer or a part of our local community. Many diversity initiatives are already in place and we intend to take more steps in the coming years.

The safety of our people is of paramount concern and we have made significant advances in reducing the number of accidents and the number of injuries from accidents. We will continue to set ambitious targets to ensure that this level of achievement continues.

Integrating sustainability into our business strategy and day-to-day decisions is an ongoing process at GM. New functions such as the GM global Energy and Environmental Strategy Board (EESB) are leading this integration. The EESB and the Energy and Environmental Strategy Core Team, a team comprised of subject matter experts that support the EESB, recently participated in sustainability training. In the near future, this training will be available to increasing numbers of our employees through General Motors University. An increased awareness of the concept and practice of sustainability, as it applies to our vision and values, will help ensure further integration of sustainability thinking into the core of our business. The WBCSD **Sustainability**

**Through the Market project** also provides us with opportunities for integrating sustainability into our business.

As we move forward, we must also continue to develop strong partnerships with our stakeholders to help accelerate our progress. The issues we face are complex and the solutions can only be found and achieved if business, government and society work together. Our relationships with organizations such as the WBCSD and the Coalition for Environmentally Responsible Economies (CERES), as well as the many members they represent, have been important contributors to our progress to date. Key to working with others is our commitment to transparency and to providing our stakeholders with evidence of our progress so that they can evaluate our performance. This report and other initiatives, such as our GMability.com web site, help us achieve that transparency. As we move forward, we will continue to build on our relationships with our stakeholders, and seek to further understand their perspectives and to build these into our decision-making processes.

## Key Issues

### Sustainability in GM's Business

At GM, sustainability represents a management framework that drives us to seek continuous improvement in our operations and products in a way that integrates economic, environmental and social objectives into both our daily business decisions and future planning activities. We recognize that our earth is fragile and as a leading global company we have a responsibility to integrate sustainable development into our business priorities. This means combining our bottom line profitability with our environmental and social responsibilities.

One way in which we are integrating sustainability into our business is through the implementation of the GM global Energy and Environmental Strategy. A global Energy and Environment Strategy Board (EESB) has been established to lead GM's development and implementation of this strategy. The EESB and the Energy and Environmental Strategy Core Team, a team comprised of subject matter experts that support the EESB, recently participated in sustainability training. In the near future, this training will be available to increasing numbers of our employees through General Motors University. An increased awareness of the concept and practice of sustainability as it applies to our vision and values will help ensure that the goals of the Energy and Environmental Strategy are increasingly integrated into our products, plants and partnerships.

### Corporate Social Responsibility

Corporate social responsibility (CSR) is generally considered conducting business activities in a responsible manner. At General Motors, CSR is the attempt to balance environmental and social aspects of our business with the economic aspects of our business.

CSR is largely driven by societal expectations and intersects a myriad of corporate issues with broad implications to profitability. We maintain a cross-functional team representing multiple disciplines to forecast and identify global CSR issues and assess impact to the corporation. Seven CSR focus areas frame current issues and anticipated issues: human rights, worker rights, environment, business practices/ethics, government relations, community relations/philanthropy and supplier relations. Our commitment to CSR is demonstrated in activities ranging from education and technology to health care and philanthropy. We continue to increase the rate of CSR integration into our global business operations, thus supporting our core values. Our six core values are customer enthusiasm, continuous improvement, integrity, teamwork, innovation and individual respect and responsibility.

We have developed and published *Winning with Integrity: Our Values and Guidelines for Employee Conduct*, which is based on our core values and demonstrates our commitment to integrity. They include personal integrity, integrity in the workplace, integrity in the marketplace, and integrity in society and its communities. We also support the Global Sullivan Principles, as consistent with our core values and Winning With Integrity. The Global Sullivan Principles, which were developed by the late Reverend Leon H. Sullivan and have their roots in the 1977 Sullivan Principles for South Africa, provide guidance to companies across the globe regarding core issues such as human rights, worker rights, the environment, community relations, supplier relations and fair competition.

### Future Fuels and Propulsion Systems

We are considering a broad range of technology options to meet future transportation needs, low emissions

requirements and fuel efficiency goals. These technologies include lean burn gasoline engines, advanced diesels, hybrids and fuel cells. All of these technologies require cleaner fuels in order to attain the maximum emission reduction potential of catalyst based emission controls. The World-Wide Fuel Charter, issued by the world's auto manufacturers, has encouraged the U.S. Environmental Protection Agency and the European Union to include clean fuel requirements in the latest round of vehicle emission requirements. Essentially, sulfur-free gasoline and diesel fuel will be needed to support lean burn, advanced diesels and fuel cells. While these fuels will be available in Europe in the 2005 to 2010 time frame, the U.S. must take steps to reduce gasoline sulfur. Gasoline distillation properties must also be controlled in order to achieve low emissions and address engine deposits. U.S. diesel fuel cetane must also be increased in order to address engine noise and smoke.

### **Sustainable Mobility**

Mobility is essential to life. There is a deep human need for autonomous, convenient, and efficient movement that shrinks distance and saves time. Mobility is also essential to modern, competitive economies, which require the timely and effective flow of goods and services. Existing means of transportation have enabled a significant percentage of the world's people and businesses to meet their mobility needs with relative ease at affordable prices. However, the successful satisfaction of these needs has led to growing concerns about transportation's impacts on the environment, on the public's health and safety, and on the quality and patterns of life, in both developed and developing nations.

In early 2000, we proposed to the World Business Council for Sustainable Development a project to look ahead thirty years to envision how the world's mobility needs could be satisfied on a sustainable basis. Eleven companies, including six of the world's ten largest, are now involved in this three-year effort, which is co-chaired by GM, Shell and Toyota. The project's first report, *Mobility 2001*, assesses the sustainability of current modes of transportation, worldwide. The companies involved will respond with *Mobility 2030*, due by mid-2003, which will include visions of sustainable mobility systems of the future and how to get there. You can follow the progress of this project at [www.wbcsmobility.org](http://www.wbcsmobility.org).

### **Aging Populations and Emerging Policies**

We have long-established safety research and engineering programs for aging drivers. These programs have been expanded greatly as a result of emerging data. GM originally was involved in bio-mechanical research to define different injury patterns in older drivers and pedestrians, to modify the Hybrid III and Side-impact dummy injury criteria to increase engineering protection. This work continues, but new emphasis is being added. Research medical data, globally, is showing that persons are living much longer, remaining vital and interested in use of freedom of mobility in personal transportation, and that the trend is actually increasing. Our programs include design features that both comprehend and extend communication needs for older drivers with needs and wishes for instrument panel, vehicle operation, and communications characteristics optimized for safety and comfort. In addition, our employee population is aging, and public and corporate policies that relate to an older work-force being increasingly capable of working longer with increased value, balanced with a desire by many for early retirement, second or third careers, and broad societal demographic shifts require new and innovative policy development. As with the younger population entering the consumer and the employee workforce, we approach this issue as a strength in diversity, and welcome the challenge to learn more from all these programs.

### **Diversity**

The global context for diversity includes two areas — multiculturalism (country-to-country) and a U.S.-based concept of diversity that goes beyond cultural/ethnic differences to include diversity based on experiences, style, gender, level, age, race, religion, etc.

Our position is that our employees' ability to handle these differences and work successfully together is critical, whether the origin of the diversity is language, national origin, cultural differences or differences based on other characteristics. Our vision is "An environment that naturally enables General Motors employees, suppliers, dealers and communities to fully contribute in the pursuit of total customer enthusiasm." Our values address the issue most directly by aligning with one of our core values: Individual Respect and Responsibility.

We regularly provide our employees with information and resources to assist them in adapting to different cultures. Our challenge is to increase this communication effort and our resources that are devoted to broader diversity issues. It is a significant challenge. Key initiatives include work with Employee Affinity Groups and

developing resources that will reach as many employees as possible, including a diversity website, diversity voice-mail "learning moments," library resources, mobile constituency exhibits, and publicity materials (posters, brochures, etc.) All materials reiterate the importance of individual behavior in creating an inclusive environment for all that interface with GM. Future priorities include broad implementation of initiatives that internal research indicates make an impact on a corporate culture predicated on inclusion.

### **Global Climate Change**

The challenge confronting General Motors is to develop a broad portfolio of advanced technology vehicles that will address concerns about climate change while continuing to meet consumer demands for performance, safety, convenience, and affordability. We believe that hydrogen fuel-cell vehicles that produce no emissions are the long-term solution to climate change in the transportation industry, though significant technical, infrastructure, and cost challenges must be overcome. We also envision a period of transition characterized by continuing improvements in conventional vehicles, modern diesel technology, and the introduction of a variety of hybrid vehicles for consumer and commercial vehicle markets.

Climate change is a global issue affecting General Motors' operations around the world. Government policies and actions to reduce emissions of greenhouse gases here and abroad could have significant impacts on the cost, performance, and demand for our products as well as impact our manufacturing operations. National policies to address climate change could encompass rising energy costs and higher gasoline prices in particular; requirements for greater vehicle fuel economy; vehicle taxes; and restrictions on personal mobility.

We have long maintained that there is enough cause for concern to take appropriate actions to reduce global greenhouse gas emissions. We believe that the development of new, cost-effective energy technologies is the most effective response to concerns about climate change. We oppose binding emissions targets and timetables, and command and control regulations such as CAFE. We believe that efforts to address climate change must include key developing countries, and must utilize market-based mechanisms to reduce the cost of mitigating greenhouse gas emissions.

## **Sustainability through the Market**

General Motors was a member of the World Business Council for Sustainable Development (WBCSD) working group on Sustainability Through the Market. The goal of this project was to take a more holistic approach to sustainable production and consumption, by promoting a better understanding of the market and how it functions as a system rather than by focusing on isolated elements of it.

This project identified seven keys to achieving sustainability through the market. We support these key concepts as they help us more fully integrate sustainability into our business plans. The key concepts, and examples of their integration into our business, include:

### **Key 1: Innovate — Novel technical and social resources; new ways to improve lives while boosting business.**

A fleet of hybrid buses using the Allison Hybrid Drive System is being used in several major U.S. cities. If the Allison Hybrid System powered the 13,000 transit buses in the nine largest U.S. cities 40 million gallons of fuel would be saved per year, equivalent to the fuel savings from 500,000 small car hybrids.

### **Key 2: Practice Eco-efficiency — Economic benefit and environmental performance**

We are proving that what's good for the environment can also be good for the bottom line with an innovative and ambitious program that has reduced the company's solid waste by 30% and is expected to save the corporation \$15 million a year. The program eliminates waste before it happens and provides financial incentives to contractors to find innovative ways to eliminate the waste typically created during the manufacturing process. Rather than merely paying a waste hauler to take the materials away from the loading dock, the resource management approach makes the supplier a partner inside the plant, searching for waste reduction and recycling opportunities wherever they might occur. Cardboard boxes, wooden pallets and even cooking oil from cafeterias are now turned into useful products, rather than filling landfills.

We have also instituted a chemicals management system in our facilities that puts a single supplier in charge of all chemicals coming into the plant. The supplier is paid based on production, not the amount of chemicals used, which provides an incentive to reduce chemical use. This system means we no longer buy

chemicals-we buy chemical services.

**Key 3: Move from Stakeholder dialogues to partnerships for progress — Shared understanding, aligned action and social inclusion**

We believe the best way to meet the many complex issues facing us is to include diverse input in our decision making process, to gather the best ideas, and keep a collective eye on a common goal.

Vauxhall, along with 19 other business and government bodies, are partnering with the Sustainability: Integrated Guidelines for Management (SIGMA) Project. The goal of SIGMA is to create a methodology for a company of organization to integrate sustainability into business practices.

**Key 4: Provide and inform consumer choice — A different type of demand by enhancing appreciation for values that support sustainability**

Education and information play a key role in shaping consumers' understanding of the consequences of their choices. We are using the Internet to help education consumer through the Gmability.com website and the earthtroop.com website.

General Motors China Group donated five electric-powered vehicles to the Ministry of Science and Technology of China as part of the company's support for a cleaner environment. The five vehicles, two EV1s and three electric S-10 pickup trucks, were delivered to the ministry in the China EV Field Test and Demonstration Zone located in Shantou, Guangdong, province in South China.

**Key 5: Improve market framework conditions — A stable, corruption free, socio-economic framework that facilitates positive change**

The U.S. government is proposing incentives for the purchase of advanced technology vehicles. This will help make these new technologies more affordable and will also help speed their acceptance.

**Key 6: Establish the worth of the earth — Environmental conservation and promotion of resource efficiency**

Ecological resources are important to the world's environmental health and well being. We are involved in many restoration and construction activities throughout the world that go well beyond regulatory requirements. Ponds, wetlands, forests and the environment provide habitats for a variety of plants, insects, birds, fish and mammals, while fulfilling other functions that are critical to the world's existence. We are active in restoring, enhancing and preserving these vital areas. Working with The Nature Conservancy in southern Brazil, we have launched a major initiative to restore and protect over 30,000 acres of degraded rainforest. This project aims to protect in perpetuity this critical wildlife habitat while stabilizing the environmental health of the Cachoeira River valley, reducing slash and burn clearances and pollution, and creating economic opportunities for nearby communities.

**Key 7: Make the market work for everyone — Economic benefit and social cohesion**

Our global manufacturing footprint is growing due to our expansion into emerging markets. In the past our corporate social responsibility programs have been fully integrated into planning for operations in many countries, notably Asia and Latin America. These include building infrastructure into new plants to utilize fully state-of-the-art and best available process technologies for low emissions and manufacturing practices. We also commit to operating the safest facilities, and providing excellent access to healthcare options. Included in the latter are educational and other efforts in HIV-AIDs, bone-marrow donor and cancer registries, and opportunities that raise the standard of living and job market advancement for the greater good of the global human community. Specifically, we have built and are operating manufacturing and assembly facilities that are among the best in the world for safety, health, education, and wages in Halol, India; Rayong, Thailand; Shanghai, China; Rosario, Brazil; and others.

# Integrated Management

## General Motors' Vision

Our vision is to be the world leader in transportation products and related services. In order to achieve this vision, we recognize that many issues must be addressed and many goals attained. It is imperative that economic, environmental and social objectives are integrated into our daily business objectives and future planning activities so that we can become a more sustainable company and respond positively to the challenges and opportunities we will encounter in the future.

As a leader in the automotive sector, our continued success is dependent upon technology, innovation and partnerships. It is essential therefore that we manage the sustainability issues we face in an integrated manner with these success factors in mind in order to help us achieve the aggressive goals we set ourselves and realize our vision.

## Winning with Integrity

We have defined a set of six core values that guide our global business conduct. These are:

1. Continuous Improvement
2. Customer Enthusiasm
3. Innovation
4. Integrity
5. Teamwork
6. Individual Respect and Responsibility

These values are the basis upon which all of our employees conduct their day-to-day business. The core value of integrity is the foundation of our guidelines for employee conduct, entitled, "Winning with Integrity — Our Values and Guidelines for Employee Conduct."

These guidelines demonstrate our global commitment to the achievement of business success with integrity. The guidelines are published as a series of information booklets, which cover personal integrity, integrity in the workplace, integrity in the marketplace, and integrity in society and its communities. In line with the global nature of our organization, our employees are able to obtain copies in nine languages.

Each booklet in the series discusses aspects of Winning with Integrity, explaining our policies and expectations, offering examples of situations employees might face, and suggesting how they ought to deal with them.

## Global Sullivan Principles

In May 1999, we announced our support for the Global Sullivan Principles, which are consistent with our internal policies and principles, including our Winning with Integrity guidelines. The Principles, developed by the late Reverend Leon H. Sullivan, have their roots in the 1977 Sullivan Principles for South Africa, and provide guidance to companies across the globe regarding core issues such as human rights, worker rights, the environment, community relations, supplier relations and fair competition.

We remain committed to the ideals outlined in Global Sullivan Principles through endorsement of, and participation in, the Global Sullivan Principles Core Group Committee.

*"The objectives of the Global Sullivan Principles are to support economic, social and political justice by companies where they do business; to support human rights and to encourage equal opportunity at all levels of employment, including racial and gender diversity on decision making committees and boards; to train and advance disadvantaged workers for technical, supervisory and management opportunities; and to assist with greater tolerance and understanding among peoples; thereby, helping to improve the quality of life for communities, workers and children with dignity and equality."*

**- The Reverend Leon H. Sullivan**

## Management Structure

The business of our corporation is overseen by the Board of Directors, which is responsible for electing the officers of the corporation, and managing its operations.

GM subsidiaries that are corporations have independent Boards of Directors responsible to General Motors. Our two the largest subsidiaries are General Motors Acceptance Corporation (GMAC) and Hughes Electronics Corporation. Our automotive business is managed through strategy boards that ultimately report to the GM Board of Directors.

- The Automotive Strategy Board is responsible for the global strategic direction of our automotive business, which accounted for 80% of our sales and revenues in 2000. Feeding into the Automotive Strategy Board are Regional Strategy Boards that coordinate operations in each of our major regions: North America Strategy Board

- European Strategy Board
- Latin America, Africa and Mid-East Strategy Board
- Asia Pacific Strategy Board

The General Motors Board of Directors represents our owners' interest in perpetuating a successful business, including optimizing long-term financial returns. The Board is responsible for seeing that the Corporation is managed in such a way to ensure this result. This responsibility is an active, not passive. The Board operates under the corporation laws of the State of Delaware (where we are incorporated), Bylaws and our Corporate Governance Guidelines. Adopted by the Board.

In addition to fulfilling its obligations for increased stockholder value, the Board has responsibility to other stakeholders — our customers, employees, suppliers and to the communities where we operate — all of which are essential to a successful business. All of these responsibilities, however, are founded upon the successful perpetuation of the business.

There are currently 11 Board members, including nine non-employee members and two management members. The Board manages the corporation's business and accomplishes work through a number of Committees. The six current committees are Audit, Capital Stock, Director Affairs, Executive Compensation, Investment Funds, and Public Policy. Except for the Investment Funds Committee, committee membership consists of independent Directors only as defined in By-law 2.12.

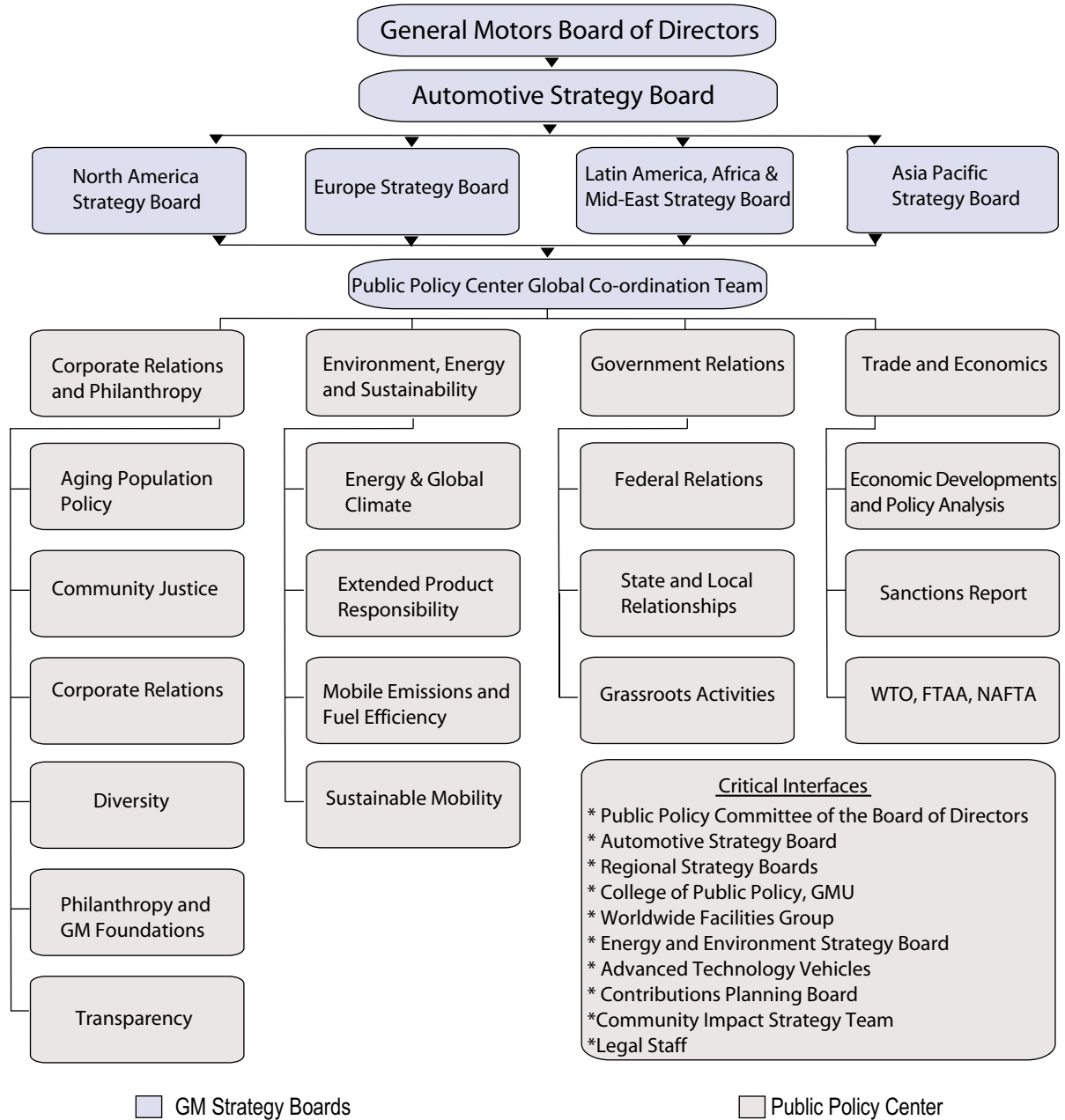
### Managing Sustainability

Of the six main committees outlined above, the Public Policy Committee was set up to ensure that we operate our global business in a manner consistent with the rapidly changing demands of society. Matters reviewed by the Public Policy Committee cover economic, environmental and social issues and are directly related to our pursuit of sustainability. A selection of the main issues that the Committee is responsible for include research and development, automotive safety, environment, diversity, health care, trade, corporate social responsibility and economic development. The role of the committee is to provide public policy guidance to management. This supports our pursuit of business growth within the framework of our core values and our sustainability goals.

To support the focus of the Public Policy Committee and provide a management structure to facilitate the work of the committee, the Public Policy Center (PPC) was established bringing together our government relations, energy and environment, sustainability, economics, philanthropy and community relations functions. The vision for the PPC is to be a lean, global network that proactively advances the position of General Motors on issues of public policy. To help achieve this vision the mission of the PPC is to:

- Anticipate external trends and changes that could impact our business decisions.
- Support corporate business and cultural objectives.
- Develop and execute coordinated public policy strategies.
- Ensure that our strategic plans and operating practices take into account the changing public policy environment.





The Global Coordination Team manages the overall operations and direction of the PPC. Within the Global Coordination Team there are members that represent the four GM regions and each of these members sit on their respective Regional Strategy Boards. This management structure provides the Global Coordination Team with a direct link to the strategy and business decisions taken by the Automotive Strategy Board and the Regional Strategy Boards. PPC leadership is provided by our Vice President Environment and Energy and Chief Environmental Officer, Vice President Corporate Relations and Diversity, Vice President Government Relations and Chief Economist who report directly to the Executive Vice President. These individuals are also part of the Global Coordination Team.

Building on the approach used throughout our businesses, the Public Policy Center promotes a cross-functional team concept, working with a series of cross-sector teams, organized around specific policy issues. The organizational structure above shows the four centers of expertise around which the PPC is arranged; each center of expertise is responsible for several issues.

We report on the work of the Public Policy Center through the annual production of this sustainability report and through the GMability web site, which was launched in February 2001.

The management approach adopted for specific environmental and social and community issues are discussed in the relevant management sections of this report.

## Key Indicators

Indicator	2000 performance	Performance against 1999
<b>Economic indicators</b>		
Turnover (US\$ in millions)	184,632	176,558
Earnings/(loss) (US\$ in millions)	4,972 (adjusted)	
Return on Net Assets (%)		14%
Vehicle Production (cars and trucks)	8.6 million	8.35 million
Global passenger car market share (%)	15.1	15.8
Dividend (US\$/share)	2	
Employees	386,000	398,000 (restated to include Saab employees)
<b>Environmental indicators</b>		
Carbon dioxide emissions (t)	13.58 million	Down 2.7% from 13.96 in 1999
Waste disposed to landfill (tons)	1.2 million	Up 9% from 1.1 million tons in 1999
Water consumption (m <sup>3</sup> )	61.5 million	Down 6% from 65.3 million m <sup>3</sup> in 1999
Product: Average CO <sub>2</sub> emissions per car sold (g CO <sub>2</sub> /km)		
Process: Sites certified to ISO 14001	81%	
Suppliers: Number certified to ISO 14001		
<b>Social indicators</b>		
Community donations and sponsorships (US\$)	\$78.1 million	Up 8.5% from \$72 million in 1999
Diversity: % female employees (U.S. workforce)	19.2%	
Diversity: % minority employees (U.S. workforce)	23.3%	
Discrimination litigation (no. of charges, GMNA only)	271	Down 13.7% from 314 cases in 1999
Employee Satisfaction (% of employees satisfied with their organization as a place to work at the present time)	58%	First global census (to be repeated in 2002)
Recordable injury rate (per 100 employees GM Global)	6.1	71% reduction since 1995
Lost time accident rate (per 100 employees, GM global)	0.6	83% reduction since 1995

## Eco Efficiency Profile

The World Business Council for Sustainable Development (WBCSD) has developed an innovative framework for measuring and reporting eco-efficiency. These eco-efficiency indicators can be used across all industries, regardless of their location and serve as decision-making tools for internal management to evaluate performance, set targets and initiative improvement measures. The indicators shown below are for GM's North American operations only.

ORGANIZATION PROFILE	
GM North America (GMNA)	
Full-line vehicle manufacturer	
Fiscal year 2000	
212,000 employees	

VALUE PROFILE	
Vehicles produced	5,640,108
Sales in U.S. dollars	\$112.7 billion

ENVIRONMENTAL PROFILE	
Energy consumed:	108,807,862 GJ
Water consumed:	50,677,579 m <sup>3</sup>
GHG emissions *	10,769,190 metric tons CO <sub>2</sub>
Non-recycled NPO**	715,864 metric tons
* From stationary sources	
** NPO = Non-Product Output	

ECO-EFFICIENCY PROFILE	
<b>Vehicles produced per:</b>	
Gigajoule energy consumed	0.052 vehicles/GJ
Cubic meter water consumed	0.11 vehicles/m <sup>3</sup>
Metric ton CO <sub>2</sub> equivalent emitted	0.52 vehicles/ metric ton
Metric ton non-recycled non-product output	7.9 vehicles/metric ton
<b>\$ Sales per:</b>	
Gigajoules energy consumed	\$1,036/GJ
Cubic meter water consumed	\$2,224/m <sup>3</sup>
Metric ton CO <sub>2</sub> equivalent emitted	\$10,465/metric ton
Metric ton non-recycled non-product output	\$157,432/metric ton

## Stakeholder Relationships

We have sought to strategically align ourselves with various organizations, in order to advance our position on issues of global importance. We value the opinion of our stakeholders and actively encourage scrutiny from environmental and safety organizations, academia and community groups. We also value differing regional and country perspectives from around the globe and issues management approaches that consider several disciplines (i.e., economic, environmental and social). We support these alliances through financial and in-kind resources.

### Stakeholder Consultation

Consultation with stakeholders is an important part of doing business. Through such dialogue we become aware of the views of others and we gain a better understanding of various constituencies. Stakeholder engagement is generally conducted through periodic meetings and advisory council forums. Written communications and surveys provide the basis for other dialogue.

We actively engage stakeholders in various areas of our business. Such engagement allows us to develop policies and positions that are of value to our business, and that are responsive to the needs and concerns of our stakeholders.

### World Business Council for Sustainable Development

The World Business Council for Sustainable Development (WBCSD) is a coalition of 120 multinational companies that share a commitment to the principles of sustainable development: environmental performance, social equity, and economic prosperity. Members represent 30 countries and 20 major industrial sectors. GM has been a member of the WBCSD since 1995, and is actively involved in its work program, which focuses on issues such as Eco-efficiency metrics, sustainability reporting, global climate, corporate social responsibility, sustainability through the marketplace, technology innovation, and sustainable mobility.

### Community Impact Strategy Team

This team was formed to strategically identify internal and external issues that may impact us and the communities in which we operate. The goal of this team is to develop and manage strategic processes that take into consideration local community initiatives when determining future actions and announcements. These issues include labor relations, facilities, community relations, philanthropic activities, communications, government relations, enterprise activities, tax, real estate, planning, and purchasing.

### Public Policy Issues

Balanced public policy solutions to major societal issues are important to our business. Strategic alliances with local, national and international organizations allow us to participate in the development of such solutions.

#### Information Generated

The information generated as result of stakeholder engagement programs provides us with a balanced perspective of our position on societal issues.

After information is generated, careful analysis allows us to continuously improve in various areas. Some of the resulting improvements are shown below:

- Development of best practices
- Benchmarking for continual improvement of various processes
- Research
- Regular reporting on progress towards established goals
- Formal and informal agreements with unions and other stakeholder groups
- Feedback used in the design of new products, machinery, equipment and tooling

## ECONOMIC INFORMATION

## Financial Performance

Since our foundation in 1908, we have grown to become the world's largest industrial corporation and full-line vehicle manufacturer. Throughout our ninety-three year history, we have consistently sought to be at the forefront of technology, innovation and creativity, gaining competitive advantage by embracing change. We experienced strong competition and rapid change in the global auto industry in 2000, factors that have become constants of our business at the dawn of the 21st century. We had our share of achievements, as well as a few challenges.

Our global revenues reached a record \$184.6 billion, up 4.6% over 1999. However, net income from continuing operations totaled \$4.5 billion, down \$1.1 billion over 1999. Excluding special items, earnings were the second highest in our history at \$8.58 per common share. That was down from the record \$8.62 in 1999, but still solid given the price pressures in our largest markets around the world.

We held on to global market leadership despite a half-point percentage reduction in global market share to 15.1%. Our market share in the U.S., our largest market, fell one percentage point to 27.8%.

In other measures, however we fell short with our GM Europe and Asia Pacific operations, posting unacceptable losses for the year.

We do not accept our continued share decline, and we are moving aggressively to reverse the trend. In 2001, we have accelerated our focus on turning our under-performing regions profitable, growing our global market share, and improving the financial measures by which we are judged.

To help achieve a turnaround, we made some tough calls towards the end of 2000 in light of the weakening North American market and losses in GME.

In GMNA, the decision to phase out the Oldsmobile brand, reached only after continued efforts to revitalize the brand, was a very difficult one to make in light of our loyal customer base and the dedicated efforts of Oldsmobile employees and dealer network. However, in the long-term interest of the company, and with the continued unprofitability of Oldsmobile, we felt it necessary to focus our skills and resources on other brands with stronger prospects for growth.

We also decided to reduce headcount in North America and Europe by 10% during 2001, and to close one of our two assembly plants in Luton, England in 2002. At the Luton Plant, our subsidiary Vauxhall Motors is working to minimize the negative impact of the plant closure through intensive efforts to relocate employees within the company, offering attractive early retirement and voluntary separation programs, and working alongside government agencies and local authorities on job search and training. By taking these actions, Vauxhall aims to have no forced job losses due to the closure, minimizing the impact on our employees and on the local community.

These difficult decisions are part of our continuing restructuring and will improve our cost structure, helping us to run more efficiently.

In addition to making tough calls, we intend to turn around under-performing areas of our business and increase market share by sticking closely to our cultural and business priorities and by making a strong commitment to innovation, leadership and customer satisfaction.

This process will result in measurable progress against our four business priorities:

1. Innovative products and services
2. E-business leadership
3. Asia Pacific growth and proactive participation in industry consolidation.
4. Excellent business results.

Beginning this process, and as part of our drive towards

**Cultural Priorities:**

- Act as one company - putting aside our history of internal competition and leveraging the global capabilities of our organisation.
- Embrace stretch targets - setting aside our tradition of conservative goal setting, and striving to achieve the best that we can.
- Move with a sense of urgency - working to accelerate everything that we do, and using speed as a competitive advantage.
- Enhance our product and customer focus - building long term relationships with our customers by providing great products and services, and keeping a keen external focus in all of our activities.

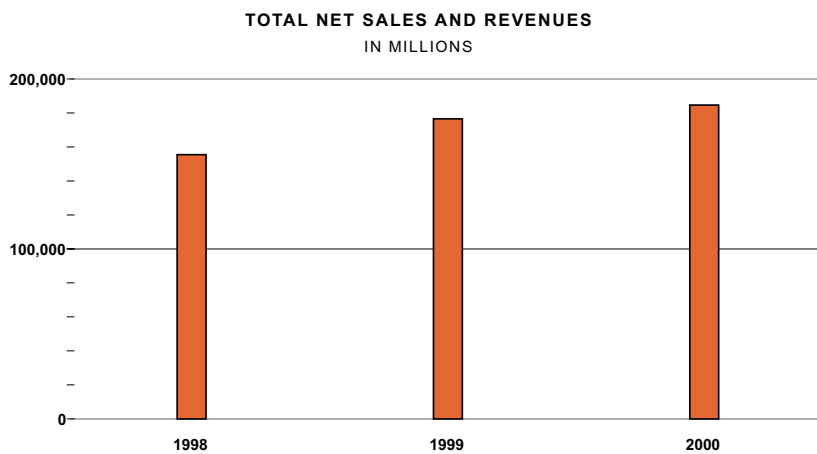
industry consolidation, we have acquired 20% stakes in two of the world's most respected auto manufacturers, Fiat Auto and Fuji Heavy Industries, owner of the Subaru brand. Through a number of partnerships and joint ventures we are sharing our combined worldwide purchasing power, technology portfolio, engineering developments and distribution networks while retaining control of our individual businesses, brands and cultures.

In 2000, we invested \$6.6 billion in manufacturing and product engineering and research and development related to new and existing products and services. This includes activities related to vehicle emissions control, improved fuel economy, and vehicle safety.

RESEARCH AND DEVELOPMENT SPENDING WORLDWIDE (US\$ in millions)	
1998	\$71,000
1999	\$71,000
2000	\$69,000

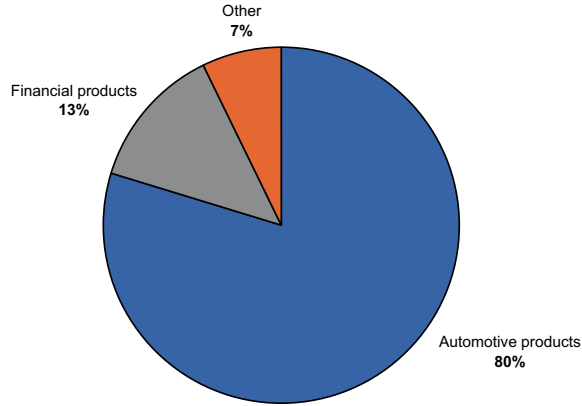
Selected financial data is presented here. More detailed financial data and further information on our business priorities is available online in our 2000 Annual Report.

## Financial Data



SALES AND REVENUES BY PRODUCT TYPE (US\$ in millions)			
	1998	1999	2000
Automotive products	\$129,054	\$146,056	\$147,400
Financial Products	\$18,284	\$20,451	\$24,005
Other	\$8,107	\$10,051	\$13,227
Total net sales and revenues	\$155,445	\$176,558	\$184,632

### SALES AND REVENUES BY PRODUCTS 2000



#### WORLDWIDE NET EARNINGS (US\$ in millions)

1998	\$3,049 million
1999	\$5,576 million
2000	\$4,452 million

Note: geographic distribution not available

#### WORLDWIDE EARNINGS BEFORE INTEREST AND TAX (EBIT) (US\$ in millions)

1998	\$10,861 million
1999	\$16,444 million
2000	\$16,397 million

Note: geographic distribution not available

#### GROSS MARGIN

Pursuant to GRI definition		NET MARGIN (adjusted basis)
1998	\$29,928 million	2.1%
1999	\$37,639 million	3.2%
2000	\$40,896 million	2.4%

Note: Geographic distribution not available.



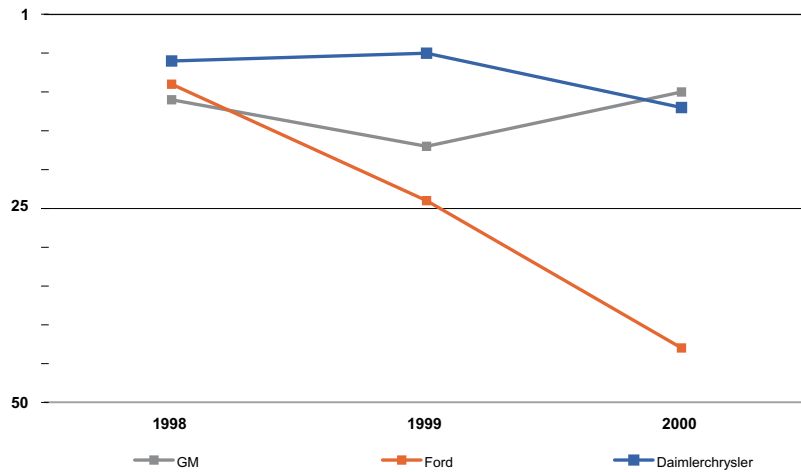
DEBT/EQUITY RATIO			
	1998	1999	2000
<i>Automotive, Communications, and Other Operations</i>			
Long-term debt to the total of this debt and equity	58.1	42.3	30.80%
Long-term debt and short-term loans payable to the total of this debt and equity	61.8	48.2	36.60%
<i>Financing and Insurance Operations</i>			
Total Debt to Total Stockholder's Equity	10.8 :1	10.9 :1	9.5 :1
Dividends (US\$)		\$2/Share	

## Reputation

Our position globally, and relative to our key competitors as one of the world's most respected companies, has been reinforced by the [U.K.] Financial Times 2000 survey of the world's most respected companies. In 2000, we leaped seven places to tenth position, above Daimler-Chrysler and Ford, ranking 12th and 43rd respectively.

The survey questioned some 4,000 business leaders in more than 70 countries, with 720 respondents taking part in the survey.

FINANCIAL TIMES 2000 SURVEY OF THE WORLD'S MOST RESPECTED COMPANIES RANKING



## Labor

During 2000, total employment across our worldwide facilities declined by 3%. Much of this decline was within GMNA, our largest operating region, where employment declined by 2.3%.

Worldwide payrolls from continuing operations (excluding Hughes) totaled \$21.6 billion in 2000, down 1% from \$21.8 billion in 1999. This is against the 3% reduction in employees worldwide between 1999 and 2000.

In the U.S., payrolls totaled \$9.4 billion down from \$10 billion in 1999. Consequently, the average labor cost per hour for the U.S. hourly work force, which includes both wages and benefits, was \$52.89, an increase of 4.7% over 1999. This is significantly higher than the all-manufacturing hourly labor cost in the U.S. In 1999, the latest year available, our labor cost was 2.6 times the U.S. all-manufacturing rate of \$19.20.

EMPLOYMENT	1998	1999	2000
GM North America	226,000	217,000	212,000
GM Europe	94,000	91,000*	89,000
GM Latin America, Africa, Middle-East	24,000	23,000	24,000
GM Asia Pacific	10,000	10,000	11,000
GMAC Financial Services	24,000	27,000	29,000
Hughes	15,000	18,000	9,000
Other (Allison Transmission Division, GM Locomotive Group, GM Service Parts Operations)	13,000	12,000	12,000
OnStar			
Total	406,000	398,000*	386,000

\*Restated to include SAAB employees

GM NORTH AMERICA WAGES AND BENEFITS (US\$ in millions)			
	1998	1999	2000
Total Wages	14,132	15,566	15,140
Total Benefits	6,844	7,648	7,199
Total Wages and Benefits	20,976	23,214	22,339

\*2000 is the first year to include information for GM de México

## Philanthropy & Community Support

We have a long history of making substantial and varied charitable contributions to deserving external organizations, bringing wide-ranging benefits to the communities in which we live and work. These contributions reach their target group through two primary outlets, the GM Foundation and GM corporate contributions.

In 2000, we contributed \$78 million to charitable causes through cash contributions (\$52.7 million), in-kind donations (\$17.4 million) and participation in charity events (\$8 million). During 2000, we donated products, components and other equipment to a variety of educational institutions with automotive service programs or engineering programs, such as universities, colleges, vocational schools, secondary schools and correctional institutions. We have also donated non-product equipment and real estate to selected non-profit charitable institutions that directly benefit the local communities in which we operate. In addition, we participate in a variety of charity events to benefit diverse philanthropic causes and organizations.

WORLDWIDE CHARITABLE CONTRIBUTIONS 2000 (US\$ millions)			
Cash Contributions	GM Foundation	GM Corporation	2000 Total
Education	9.0	4.9	13.9
Health and Human Services	7.6	7.1	14.7
Civic and Community	2.8	2.8	5.6
Public Policy	3.8	-	3.8
Arts and Culture	8.2	1.8	10.0
Environmental and Energy	-	1.3	1.3
Other	1.9	1.5	3.4
Total Cash Contributions	33.3	19.4	52.7
In-Kind Donations	-	17.4	17.4
Total Contributions	33.3	36.8	70.1
Charity Events	-	8.0	8.0
<b>TOTAL</b>	<b>33.3</b>	<b>44.8</b>	<b>78.1</b>

## Supporting Education

During 2000, we continued relationships with universities through our Key Institution Program, which comprises schools that have been selected primarily for the quality of their engineering and business programs. Educational contributions totaled \$13.9 million in 2000 of which approximately 80% was directed towards science and engineering, with much of the remainder supporting business education. This support has been primarily in the form of cash grants and equipment donations.

We have also provided grants that match employee contributions through the GM Matching Contributions Program. In 2000, the company matched more than \$978,000 representing more than 2,600 employee contributions to 440 accredited degree-granting institutions and libraries.

In addition to providing grants to colleges and universities, we provide direct support to students. In 2000, we provided 914 scholarships, totaling more than \$1.56 million to outstanding engineering, environmental, public policy and business students. Many participating students also gained work experience related to their studies through summer internships at our facilities.

We are a major sponsor of World in Motion, an educational program created by the Society of Automotive Engineers (SAE). This program provides the opportunity to demonstrate to students the value of continuing to take mathematics and science courses by showing them how technical disciplines can be readily applied to the world of work. Through this program, SAE provides students with engineering experience and gives them an opportunity to discover and try their hand at what engineers do in the real world. SAE's hands-on interdisciplinary curriculum, integrated into one planned unit is a model program that meets all educational standards.

In 2000, the GM Foundation funded an initiative which provides \$200,000 a year for five years to the National Science Foundation of China (NSFC). This relationship was formally announced in November at a ceremony held in the Great Hall of the People in Beijing where we jointly signed the Science Research Cooperation Agreement. This agreement assists Chinese scientists by providing funding for joint research and development projects on transportation and safety, environment, and human health.

## Supporting Health & Human Service Initiatives

Cancer research remains one of our key philanthropic priorities. We established the GM Cancer Research Foundation (GMCRF) in 1978 to honor scientists throughout the world who have been selected by their peers for hallmark achievements in research on the causes, prevention, and treatment of cancer. The awards - valued at \$250,000 each - are considered among the most internationally prestigious in medicine. Seven of the GMCRF award winners have subsequently won Nobel prizes for their work. The GM Foundation contributed more than \$1.7 million to the GMCRF in 2000 and has contributed more than \$30 million since its inception.

In March 2001, we announced a new cancer research recognition program, the GM Cancer Research Scholars Program. This new fund will provide \$1 million per year to support ongoing research projects. The GM Cancer Research Scholars Program is open to members of the 36 Comprehensive Cancer Centers designated by the National Cancer Institute.

### **Vice Chairman Raises Money For Cancer Research**

After waging a two-year battle against leukemia, GM Vice Chairman Harry Pearce announced that he would work to increase the funding for blood-related cancers, leukemia, lymphoma, and myeloma by appealing directly to the executives of other corporations in the United States and around the world.

Recognizing the role he can play as a corporate leader, Pearce, whose cancer is now in remission, launched a personal crusade to raise millions of new research dollars for the Leukemia & Lymphoma Society. Pearce plans to document for his corporate colleagues the financial costs associated with blood-related cancers and the impact of these diseases on employers. Funds will be earmarked for the Society's new Specialized Center of Research (SCOR) grant program.

*Note: Mr. Pearce has since retired from General Motors and is currently Chairman of Hughes Electronics.*

## Disaster Relief

As one of the world's leading philanthropic donors, we realize that in the midst of crises, the physical and emotional needs of individuals and communities are heightened, and that a rapid response is required. As part of an ongoing effort to strengthen our philanthropic base, reaching farther into the global community, we initiated a new program in 2000, GM Global Aid. This program enables us to quickly direct funds from the GM Foundation to those in crisis, while leveraging our national and international units to contribute vehicles and supplies and, more importantly, to volunteer time. An essential component of the program is a new web site - GM Global Aid — contained in the "GMability" section of [www.gm.com](http://www.gm.com). This site allows our employees across the globe to contribute funds to disaster relief efforts, many of which are matched by the GM Foundation.

On January 26, 2001, a devastating earthquake struck the entire Indian subcontinent. Within hours, the GM Foundation responded with a contribution of \$100,000 to aid in the earthquake relief efforts. In the ensuing days, over 100 of our employees utilized the GM Global Aid Web site to contribute approximately \$10,000. In addition, employees at the our facility in Gujarat, India, responded with volunteer time, medical and other supplies, and deployed a rescue team to search for survivors of the earthquake. This prompt and speedy response gained favorable comment from the international press, as well as from our own employees.

## Arts & Culture

Over the years, the GM Foundation has been a major contributor to a variety of artistic and cultural institutions. The GM Foundation continues to support these organizations in its effort to promote appreciation of the arts, recognition of diverse cultures and awareness of arts in education programs. The following examples illustrate our ongoing dedication to meeting this commitment:

### **Martin Luther King, Jr. Washington Memorial**

In 1996, President Clinton signed legislation authorizing the building of a memorial to Dr. Martin Luther King, Jr. in Washington, D.C. In December 1999, a four-acre tidal basin site on an axis between the memorials to Presidents Jefferson and Lincoln was chosen for its location. More than 1,900 registrants from over 52 countries

submitted designs. The Memorial will be inspired by three major themes: the Man, the Movement and the Message. General Motors has pledged to provide leadership to the Memorial Foundation and will utilize cause-related marketing, dealers, and employees to make the Memorial a reality.

**Smithsonian Museum of History**

The Smithsonian's National Museum of American History attracts nearly 6 million visitors each year. 'Americans on the Move' will be the Museum's first major exhibition on transportation since the late 1970's and will highlight all modes of transport - road, rail, air and water. General Motors will be the named sponsor of this new transportation exhibition wing.

**Detroit Institute of the Arts (DIA) - Center for African American History**

The DIA is the sixth largest art museum in the U.S. with more than 60,000 works housed in 100 galleries. Ongoing contributions to the Institute have led to the establishment of the GM Center for African-American Art, which will focus on achievements and influence of African American artists. It is the first of its kind anywhere in the world and its formation brings recognition to the city of Detroit and to our company.

## ENVIRONMENTAL INFORMATION

## Policies and Organization and Management

### GM Environmental Principles

For more than 30 years we have had a formal commitment to a safe and healthy environment. In 1991, we strengthened our commitment with the adoption of the GM Environmental Principles. The Principles apply to our facilities, products and employees worldwide, and provide guidance in the conduct of daily business practices. GM Europe derived its Environmental Guidelines from the GM Environmental Principles.

#### 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 continue to 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 laws and 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

### Externally Endorsed Values and Principles

#### CERES Principles

In 1994, we became the first Fortune 50 manufacturing company to formally endorse the CERES Principles. This was a major step in affirming our commitment to environmentally responsible business activities. Our relationship with CERES has been highly beneficial, as we have become more accountable for our performance and have come under greater public scrutiny. This helps us to focus on specific initiatives such as finding ways to reduce emissions from our manufacturing facilities, and developing alternative vehicles and fuels.

As an example, in 1996, GMNA established one of our most important targets: to reduce non-recycled, non-product output from our manufacturing facilities by 30%. We expected to achieve this target by year-end 2002, with a base year of 1997. At the end of 2000, we had achieved a 42% reduction in non-recycled non-product output, exceeding our goal two years ahead of schedule. The business tools we used to achieve this goal were programs such as Chemicals Management, Resource Management, and Oil Management.

Our relationship with CERES, and the resulting commitment to public accountability, is just one example where dialogue with a non-governmental organization (NGO) can lead to improved environmental performance.

#### Global Sullivan Principles

These principles, which include environmental commitments, are described in the social management section.

#### CERES is ...

- The leading U.S. coalition of environmental, investor, and advocacy groups working together for a sustainable future
- A community of forward-looking companies that have committed to continuous environmental improvement by endorsing the CERES Principles, a ten-point code of environmental conduct
- A common ground where groups with widely different backgrounds, assumptions, and visions find concrete solutions to today's environmental challenges.

## Energy and Environment Strategy Board

Energy and environmental trends continue to be of increasing importance to our success. The global Energy & Environmental Strategy Board (EESB) was established to develop and integrate energy and environmental factors into business decisions. Accountable to the Automotive Strategy Board, EESB members include senior leaders from Communications, Product Engineering, Powertrain, Worldwide Facilities Group Manufacturing, Public Policy Center, and Advanced Technology Vehicles. The EESB sets the overall direction for energy and environmental policy within GM. Specifically, the EESB:

- establishes stretch goals for energy and environmental performance
- periodically reviews progress against a set of global metrics
- approves energy and environmental proposals
- directs the overall implementation of the energy and environmental strategy

The EESB provides guidance and support to the Energy & Environmental Strategy Core Team. This team of 'subject matter' experts facilitates a global process to support the following E&E strategic initiatives:

- Vehicle Energy
- Vehicle Emissions
- Vehicle Fuels
- Design and Manufacture for the Environment
- Facilities Environment
- Facilities Energy
- Vehicle Pass-by Noise

## Global Environmental Issues Team

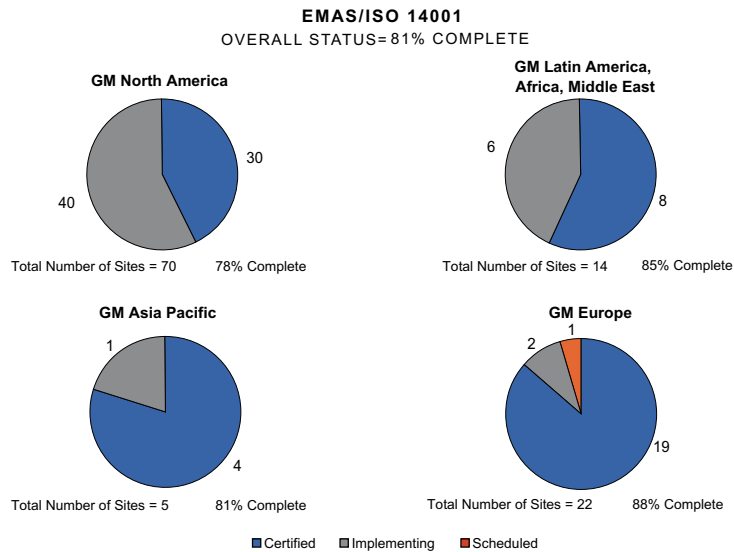
By combining representatives from operations across the globe, we have formed a Global Environmental Issues Team (GEIT) to formulate and implement a common global environmental policy for our operations. The GM Environmental Principles serve as the basis for this activity. Meetings are scheduled biannually, but issues-based working groups hold additional teleconferences and/or meetings throughout the year.

The GEIT draws upon the best ideas and talents of employees from around the globe and helps us to function as an integrated organization. The GEIT is composed of representatives from our operations in North America, Europe, Asia-Pacific, Latin America, Africa and the Middle East. The global makeup of the GEIT is intended to ensure that there is proper detection, full consideration and resolution of common environmental concerns.

The group considers many environmental issues affecting global operations and helps to spread best practice between facilities. These include developing a set of global metrics for measuring environmental performance and the implementation of independently certified Environmental Management Systems at all of our facilities.

## Environmental Management Systems

Building on our existing environmental management framework, we have redesigned our global EMS model around ISO 14001 and have made several enhancements in doing so. Although ISO14001-based, our EMS includes several additional requirements that place increased emphasis on supporting environmental performance and cost reduction activities. These elements provide a common framework and specifications for our units around the world to understand how their activities interact with the environment and to improve management of these activities in an ongoing cycle.



## Measuring Our Global Performance

In an effort to assess the environmental performance of our worldwide operations and to better manage environmental issues, we are in the second year of a worldwide energy and environmental data collection effort. In late 1999, our Global Environmental Metrics Team (GEMT), comprising employees from operating units around the world, and the GEIT, agreed upon a common set of metrics for our facilities.

### GM Global Environmental Metrics

#### Inputs:

##### Energy

- Fuel use - natural gas, oil, coke, propane, etc.
- Electricity use
- Other energy purchased

##### Water

- Purchased water
- Groundwater from on-site wells
- Surface waters from rivers, lakes, streams, etc.

#### Outputs:

##### Air

- Nitrogen Oxides — from fuels used
- Sulphur Oxides — from fuels used
- Carbon monoxide — from fuels used
- Volatile Organic Compounds (VOCs) — from assembly plant paint shops



**Waste Water**

- Wastewater discharges to treatment (excluding storm water) — sanitary and industrial volumes
- Wastewater discharges direct to surface waters (excluding storm water) — sanitary and industrial volumes
- Heavy metal content

**Hazardous Waste**

- Recycled and non-recycled

**Non-Hazardous Waste**

- Recycled/reused and non-recycled

**Greenhouse Gases**

- Carbon dioxide from energy use including the indirect effect of our electricity use

Following a two-year piloting process, we are publishing the 1999 and 2000 global performance data against four of the metrics. They include energy use, water use, carbon dioxide emissions and recycled and non-recycled waste. We are publishing the data as part of our commitment to transparency and accountability.

This is a global process involving over one hundred facilities in many countries all operating in different cultural and regulatory environments. We are working hard to improve the consistency of data from all plants. Regional differences in definitions, terminology, and calculation methods pose challenges. However, we strive to ensure the accuracy of the reported data and we will continue to refine the data management processes in order to provide further quality assurance.

## Energy Management Systems

During 2000, we formed a Global Energy Team, which is coordinated by the North American Utilities Services Group, and comprises representatives from each of our business regions. The team's objectives are to establish common goals, monitor progress and share "Best Practice" across our global operations. To help manage energy globally, a common global utility information system (GUIS) is being developed and should be complete by early 2002.

Energy efficiency is an essential element of our energy strategy. The Utilities Services Group integrates procurement, operation of utility systems and plant level energy efficiency through a single organization. Common initiatives have been developed to improve equipment shutdown and efficiencies, integrate the latest efficient technologies and monitor and control utility usage.

## Supply Chain Environmental Management

**Supplier Environmental Management Standards**

In July 1998, we advised our top 600 vehicle parts suppliers (based on sales volume) that we required certified evidence of EMS implementation by the end of 2002 in conformance with ISO14001. This requirement applies to all supplier facilities that provide parts to GM and that have a significant environmental impact and to suppliers whose current or future contracts extend, or might extend, beyond 2002.

**GM Supplier Environmental Advisory Team**

In 1998 our Supplier Council formed a Supplier Environmental Advisory (SEA) Team. This team comprises nine suppliers, together with representatives from Worldwide Purchasing, Engineering, Worldwide Facilities - Environmental Services, Public Policy and Research and Development meets throughout the year to develop joint efforts to improve environmental performance.

The SEA team is currently focusing on two major projects looking at life-cycle performance in the Silverado truck seating system and greening the supply chain in Saturn vehicles.

The SEA Team has provided a forum for a number of pertinent topics, for example:

- The SupplyPower website, where information is available to suppliers on Restricted and Reportable Substances (GMW3059) and the Recyclability Design Guide (GMW3116).
- The GMAbility.com website, where information is available regarding environmental activities.

- The European Union End-of-Life Vehicle (ELV) directive which will have an impact on the global automotive industry.

- The Global Reporting Initiative (GRI), which we view as a business management tool, allowing us to evaluate our past and current performance and gain a better understanding of how to set future goals and dedicate resources for improvement.

#### **Supply Chain Management at Opel and Vauxhall**

"Creativity" teams of buyers and representatives from the European plants as well as engineers of the International Technical Development Center, decide with which suppliers the company will work. Opel, for example, requires that candidate supplier companies comply with the QS9000 quality standard. Opel informs suppliers of environmental guidelines when seeking quotes. Since 1998, teams of experts from Opel and eight supplier companies have met to analyze supplier relationships, and how to improve co-operation with partners on environmental issues, with respect to production and manufacturing.

#### **Standardized Environmental Management**

In addition to other initiatives, the team has expanded the guidance for Opel's materials and components suppliers on preparing their environmental management system (EMS) has been expanded. Opel requires Europe-based suppliers to obtain either ISO 14001 certification, registration pursuant to the EU Eco-Management and Audit Scheme (EMAS), or submission of a relevant company self-declaration by December 31, 2002. An adequate environmental management system should cover all company facilities that cause significant environmental impact, including production equipment, manufacturing processes and other activities. The benefit of an efficient EMS is the reduction in environmental expenses and enhanced ecological performance.

#### **Close Cooperation Starts Early On**

As customer expectations and legal requirements for Opel's models become increasingly demanding, Opel must rely on its suppliers to provide top quality parts. It is crucial, therefore, that suppliers have in-depth technological expertise. Indeed, because of their expertise, Opel's partners often make valuable contributions at very early stages of development of a vehicle.

This is the case, for instance, where Opel needs to hasten the introduction of new materials in series production. In their endeavors to close material cycles by releasing recycled materials for use in new vehicles, Opel engineers go on site to suppliers to get a realistic idea of sample material or component production. Among other items, they verify compliance with specified assembly times and make sure that fluctuations in recycled material batches are minimized. It is frequently the suppliers themselves who suggest materials for recyclability testing. Opel acknowledges its suppliers' contributions at its annual "Supplier Of The Year" event. In May 2000, one of the coveted awards went to Polymer-Chemie GmbH in Bad Sobernheim for valuable input to the development of recycled materials.

#### **Uniform Material Data Sheet**

To reduce the use of hazardous materials and meet future recycling quotas, detailed information on the materials that suppliers use in the parts and components they supply is essential. In the future, this information will be harmonized and made available to the entire automotive industry in the form of a Material Data Sheet (MDS). Because they are sent over the Internet, all material data sheets are quickly and directly incorporated into its common database system. Suppliers were trained in the use of this German-wide system before its official

#### **Supporting Smaller Suppliers at Vauxhall**

Vauxhall recognizes that achieving ISO14001 can be more of a challenge for smaller companies. In order to assist small-to-medium sized enterprises (SMEs), Vauxhall is supporting a DTI-sponsored program called Project Acorn. Operated by the British Standards Institute (BSI), the scheme provides training and partial funding to SMEs wishing to implement an environmental management system.

The scheme has two levels, fast-track and non-fast track. Vauxhall intends that fast-track suppliers achieve an EMS, equivalent to that required by ISO14001, within one year. This is achieved through training classes that are offered in 'manageable steps'. Non-fast track aims to achieve this level within two years, for a reduced fee.

Currently, Vauxhall has nominated 25 companies, who expressed interest in the scheme, with five of those currently signed up for the Fast Track plan. This will help achieve its objective of ensuring all suppliers have a certified EMS in place by the end of 2003.

launch in Summer 2000. A global expansion of the system is also planned.

## GMNA Environmental Organization

Beginning in 1995, our North American operations consolidated management for Environmental Services into a single unit. All environmental professionals report to the unit which provides a variety of services to our manufacturing and non-manufacturing facilities. By creating a single unit, we have been able to share the best lessons learned from across our North American region. Regional personnel and leadership personnel meet regularly to solve common problems and share lessons learned.

Management of manufacturing facilities is divided into regions as follows:

- Eastern Region
- Southern Region
- Ohio Region
- Midwest Region
- S. E. Michigan Region
- Mid-Michigan Region
- Canada Region
- Mexico Region

Non-manufacturing facilities are organized into a series of separate groups.

The overall organizational structure has provided us with a greater degree of flexibility, allowing the sharing of expertise across different facilities within each region. Regional groups are supported by a central environmental activity located in Detroit, responsible for Chemical Risk Management/Industrial Hygiene, Environmental Permitting and Operations Support, Remediation and Plant Decommissioning and Regulatory and Legislative Interface. This single organizational structure has allowed us to effectively implement our environmental programs across all activities. For example:

- Chemicals Management Program. This program entrusts the management of indirect chemicals (those not used in products) within our facilities to a single supplier. The supplier is rewarded on its ability to reduce the amount of chemicals used within the facility. The supplier has single point accountability for compliance with regulatory requirements and compatibility with other chemicals thereby reducing risks.
- Resource Management (RM). This program looks at waste from a different perspective, viewing it as a wasted resource. The program focuses on waste elimination, recycling and disposal, in that order of priority. Resource management is one of our cornerstone programs, and has helped us to reduce non-recycled, non-product output by 42% by year end 2000, compared to 1997 levels.
- Voluntary Pollution Prevention Programs. We have participated in the U.S. EPA WasteWise Program, the Michigan Auto Project, and the Ohio Prevention First program for a number of years and achieved significant pollution reductions to date.
- Conserve Resources/Prevent Pollution (WE CARE) Strategy. This initiative is a process to look at environmental and energy conservation based on the hierarchy of prevention, reduction, and recycling, in that order. The strategy is a joint activity in the U.S. with the United Auto Workers. Training materials developed with the United Auto Workers union for manufacturing and office operations and for product design engineers are utilized to inform all employees about their role in conservation activities. The training materials are available to our facilities worldwide in English and Spanish. To share successes between facilities, case studies are developed and distributed through an internal website. An awards program is also available to facilities in North America.
- Design for the Environment Facilities Team. Established in 1999, the Design for the Environment (DfE) Facilities Team is part of the Worldwide Facilities Group, Environmental Services staff. Team members are responsible for interfacing with other DfE Teams worldwide. The DfE Facilities Team provides the environmental expertise to develop management systems that integrate life cycle analysis and environmental considerations into manufacturing processes, product development, research and development, and material selection activities. The DfE Facilities Team works with manufacturing operations to improve existing processes, using new technologies or operations to prevent waste, and avoid air, water and environmental impacts before

manufacturing processes are put in place. The outcome is a reduction in facility and product environmental impacts as well as reduction in process, product, and regulatory compliance costs. For more details about the Team's activities, click here.

- **Third Party Data Management & Regulatory Reporting.** We have engaged the services of a third party to standardize environmental data collection from our facilities. This common format helps to ensure consistency and accuracy in environmental reporting. With over 30 regulatory reports required per facility, it is imperative that data is highly accurate. This system reduces the burden on the environmental professional, allowing her/him to spend more time on the facility floor working on pollution prevention and compliance activities.

- **Remediation and Plant Decommissioning Activities.** For several years we have had single point responsibility for all remediation activities. During 2001, responsibilities for all plant decommissioning activities were also integrated into this group. This single point accountability allows for uniform implementation of environmental clean-up requirements, timely and efficient demolition of antiquated facilities, with a focus on recycling of materials and redevelopment of property.

In 2000, we were presented with a U.S. EPA award for our brownfield redevelopment efforts in Pontiac, Michigan. We are actively involved in many similar re-developments in other locations across the country. For example, we have announced the development of a 312-acre area just outside Warren, Michigan. Approximately one third of the site has been donated to the residents of the city and designated as open green space and wetland. In cooperation with Warren Downtown Development Authority (DDA) we have engaged the services of an urban planner to help determine how to best develop the property. The planner is developing a number of land-use scenarios (picnic areas, football fields, walking/bicycle trails etc.) for presentation and final selection by the citizens of Warren themselves.

## Employee Training and Support

Environmental management requires a well-trained workforce not only to keep pace with a changing regulatory landscape but also to satisfy our goal to have the best-trained environmental engineers in the world. To this end, we have set a goal of having each of our environmental engineers achieve and maintain Certified Hazardous Materials Manager (CHMM) certification. This sets the knowledge base upon which our environmental engineers can build. To date, 82% of our engineers have achieved the CHMM certification. Worldwide, we have set up certification programs in Canada, Mexico, South America and China. We also have developed a core environmental curriculum of environmental courses for our engineers.

In Europe, environmental training has been developed for engineers at the International Technical Development Center in Russelheim, Germany. This program focuses on design for manufacturability and design for the environment in which environmental concerns are accounted for early in the product development process.

### Co-Op/Intern Program

Our cooperative and internship program is providing a professional environmental engineering resource that is required to function effectively at our facilities when needed. Students are given diverse hands-on training within various types of operations, including assembly, foundry and machining operations. Upon graduation, these students are able to accept an assignment without total disruption of environmental service to a facility.

Currently, nine co-op students and four interns are in the program in North America. Since its inception in 1984, GM has employed 21 students as permanent environmental engineers.

### Employee Communications

A variety of methods are utilized to transit information and data between our environmental and energy professionals. An Internal Communications Strategy team oversees the format and flow of information and evaluates the effectiveness of such communications. The methods used include satellite broadcasts, newsletters, networking meetings and meetings with management. Employees have access to at least one of these communications vehicles each month.

An extensive Worldwide Facilities Group website is maintained by a number of staff "web authors". Its purpose is to keep employees informed about the group's business activities and the resources available from

other centers of expertise within the corporation. The Environmental Services section of the website covers many specific topic areas and is expanding daily. Information includes everything from news and events to site information. The status and progress of our facilities' ISO 14001 certification processes are posted on the site. Business plan information and updates on the progress of strategic business initiatives will be part of the website offerings in the near future.

## Performance

### Energy and Fuel Usage

#### GM Global Energy Use

Our global operations are focused on using energy in the most efficient manner possible. In 2000 our global operations consumed 37.4 thousand gigawatt hours from various sources of fuels including electricity.

#### Global Energy Efficiency Initiatives

During 2000 we reduced energy consumption by 2.5% when compared to 1999. Energy use per vehicle produced has been reduced by 6.0% to 4.5 megawatt hours.

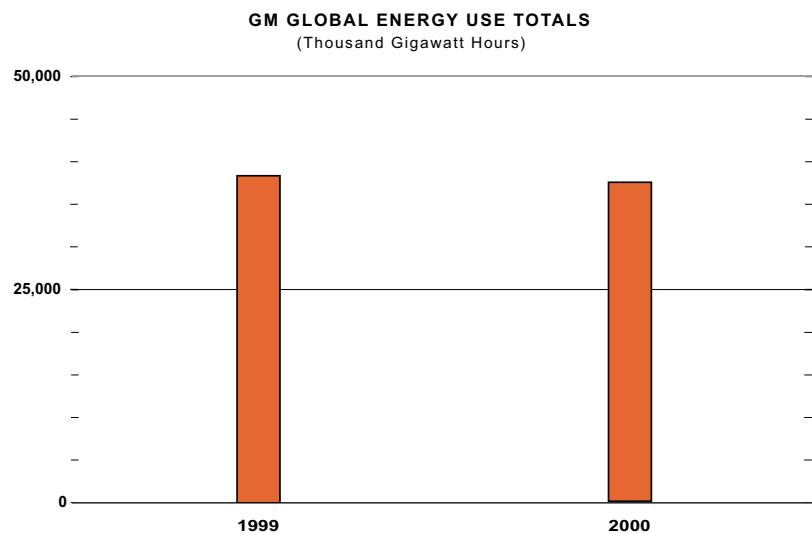
- In the Saab plant in Trollhattan, Sweden, energy efficient ventilation has been installed in the newly extended body-shop and the assembly-shop. The ventilation concept is based on an energy efficient design and closing off of ventilation areas. In the body shop the airflow is reduced by 50% and in the assembly shop by 48%. The energy consumption is lowered by 1100 MWh/year (3.75 billion BTU) for the body-shop and 1140 MWh/year (3.89 billion BTU) for the assembly-shop, compared to the traditional design. Investments are, in both cases, lowered by 50% compared with traditional design. This concept is to be applied in all new Saab installations in the future.

- Efficient lighting replacement programs are underway at GM do Brazil plants and offices.

- Our plant in Kenya reduced significant amounts of energy by minimizing compressed air leaks, shutting down equipment during non-production hours, improving bake oven efficiency and engaging its workforce in energy conservation efforts.

- At the Holden Elizabeth, Australia, plant, body and paint shop ventilation systems were optimized to achieve 20% energy use reduction.

- At our Mexico facilities many conservation measures have been implemented saving 117 GWh (0.4 trillion BTU) per year. These measures have included installation of compressor controls, replacements with high efficiency lighting, leak repair and equipment shut down.

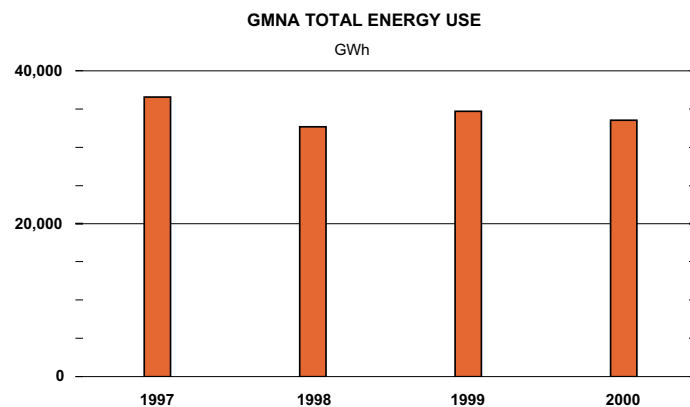


- Our Canadian Operations have implemented many projects with total energy savings of 176 GWh (0.6 trillion BTU) per year. Projects include:
  - Elpo oven temperature reduction at Oshawa paint shop.
  - Steam use reduction at Saint Therese and Windsor plants.
  - Non production load improvements at Oshawa and other plants.
- Many facilities in Europe have co-generation facilities including the new 84MW facility at Opel's Russelheim plant. This plant is achieving 88% thermal efficiency by generating electricity and hot water simultaneously for use by the plant.
- In the U.K., both Luton and Ellesmere Port plants, Vauxhall's most intensive energy users, made electricity savings during 2000, resulting in a company-wide drop of 6.8% from 1999.
- At Opel's Torbali plant in Turkey, a series of energy efficiency measures and keen employee involvement in 1999 has resulted in a production-adjusted energy consumption reduction of 14% from 1998. This was achieved by using energy efficient lighting, a leaner air compressor in the paintshop, and 10% more efficient high pressure dryers.

### GMNA Energy Use

We have extended our goal to reduce energy consumption by 25% by 2005 from a 1995 base. This goal is being achieved during a period where our floor space requirements have increased (air conditioning), and process environmental controls are becoming more energy intensive. By the end of 2000 we had achieved an 11% reduction since 1995 making steady progress towards this goal.

During 2000, GMNA energy usage decreased by 3% over 1999. Energy usage per vehicle has decreased by 2.3% over 1999.



### GM Canada Reduces Energy Use

Since 1990 our Canadian operations have reduced energy usage by 36%. GM of Canada has exceeded our GMNA Corporate goal of 20% reduction from 1995 base by achieving 24% reduction of energy usage through 1999. GM of Canada publishes detailed energy efficiency accomplishments annually in the Voluntary Challenge and Registry Inc. (VCR) Program and has been recognized as Gold Champion level reporter by VCR.

### Energy Efficiency Progress

Strategies to reduce energy consumption involve reductions in major processes such as painting, metal casting, energy conversion efficiency improvement at our powerhouses, and many plant level initiatives. This effort involves the plant workforce in GMNA through the "WE CARE" initiative, a Quality Network strategy.

We are making progress towards installing common energy management and control systems at our North American facilities. These systems monitor the use and control of lighting and HVAC (heating, ventilation and air conditioning) systems for optimum operation. Installation of energy management systems in 16 facilities has been completed. A typical Energy Management System in an assembly plant saves approximately \$300,000 in energy costs. Eight additional facilities will be completed in 2001 and we expect to roll out this system to 15 additional plants by year 2005. Energy efficiency projects include the following:

- A steam generating power house was shut down at our GM Powertrain Tonawanda, New York facility. The

heating system was replaced with direct-fired gas. In addition, the plant air compressors were replaced by state-of-the-art compressors of a higher efficiency.

- At our Metal Fabrication Division facility in Mansfield, Ohio, the coal-fired powerhouse has been shut down in conjunction with a gas-fired heating and ventilation system conversion. The air compressors were also replaced with more efficient units.

- At our Orion, MI assembly plant, the use of landfill gas has replaced more than 50% of fuel used in the boilers. The project received recognition by the Michigan Power Booster group as an exemplary energy efficiency improvement project. This project was also recognized by the Society of Automotive Engineers and the US EPA.

- An extensive effort is underway to implement the GM Energy Reduction Sufficiency Plan at our plants. This process engages all employees in energy use reduction. Our powertrain and assembly facilities are targeting completion of this initiative by the end of 2001. Other GMNA plants will implement this initiative by end of 2002.

- The old coal fired powerhouse at our Buick Complex in Flint, MI has been shut down and replaced by an optimized gas-fired boiler considerably improving efficiency and reducing emissions.

Energy efficient practices are being integrated into the design of new plants and at plants undergoing major improvements. For the Lansing, MI Grand River Plant, paint processes and building systems are incorporating efficiency measures that will contribute up to 20% energy efficiency improvement compared to older assembly plants. This plant will become operational in 2001. Similar efficiencies are being designed into the Flint, MI L6 Engine Plant, Oklahoma City, Oklahoma and Shreveport, Louisiana facilities.

#### **Voluntary Energy Reduction Programs**

Our plants in the U.S. are working on several voluntary programs with the U.S. Environmental Protection Agency (EPA) and others to improve energy efficiency at our plants.

- As part of our participation in the Green Lights program, lighting improvement surveys have been completed for all Truck and Saturn assembly plants. The lighting systems at our Linden, NJ, Pontiac East, Lansing Grand River, Moraine, and Fort Wayne Assembly plants have been completed. A typical assembly plant can save 10 million kWhs per year or 5% of a plant's electricity usage. By the end of 2001, four additional plants will meet the Green Lights requirements.

- Together with Green Power Marketing Group, we are participating in an initiative designed to advance implementation of green power generation projects. The Green Power Market Development Group is comprised of leading multinational corporations, the World Resources Institute (WRI), and Business for Social Responsibility (BSR), focused on developing corporate markets for 1,000 megawatts of cost-competitive, new "green" energy capacity over the next 10 years. The Green Power Group intends to promote a clean energy future by catalyzing the growth of the green energy market through identifying cost-effective strategies for environmentally sustainable energy consumption. We are working with this Group to develop landfill gas generation and wind power electric generation projects at several sites.

- During 1999 we embarked on a project to demonstrate our commitment to the environment through voluntary participation in the Energy Star Buildings program. In addition to reducing energy consumption and the associated environmental impact, this program provides us with the opportunity to "redesign" our existing facilities, achieving balanced building conditions while implementing energy efficiency improvements. Studies were completed during year 2000 at three U.S. assembly plants. We are committed to implementing the "Energy Star" concepts at all GM North American Truck & Saturn facilities by year 2005.

- We have signed as a Founding Partner of the U.S. EPA Green Power Partnership, which began in July 2001. As part of this agreement GM is committed to sourcing 2% of our Service Parts Operation facilities electric load to green power sources by year 2002.

- We are participating in the U.S. EPA Methane Outreach Program, a voluntary program to expand the use of landfill gas for plant heating and electrical generation. Two projects to use landfill gas as boiler fuel are complete, one project is being installed, and several others are in the project development phase. This effort will provide over 1% of our total North American energy usage from renewable sources (landfill gas) by the end of 2001.

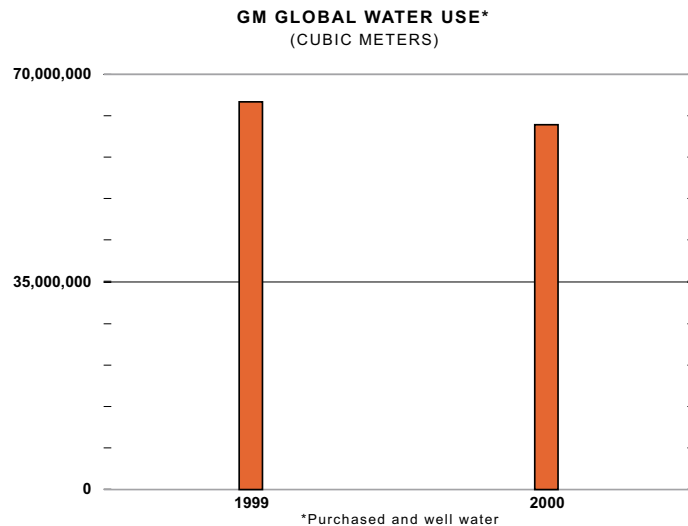
## Water Use

### GM Global Water Use

Our world-wide manufacturing and support operations use water from many sources. In 2000 our global operations purchased and used 61.5 million cubic meters (16.2 billion gallons) of water, down 6% from 65.3 million cubic meters (17.2 billion gallons) in 1999.

### Water Sources

Global information on water sources is not yet available. In the U.S., our water sources are primarily lakes, rivers, and tributaries. Well-derived water is a minor source of water. In Mexico and other parts of the world, well water is the primary source and is highly valued as a scarce commodity. This emphasis is reflected by water reduction efforts at our Ramos Arizpe and Silao, Mexico plants where water use per vehicle approaches less than half of the U.S. benchmark. Our sustainability goals drive our efforts to minimize the impact of water requirements on the communities where our operations are located.



### Water and Waste Water Management

#### GMNA

We consider water to be a scarce resource and have continued to focus on water conservation initiatives. In GMNA, our goal is to reduce water usage by 30% by year 2002 from a 1995 base line. This goal was revised in 2000 from a previous goal of 20% reduction. Water usage for 2000 was 13.1 billion gallons (49.7 million cubic meters) which represents a 23% reduction towards this goal. Compared to 1999, a 9% reduction in water usage was achieved. Our North American plants decreased water usage on a per vehicle basis by 8% in 2000 to 2300 gallons (8.7 cubic meters) compared to 1999.

In all of our plants wastewater is treated before discharge to municipal treatment plants or other receiving bodies of water, to meet all applicable regulations.

Where a clear discharge criterion is not available, we apply our own minimum guidelines as defined by our Environmental Performance Criteria requirements. Some specific examples of water conservation initiatives are listed below:

- Willow Run Transmission Plant is improving the instrumentation and controls for 18 cooling towers, which will allow more efficient control of blowdown volumes. The total water savings are projected to be 358 million gallons (1.4 million cubic meters) per year.
- Shreveport and Oklahoma City are replacing the existing Process Air Humidification Systems with more efficient Centralized Systems, thereby saving 25 million gallons (95,000 cubic meters) per year.
- GM de Mexico Silao Assembly has reduced water consumption by 15 million gallons (57,000 cubic meters) per year by improving the well water softening process, increasing Reverse Osmosis recovery by 7%, and cascading rinse water to other processes.
- GM of Canada implemented many water savings projects, saving 188 million gallons (712,000 cubic meters) in 2000. In particular the Oshawa Truck Plant achieved a 50% reduction in water consumption by implementing a humidification water recirculation system and other water conservation measures. This effort



reduced the load on the wastewater plant and the need for wastewater treatment capacity increase.

#### **GME**

Swedish subsidiary Saab extracts, uses and returns water for its manufacturing processes from the nearby river, the Göta Älv. In terms of volume the Göta Älv is Sweden's largest river, with a mean flow of 550 cubic meters per second. It takes in water from a drainage basin equal to one-tenth of Sweden's total area. The river is a very important natural resource, supplying drinking-water to more than 700,000 people. It is also of great value from a recreational point of view. Almost every species of fish that is present in the lakes and streams of Sweden can also be found in the Göta Älv. Maintaining water quality is therefore one of Saab's highest priorities.

#### **GMLAAM**

GM de Mexico Ramos Arizpe Complex was awarded the Stockholm Industry Water Award for 2000 for their outstanding achievements in water use reduction. The plant has commissioned a state-of-the-art water recycle/reuse system and has continued to focus on water conservation initiatives. Ramos Arizpe facility has reduced well water withdrawal by 50% since 1986 while they are producing seven times more cars and 50% more engines.

## **Resource Use**

### **Health and Environmental Impact Assessments**

Materials recommended for use in our products and manufacturing processes are assessed prior to approval for potential health and environmental impacts. This occurs through the utilization of two complementary processes. The first, the Productive Materials Review Process (PMRV), supports the release and material engineering community and is part of the Design for the Environment process. If a material is approved through this process, the information is then sent to the plant Hazardous Materials Control Committee (HMCC), for local review and implementation.

The PMRV team provided critical support for the assessments of the materials proposed for use at the new Lansing Grand River Assembly facility. Timely review and communication to the design and release engineers and local HMCC assisted the plant in meeting start-up deadlines. Additionally, similar support for the new truck assembly plant in Shengyang, China occurred, including the special assignment of a GMNA industrial hygienist to the plant in China for six months to assist in the development of health and safety and HMCC programs consistent with comparable GM facilities.

### **Chemicals Management**

We continue to expand the Chemicals Management programs in our facilities to include all indirect chemicals used in the manufacturing process (those that are not directly involved in producing a vehicle). Chemicals Management utilizes a single supplier to provide non-product-related chemicals and chemical invoices at each GM facility. Chemicals Management activities include chemical process control, process improvements, chemical reuse, chemical recycling, and health and safety improvement. The Chemicals Management supplier also provides the chemical data required for regulatory reporting.

When chemicals management programs are installed in a plant, first year material savings average 20% with additional savings of 3 to 5% in the second and third years. Materials savings result from material conservation, material commonization, and process optimization. Additional benefits include improvements in quality, throughput, and manufacturing efficiency.

### **Use of packaging materials**

#### **GMNA**

Our vehicle assembly plants have taken aggressive steps in the last decade to reduce parts and components packaging volumes that go to landfills. The GMNA Containerization Group has been instrumental in making the changes.

An Environmental Packaging Specification was instituted in the early 1990's and is still in effect today. The various marking, construction, and materials characteristics required in the specification ensure that expendable packaging can be readily broken down and recycled. In 1994, we started cutting down all expendable packaging waste by converting to returnable containers. Returnable containers now make up about 60% of our

assembly plant packaging overall.

North American Containerization Engineers work hard to reuse and recycle packaging. For instance, plastic pallets are made up of 50% recycled materials. Containers made of thermoplastic resin must comprise 25% recycled materials. The construction of containers is also well planned so that they may be easily compacted to minimize the space they take up during return trips to the supplier.

The GM Environmental & Energy Strategy Board (EESB) recently approved the use of common plastic materials for protective shipping caps and plugs in all facilities. This effort will promote reuse, increase recycling, minimize costs, and reduce landfill materials.

#### **GME**

In Europe, GME was the first auto manufacturer to adopt reusable packaging for its material transportation systems. As a result, the use of environment-friendly reusable packaging has risen to 97%. Near-indestructible small part containers and special hanging racks designed by our engineers contribute to the low proportion of packaging waste. Approximately 70,000 small part containers are shipped to European plants each day. During year 2000, improved hanging racks were introduced, which have higher volume, equal stability, and are 15-32% lighter.

#### **Detroit/Hamtramck Assembly Converts to Returnable Containers**

Traditionally, many parts used by a final assembly plant are shipped in cardboard (corrugated) containers. And while much of the cardboard is recycled, Detroit/Hamtramck Assembly Center uses a different approach to prevent the use of cardboard in the first place. Under the Returnable Container Program, parts are shipped in reusable, returnable containers. When a supplier drops off parts, they take the returnable containers back with them to be used again and again. After this program was launched, the volume of plant trash generated by Detroit/Hamtramck Assembly was reduced from 610 cubic meters per day to 76 cubic meters per day.

## **Land Management and Biodiversity**

### **Land Use, Biodiversity and Clean-up**

#### **Surplus GM Sites**

Our objective is to return our surplus properties to productive reuses while being sensitive to the economic impact on local communities, public agencies and GM itself. Local real estate experts, business leaders and government officials are consulted in determining the most suitable reuse. There are many examples of successful surplus property redevelopment; the following is a recent illustration.

#### **State and Superfund Sites**

We also evaluate future land uses and ecological habitats when developing cleanup plans at state and federal Superfund sites. Developing a cleanup plan consistent with a productive end use for these sites is often complicated by the absence of a current property owner and the diverse interests of the various stakeholders.

#### **Outreach and Educational Projects**

We recognize the need for restoring and protecting wildlife habitats, in particular those that are sensitive or endangered. In addition, to ensure children continue and build on the efforts of the current generation, we conduct outreach programs to educate youth on the importance of biodiversity.

#### **Hyatt Hills Golf Course, Clark, New Jersey**

The site of the former Hyatt-Clark facility, built in 1938, has been converted from an industrial site into a much-anticipated recreational resource. After the facility closed and demolition activities began, we met with local officials to review potential reuses for the site. Our evaluation of the potential reuses for the site revealed a viable market for a public golf course. In 1996 the local community reclassified the land for use as a golf course, allowing us to conduct necessary remediation work and environmental studies. The course, which we will continue to own, will be operated by the local communities. It is scheduled to open in 2002. Environmental issues at the site are being addressed under the New Jersey Industrial Site Recovery Act with oversight by the New Jersey Department of Environmental Protection.

### Helping to Protect the Brazilian Rain Forest

In 2001, we launched a major initiative to restore and protect over 30,000 acres of degraded rainforest in southern Brazil, an area twice the size of Manhattan. The Brazil Atlantic Rainforest Restoration Project, a collaborative undertaking between ourselves, The Nature Conservancy Council and the Sociedade de Pesquisa em Vida Selvagem e Educação Ambiental (SPVS), a leading Brazilian conservation organization, was formed to purchase privately owned agricultural land in Brazil's Atlantic Forest and convert it into a private nature preserve owned and managed by SPVS. The U.S. \$10 million project aims to protect in perpetuity this critical wildlife habitat while stabilizing the environmental health of the Cachoeira River valley, reducing slash and burn clearances and pollution, and creating economic opportunities for nearby communities.

With only 5 to 7% of the Atlantic Forest intact, restoration is considered one of the world's highest conservation priorities. An amazing 53% of the trees and 77% of other plant species found in the Atlantic Forest are unique to this ecosystem. Fifty species of mammals and 158 species of birds are found nowhere else on the planet, and 171 of Brazil's 202 officially recognized endangered species depend on the Atlantic Forest for survival. One of the main objectives of this project is the creation of a scientifically-based model for biodiversity protection and ecosystem restoration on a large scale. Among the scientific goals will be to quantify and document the environmental services performed by the restored forest, such as absorption of atmospheric carbon, in order to understand the role that reforestation can play in responding to concerns over the global climate.

## Waste

### GM Global Waste

Globally, the total amount of waste managed by 145 facilities declined 3% between 1999 and 2000 when adjusted for production (518 kg/veh versus 502 kg/veh). The volume of waste recycled was typically more than double the volume of non-recycled waste. Unadjusted waste volumes were 4.13 metric tons in 1999 and 4.17 metric tons in 2000. Worldwide vehicle production between 1999 and 2000 rose by 3.2%.

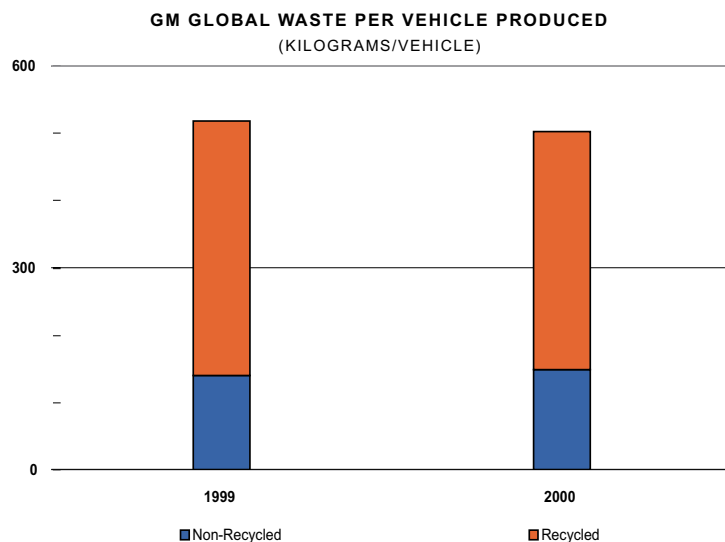
Waste reduction and increased recycling are business imperatives for us.

Programs such as Resource Management, Chemicals Management, Oil Management, and ISO 14001 ensure that we will continue to focus on progressive improvements. We also recognize the need to work with global teams such as the GEIT to ensure that facilities in each region can share and effectively use the best practices developed in our facilities around the world.

### Resource Management

Our Resource Management program preserves natural resources, reduces our environmental impact, and makes considerable cost savings. After just three years, facilities taking part in the program have reduced waste disposal by an average of 30%. The program is now operating in more than half of our North American facilities and will be nationwide before the end of 2002.

We designed the program to eliminate waste before it happens. Resource managers are provided with



financial incentives to find innovative ways to eliminate the waste created during the manufacturing process. Rather than paying a waste contractor to dispose of the material, our approach makes the supplier a partner inside the plant, searching for, and benefiting from waste reduction and recycling opportunities wherever they might occur.

Cardboard boxes, wooden pallets and even cooking grease from cafeterias, items previously sent to landfill, are now turned into useful products. The benefits of the program were recognized by the U.S. Environmental Protection

Agency at their WasteWise Awards and Recognition Ceremony where it was suggested the program provided a national environmental model that should be embraced by other organizations.

Our RM program has saved over \$8.2 million in North America. Although RM is not yet considered a global initiative, it has been implemented in six plants in Europe and a plan has been approved for the Holdens manufacturing facility in Australia. Our current strategy is to consider the technical and economic potential of RM in all new GM plants worldwide. Existing plants outside North America are encouraged to evaluate RM in the future.

We piloted this program in 1994 at our engine plant in Kaiserslautern, Germany. Our Orion, Michigan Assembly Plant was the first pilot facility in North America. Recycling has increased at every facility where the program exists. For example, at the Orion facility, a recycling program was initiated to collect and recycle small plastic caps and plugs. Plant production personnel remove these plastic pieces, which are used by suppliers to protect their parts during shipping and handling, during the vehicle assembly process. In the past, these plastic pieces were disposed of in the general trash and landfilled. In 2000, over 88,000

pounds of these plastic pieces were collected and recycled. The volume of this quantity of small plastic caps and plugs is enough to build a mountain of plastic, which is 28 feet around by 45 feet high.

Other examples of innovative resource-saving initiatives include:

- Collecting, cleaning and reselling aluminum splashes from the manufacturing floor
- Diverting fly ash, a by-product of our coal-burning power plants, from landfills by adding it to potting soil as a by-product.
- Damaged or scrap pieces of windshield glass are being ground up for use in reflective paints used to mark roads and outdoor signs.
- Cafeteria grease is recycled into pet food and cosmetics.

In 2001 we became the first auto manufacturer ever to receive the National Recycling Coalition's prestigious Fred Schmitt Award for Outstanding Corporate Leadership. The award was in recognition of our innovative Resource Management (RM) program.

*"Rather than having our waste contractor just be a vendor who costs us money, they have become a strategic partner who helps us cut our costs. It is a win-win for our shareholders and customers when we reward our resource managers for reducing waste."*

**- GM Chief Environmental Officer  
Dennis Minano**

**GMNA Waste and Emissions Management Strategy (NPO)**

We utilize the term "non-product output" or NPO to refer to all emissions, effluents, and wastes that are not incorporated into the final product of any of our operations. In this way, we focus on the product and the conservation of raw materials going into the product rather than on improved waste management methods. Conserving raw materials includes the recycling of waste materials into new products, where feasible.

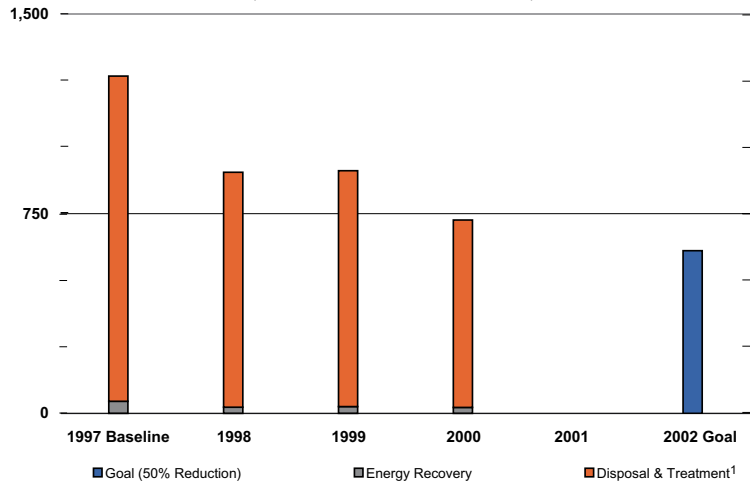
The volume of non-recycled NPO has been reduced 42% since the base year of 1997 from 1221 metric tons to 703 metric tons. The accelerating implementation of chemicals, resource, and oil management programs helped us achieve a 21% reduction between 1999 and 2000 alone.

The GMNA emissions, effluents, and waste data in this report represent the automotive operations, Allison Transmission Division, and GM Locomotive Group.

**Managing waste in GMNA**

Waste is tracked using an internally developed data collection and management process. Our facilities provide data annually that are loaded into a database. Common waste descriptions are used and data collection is now being converted to an Internet-based system that will allow each facility to input their data directly.

**NON-RECYCLED NON-PRODUCT OUTPUT (NPO) TOTALS. (U.S., CANADA, & MEXICO)**  
(THOUSANDS OF METRIC TONS)



<sup>1</sup> Disposal and Treatment include incineration, other treatment, and landfill (U.S., Canada, Mexico), air and water toxic emissions (U.S. and Canada).

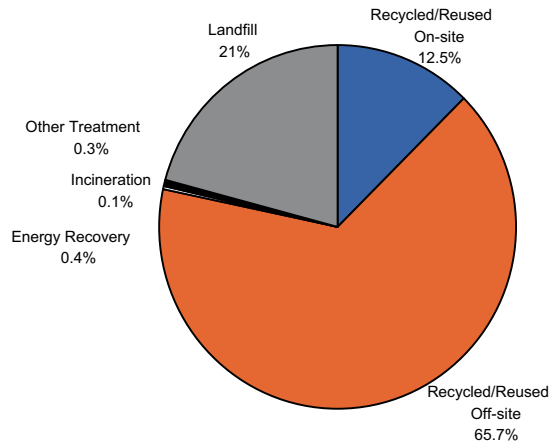
The North American operations have a goal to reduce non-recycled NPO (all emissions, effluents, and wastes that are not incorporated into the final product) from a 1997 base year. Our Chemicals Management, Oil Management, and Resource Management programs are essential to help us achieve the goal. NPO reductions in 2000 exceeded the original 30% reduction goal, therefore the goal has been increased to 50%. The target year remains the end of year 2002.

### Non-Hazardous Waste

The graph at right shows how we manage our non-hazardous solid wastes in GMNA. Total non-hazardous waste managed in 2000 was 3,155,829 metric tons.

Non-hazardous waste from GMNA facilities is made up of ordinary trash, used packaging, most foundry wastes, production scrap, and most industrial process sludges and waste oils. We recycled or reused 87.2% in 2000. Our facilities manage 24% of non-hazardous wastes on site. The balance is managed at non-GM off site facilities. Of the wastes managed on site, 53% are reused or recycled, 47% landfilled, and 1% are burned and the energy recovered and used.

**2000 NON-HAZARDOUS SOLID WASTE MANAGEMENT METHODS**  
(U.S., CANADA, & MEXICO)

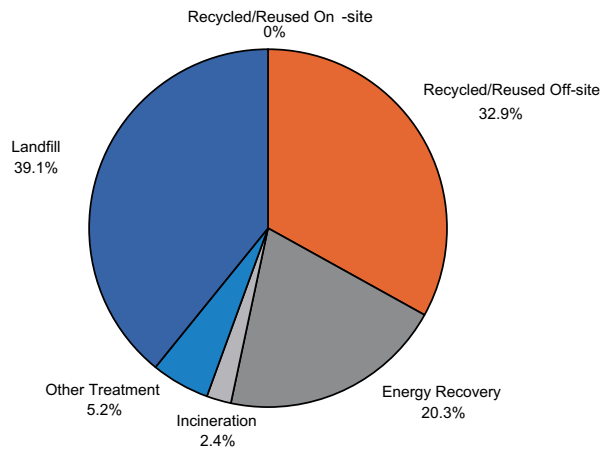


### Hazardous Waste

The graph at right shows how we manage our hazardous solid wastes in GMNA. The total hazardous waste managed in 2000 was 42,529 metric tons. Of this total, we recycled 32.9%.

GMNA hazardous wastes include batteries, some process solids, sludges, and demolition wastes, solvents, PCB equipment, and some waste oils. No hazardous wastes are managed on site at our facilities.

**2000 HAZARDOUS SOLID WASTE MANAGEMENT METHODS**  
(U.S., CANADA, & MEXICO)



Hazardous Waste Total = 42,529 Metric Tons

### Waste Prevention

The following are some specific examples of waste prevention and reuse activities occurring during 2000 in GMNA as a result of the various initiatives described in this report:

GMNA 2000 Waste Reduction Activities				
Specific Action	Material	Product	Kilograms	Savings (\$U.S.)
Reuse of foundry sand and quenched slag for municipal landfill alternate cover and aggregate additive for asphalt production.	Sand	Landfill cover & road surface	272,400,000	Unknown
Reuse of water treatment plant grit and foundry hard iron sand as a feedstock in asphalt manufacturing.	Sand/grit	Road surface	13,620,000	\$210,000
Our new full-size Sport Utility Vehicle (SUV) production uses new hydroforming frame technologies that reduce the volume of steel scrap produced compared to previous methods (volume savings = one model year)	Steel	Vehicle frame	9,715,600	Unknown
Reuse of boiler fly ash as feedstock in cement production	Boiler ash	Pavement	1,816,000	\$10,500
The continued implementation of our environmental packaging policies at one assembly plant resulted in cardboard being reduced to 6.40 lb./car (27% decrease over 1999), skids being reduced to 3.89 lb./car (49% decrease over 1999). Trash was also reduced to 10.84 lb./car (3.4% over 1999).	Corrugated			
Wood	TP - Boxes/ containers/ carmetric tons & Pallets/ skids	670,100	\$10,000	

Chart continued on next page

GMNA 2000 Waste Reduction Activities				
Specific Action	Material	Product	Kilograms	Savings (\$U.S.)
Refurbished and reused 27,500 square yards of carpet tiles	Textiles	Carpet tile	127,100	\$7,500
Recovered and reused aluminum foundry flash and floor sweepings.	Aluminum	Automotive castings	66,300	\$80,000
The quantity of pieces shipped per pallet load was increased to reduce the number of pallets required, material handling expenses, freight, and storage space.	Wood	TP - Pallets/skids	5,200	\$13,000
Reduced the number and cost of new paint robot covers being purchased by recycling and reusing the covers.	Textiles	Protective equipment covers	4,500	\$8,600
Changed carton sizes, increased unit load, and minimized packaging material including pallets.	Boxboard and wood	TP - Boxes/containers/carmetric tons & Pallets/skids	4,500	\$7,700
Used asphalt was ground up and reused as a road surface to the plant's water tank.	Asphalt	Road surface	4,500	(\$1000)
Reduced the printing and mailing of spare parts catalogs by mailing catalogs based on annual purchase volume to direct accounts only.	Mixed paper & ink	Catalogues	Unknown	\$996,000
Remanufacture of used transmissions for use as spare parts.	Mixed metals	Transmissions	Unknown	\$788,000
Sold obsolete spare parts to an outside service provider for reuse rather scrapping them.	Mixed metals	Spare parts	Unknown	\$144,000
Printed instructions using a smaller font and 2-sided copies. The number of pages is reduced by half and sometimes two thirds.	High grade/office paper	Copier paper	Unknown	\$123,000

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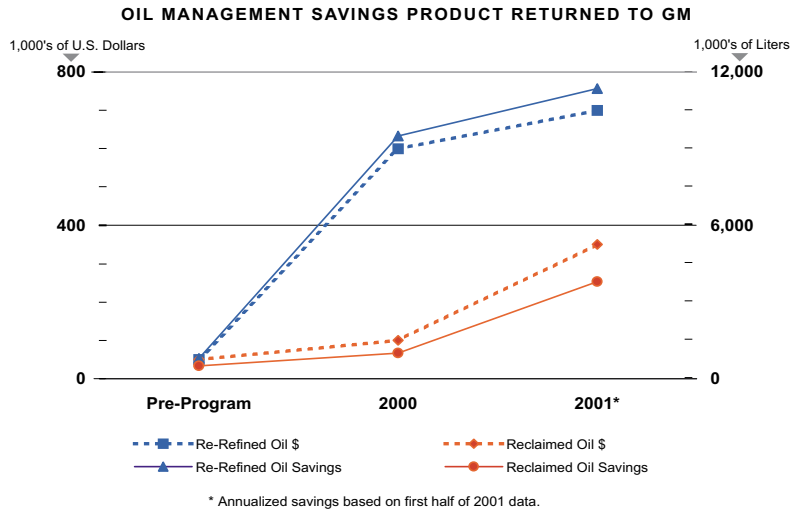
GMNA 2000 Waste Reduction Activities				
Specific Action	Material	Product	Kilograms	Savings (\$U.S.)
Printed instructions using a smaller font and 2-sided copies. The number of pages is reduced by half and sometimes two thirds.	High grade/ office paper	Copier paper	Unknown	\$123,000
Returned defective parts to the supplier for rework and reuse rather scrapping them.	Mixed metals	Spare parts	Unknown	\$105,000
9000 part tags per month were deemed not necessary, resulting in savings on tag card stock, printing supplies, time, and delivery.	High grade/ office paper	Part tags	Unknown	\$31,000
In-plant "scorecard" information is printed and laminated instead of mounted on gater board and laminated. This requires less material and labor to produce the same message for employees.	Foam board & plastic laminate	Posters	Unknown	\$14,000
Reused existing scrap metal to build new production support equipment trays.	Mixed metals	Scrap metal	Unknown	\$12,000
Our new full-size SUVs have longer-life brake components that prevent thousands of pounds of brake parts from reaching landfills each year.	Mixed metals	Brake parts	Unknown	Unknown

### Industrial Oil Management

Two years ago we began to improve the management of the life cycle of industrial oils in GMNA plants: this is now beginning to pay dividends. The program provides both substantial cost savings as well as significant benefits to the environment through waste prevention. The program functions on three levels:

- First, plants switch high volume lubricants to those approved against the GM "LS2" maintenance lubricant standards. The standard ensures high-quality lubricants and promotes using a minimum number of lubricants. Maintenance and problem resolution is also stressed throughout. These initiatives resulted in over \$2 million savings in 2000.
- Second, plants recondition or recycle industrial oils using portable reconditioning units to remove water and particulates from oils even as the machines they service are still operating. Other plants collect the used oil for recycling off or on-site. The combined impact for the facilities using this service is \$900,000 annual savings.

• The final level involves shipping used oil off-site. It can be reclaimed or refined for resale to the plants and reused as metal removal fluids or maintenance lubricants. Nearly all of the 20 million gallons (76,000 cu.m) of used oil that GMNA produces is now collected in this program and is available for recycling. Although much of it still is sold for fuel, the volume of returned product is beginning to increase substantially, as shown in the chart at right.



### Recycled Waste

We are making significant progress in expanding and improving recycling collection and implementation as we work toward our goal to reduce non-recycled waste in North America. In 2000 GMNA saved a total of \$206 million from the recycling of 2 million metric tons of waste.

Amount of Waste Recycled in GMNA during 2000			
Original Material	Used for	Cost Savings	Kilograms
Absorbents	Absorbents	0	3,900
Asphalt	Road surfacing	0	319,300
Batteries	Batteries	0	1,750,700
Boiler ash	Coal	0	10,252,800
Carbon	Filter media	0	9,500
Ceramic	Shot beads, grinding wheels	0	24,000
Concrete	Pavement	0	55,361,000
Corrugated	TP - Boxes/ containers/ carmetric tons	\$360,000	27,524,900
Glass	Light bulbs	0	221,000
Mixed organics	Kitchen & other greases	0	40,900
Other yard waste	Grass & yard debris	0	7,300
Paint	Paint	0	2,865,700
Paper, High grade/ office	Copy paper, office paper	0	445,500
Paper, newsprint	Newspaper	0	90,900
Paper, mixed	Misc. office supplies	0	2,454,200

Chart continued on next page

Amount of Waste Recycled in GMNA during 2000			
Original Material	Used for	Cost Savings	Kilograms
Rubber	Tires, other rubber	\$2,000	31,912,600
Sand/ grit/ fines	Foundry materials	0	384,580,800
Soil/ dirt	Soil & dirt	0	3,216,600
Textiles	Equipment covers, protective clothing, rags	0	340,000
Unspecified construction debris	Building Materials	0	798,800
Unspecified mixed trash	General plant & cafeteria refuse	0	77,500
Wood	TP - pallets, other supports	0	25,877,600
Wood	Railroad ties, other wood	0	103,500
Iron	Automotive scrap, building materials	\$6,100,000	108,474,900
Steel	Automotive scrap, building materials	\$127,000,000	1,176,565,800
Other ferrous metals	Automotive scrap, grinding fines, aerosol cans, building materials	\$32,800,000	51,958,000
Aluminum	Beverage cans	\$3,300	5,600
Aluminum	Automotive scrap	\$30,000,000	37,222,700
Other non-ferrous metals	Automotive scrap	\$630,000	16,001,000
Mixed metals	Automotive scrap, obsolete equipment, cylinders, aerosol cans, filters, building materials	\$9,000,000	141,790,100
HDPE	TP - Pails, protective caps/ covers, pallets	0	39,800
PVC/Vinyl	Miscellaneous	0	143,500
LDPE	TP - Stretch wrap, bubble wrap, bags, other	0	39,500
Polypropylene	Miscellaneous	\$21,000	120,800
Polystyrene	Miscellaneous	0	113,500
Mixed plastics	TP - miscellaneous, obsolete office equipment, Printer, copier cartridges	0	2,644,000
<b>TOTAL</b>		<b>\$205,916,300</b>	<b>2,073,398,210</b>

Examples of recent recycling activities that contributed to the amount of waste recycled in GMNA during 2000:

- The Detroit/Hamtramck Assembly plant implemented a solvent rag-recycling program. The rags are sent off-site where the solvent is extracted at a hazardous waste Treatment, Storage, and Disposal Facility (TSDF) and the rags are then available for reuse. The result is a \$14,000 saving and an 11-ton reduction in waste volumes disposed annually.
- The Bowling Green Assembly plant recycles nearly 300 metric tons of materials each year such as wood pallets, plastic drums, fluorescent lamps and boxes, plastic parts, and metal anti-rotation pins. These efforts conserve landfill space and saved the plant nearly \$30,000.
- During a recent plant renovation for a new product line, the Janesville Assembly plant segregated scrap iron, steel, and metal from the demolition activities. The scrap metal was sent to a local reclaimer for recycling into new steel. The project saved \$581,000.
- The Warren Transmission plant recycles cloth filter media. Metal chips are recovered through secondary smelters and the filter media is recovered through secondary fiber markets.
- The Saturn, Spring Hill facility recycled seat belts that were obsolete due to a material change for model year 2000 through the local county "Impact Center". The Center provides training and jobs for 250 people with disabilities. Center employees took the seat belts apart and segregated the components for recycling.
- Our Warren, MI Technical Center is a complex operation that handles many waste streams. They recycle steel, corrugated paper, computer equipment, ink cartridges, concrete, and metal debris. The Center also recycles their wood into landscaping mulch, brick and block into road base materials, dirt into landfill cover, carpet into new carpet tiles, and grease into soap, animal feed, candles, and cosmetics.

An example of another GMNA initiative is the GM de Mexico Truck Group at Silao where waste and pollution prevention initiatives saved \$595,000.

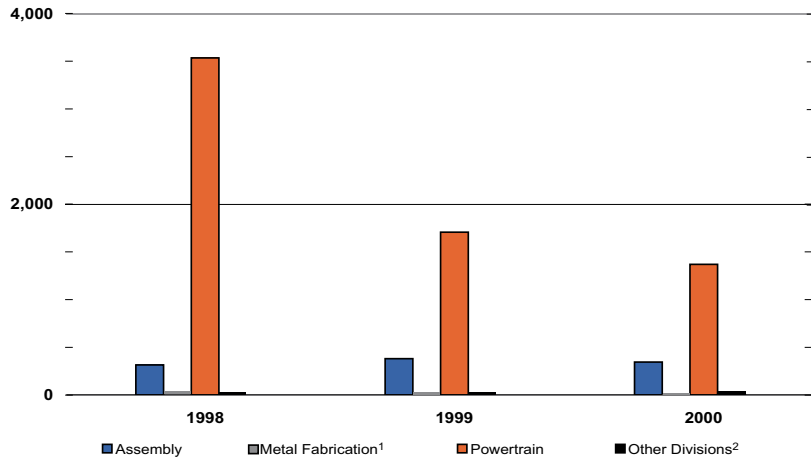
### **Non Recycled Waste**

Non-recycled solid waste volumes from North American facilities in 2000 were 687,275 metric tons out of a total of 3,155,830 metric tons of recycled and non-recycled waste. As mentioned in other sections, we have various initiatives underway to reduce this waste. All of the links listed below provide descriptions of the various initiatives.

### TRI and NPRI waste disposal in GMNA (excluding Mexico)

U.S. TRI and Canadian NPRI toxic releases to land disposal in absolute numbers are shown in the following graphs. U.S. production rose by 8% from 1998 to 2000. Canadian production levels increased 28% over the same time period. These releases are part of non-product output and managed within our NPO reduction strategy in GMNA.

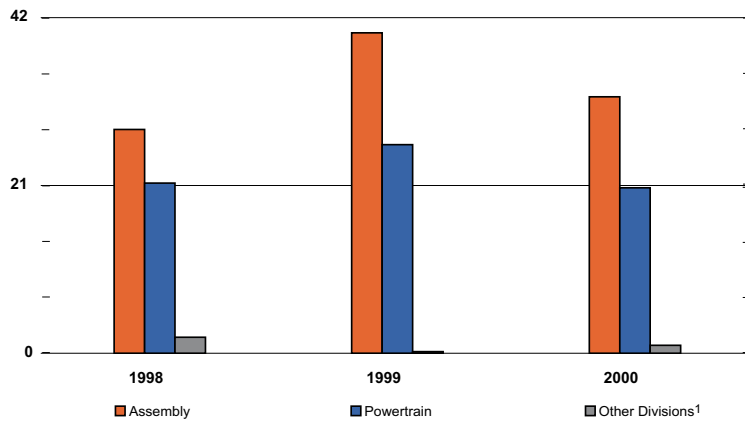
**SARA TRI: DISPOSAL TO LAND (U.S.)**  
(METRIC TONS)



<sup>1</sup> Releases for Metal Fabrication for 1998=12.7, 1999=9.9, and 2000=2.4

<sup>2</sup> Releases for other divisions for 1998=0.5, 1999=0.8, and 2000=2.6

**NPRI: DISPOSAL TO LAND (CANADA)**  
(METRIC TONS)



<sup>1</sup> Annual releases for Other Divisions = 2 metric tons or less.

## Emissions to Air

### Greenhouse Gases from Stationary Sources

Our global facilities emitted 13.58 million metric tons of CO<sub>2</sub> in 2000 (see graph below), a 2.7% reduction from 1999. Emissions per vehicle were reduced by 6.2% to 1.65 metric tons in 2000.

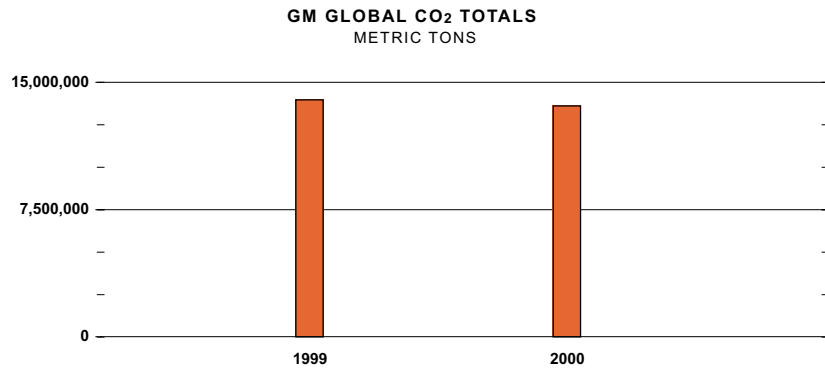
These emissions are calculated based on the fuels sused at each facility (including electricity), which is the major source of greenhouse gas emissions from our facilities.

For GMNA CO<sub>2</sub> emissions for 2000 were 10.91 million metric tons, resulting in a 3.3% reduction from 1999 levels. Since 1995, we were the first automotive manufacturer to voluntarily report greenhouse gas emissions from U.S. facilities under Section 1605(b) of the Energy Policy Act of 1992 - Voluntary Reporting of Greenhouse Gases.

CO<sub>2</sub> emissions from U.S. facilities were 9.83 million metric tons, resulting in a reduction from 1990 levels of 14.6%.

GM's Canadian operations report greenhouse gas emissions as part of the Voluntary Challenge and Registry Inc. (VCR) program. GM of Canada was again recognized as Gold Level Champion Reporter in their 2000 report.

GM of Canada reported a 42% reduction in CO<sub>2</sub> generation since 1990. For a full report refer to the Action Plan for Reduction Greenhouse Gas Emissions filed in October 2000 with Canada's Climate Change VCR Registry.



GMNA CO <sub>2</sub> EMISSIONS	
For U.S. operations only:	
1990	11.51 million metric tons CO <sub>2</sub>
1999	10.1 million metric tons CO <sub>2</sub>
2000	9.8 million metric tons CO <sub>2</sub>

### CO<sub>2</sub> Reductions at Vauxhall

Vauxhall's total U.K. emissions of carbon dioxide fell by 2.3% in 2000 to 273,000 metric tons from 280,000 metric tons in 1999. Vauxhall is making good progress towards its target of a 7% reduction in CO<sub>2</sub> emissions from stationary sources between 1999 and 2003, returning a 4.1% reduction from these sources alone. With lower production, CO<sub>2</sub> emissions per car built actually increased by 9.4% in 2000 to 970 kg per car.

Overall, Vauxhall has reduced CO<sub>2</sub> emissions from stationary sources by 18.9% since 1990 and with the 7% cut targeted will have reduced emissions by 21% by 2003. This ties in with the U.K. government's voluntary commitment of a 20% cut in greenhouse gas emissions from 1990 levels by 2010, which Vauxhall fully supports.

Vauxhall has been actively involved in the development of a U.K. Emissions Trading Scheme to provide further incentives for U.K. businesses to continue to reduce greenhouse gas emissions in the most cost-effective manner.

Further carbon dioxide emission reductions are planned through the introduction in 2002/2003 of combined heat and power generation. This could save 33,000 metric tons of carbon dioxide each year over existing targets.

**Climate Change Levy**

In 2000, Vauxhall was an active participant in obtaining a Negotiated Agreement for the motor Industry (through its trade body SMMT) in relation to the Climate Change Levy, a tax on business energy use introduced in April 2001. This was one of the first Negotiated Agreements to be agreed by the Government and provides the motor industry with a rebate against the Levy in return for agreed improvements in energy efficiency in terms of vehicle production over the next 10 years.

**Air Pollutant Emissions**

**GMNA**

Emissions to air in GMNA are tracked using the U.S. TRI and Canadian NPRI. Painting and coating operations at assembly facilities contribute the majority of air emissions. Paint shop emission reductions have been ongoing since the early 1980's as coating application technologies have undergone extensive changeovers. Technologies that contribute to lower emissions are continually implemented as new paint shops are installed and existing shops renovated. TRI emission levels from assembly plants varied primarily based on U.S. production levels, which were 15% higher in 1999 and 8% higher in 2000 over production levels in 1998. In 2000, 89% of TRI air emissions were from point sources (stacks) and 11% from fugitive or non-point sources.

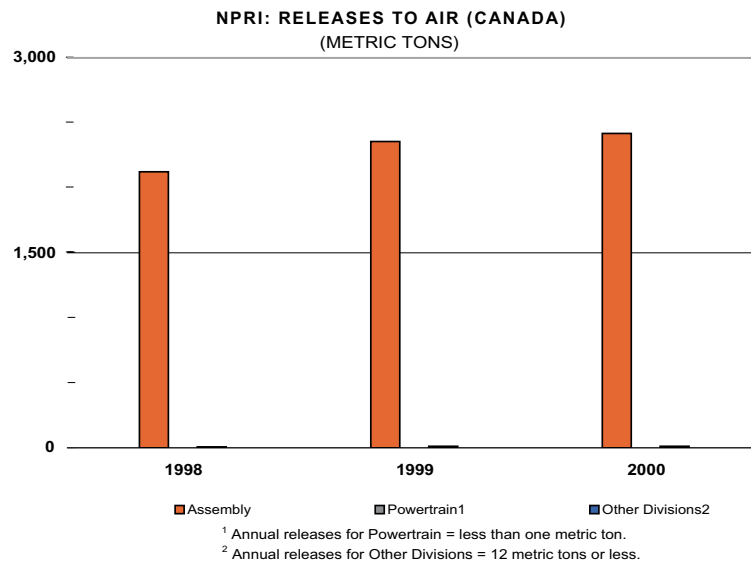
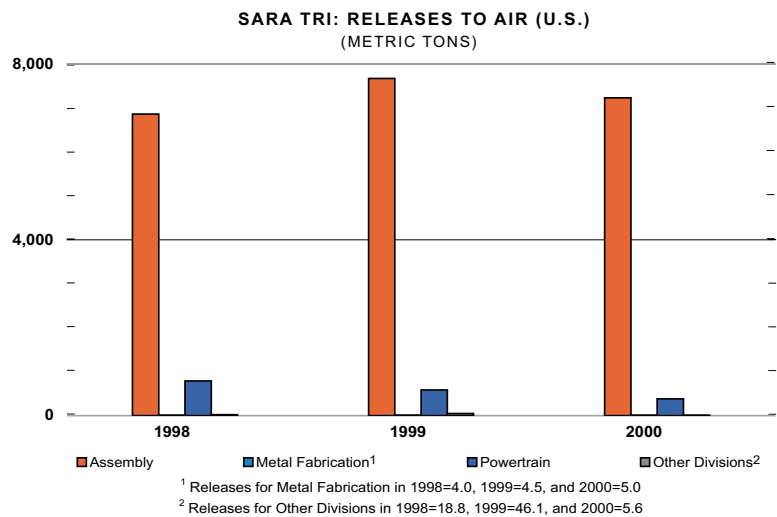
Our approach to managing emissions to air is part of our non-product output management strategy in GMNA.

Total Canadian NPRI air releases increased in 2000 by 4%, with 2,430 metric tons compared to 2,331 metric tons in 1999. Production levels in Canada were 22% higher in 1999 and 28% higher in 2000 than production levels in 1998.

**Criteria Air Pollutant Emissions**

The majority of criteria air pollutant emissions from our operations are generated from fuel burning operations (supplying heat and power to factories) and from solvents used in the painting of vehicles.

During the past decade we have decreased emissions from heating and power operations by reducing our use of coal burning systems, increasing our reliance on cleaner burning natural gas units, and improving the



energy efficiency of our facilities. When replacing coal-burning systems, we are often able to replace larger, less efficient units with smaller, high-efficiency systems. As a result, although we are producing a record number of vehicles, emissions of particulate matter, nitrogen oxides, carbon monoxide, and sulfur oxides have significantly declined over this period. The graph at right shows our emission levels of these pollutants since 1998.

### Volatile Organic Compounds

In 2000, we initiated an extensive effort to minimize the amount of Hazardous Air Pollutants (HAPs) contained in paint coating materials. This is an ongoing effort and will continue over the next few years.

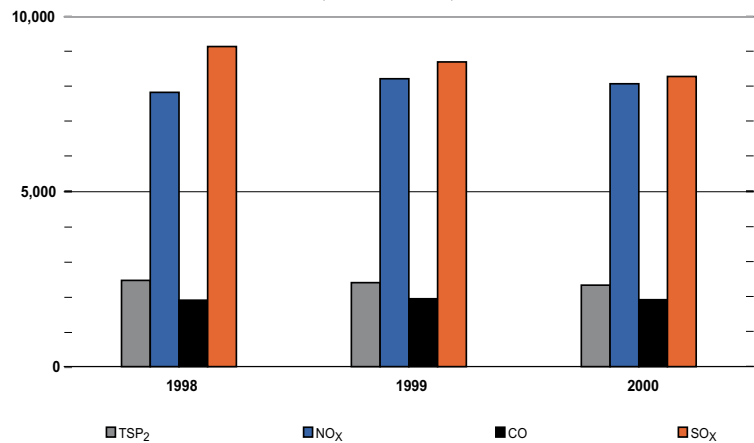
Vehicle painting operations are the largest source of volatile organic compound (VOC) emissions in vehicle manufacturing. VOC reductions have been achieved from:

- Routine coating material reviews for paints;
- Limitations on the amount of VOCs used in paint shop purge and cleanup operations concurrent with new programs at several facilities.
- Use of powder primer surfacer in the majority of facilities.
- New casting programs using lost foam technology for aluminum, blocks and heads. This means lower VOC emissions than iron casting technology. Aluminum engine components increase fuel economy.
- Grilles, mirror housings, cowl screens, bumper caps, and door handles are designed to reduce traditional paint operations -- reducing airborne and waste emissions in production.

U.S. production-adjusted paint shop VOC emissions levels have dropped 2% over the last three years. Total VOC emissions from Canadian assembly facilities have decreased by 21% on a kilogram per vehicle-produced basis. These differences in the U.S. and Canada VOC data are attributable to the use of model-specific paint

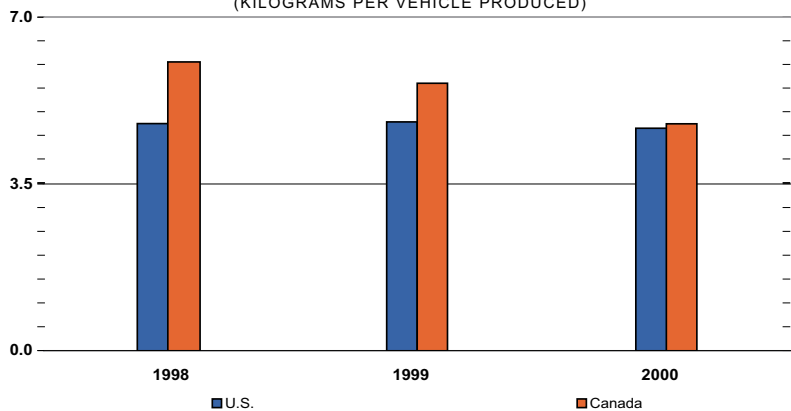
Releases at the GM Canada Ltd. (GMCL) Ste Thérèse plant in Québec decreased 53% from 1999 to 2000. Two purge thinner products were abandoned in 2000 due to a change in Québec regulation. This resulted in the significant decrease in release of toluene, xylene, n-butyl alcohol, and ethylbenzene. The main contributor to methanol release in 1999 was a reducing solvent, which was not used in 2000. The overall use of cleaning and purging solvents was reduced from 364 metric tons in 1999 to 100 metric tons in 2000.

CRITERIA AIR POLLUTANT EMISSIONS,<sup>1</sup> (U.S., CANADA, AND MEXICO)  
(METRIC TONS)



<sup>1</sup> These air emissions data are derived from corporate fuel use records and generalized emissions factors.  
<sup>2</sup> Total Suspended Particulates.

ASSEMBLY FACILITIES VOLATILE ORGANIC COMPOUNDS (VOCs)  
(U.S. AND CANADA)  
(KILOGRAMS PER VEHICLE PRODUCED)





technologies and processes on different car and truck models built at various North American assembly operations as explained above.

Since 1998, the Oshawa Truck Assembly Center in Canada has initiated several projects and process changes that resulted in air emission reductions.

- Reductions in the use of clearcoat paint while maintaining the appearance and durability of the vehicle's finish resulted in a reduction of 31 metric tons per year of emissions of VOCs.
- Elimination of the use of black primer to affect adhesion with windshield urethane adhesive resulted in the elimination of 3.1 metric tons per year of VOC emissions
- Redesign of the product to eliminate wheel painting resulted in the elimination of 9.6 metric tons of VOC emissions.

These VOC reductions significantly lower the reported quantities of solvents in both the National Pollutant Release Inventory (NPRI) and the Ontario Ministry of the Environment Air Emission Inventory.

#### **Volatile Organic Compounds at GME**

Volatile Organic Compounds (VOCs) Solvent emissions are one of the four key impacts for which Vauxhall has set corporate targets. Solvent emissions arise from car painting operations and for 2000, total emissions fell by 13% to 1,428 metric tons resulting in a 3.3% reduction per car produced. This keeps us on track for our 17.5% reduction target by 2003. Solvent recovery increased by 5.5% to 694 metric tons in total.

The introduction of waterborne basecoats at the Luton plant and increased efficiency in the painting process, including solvent recovery that are coming on stream in 2000 and 2001 at Ellesmere Port, will help achieve the company's target for solvent emissions.

#### **Ozone Depleting Substances**

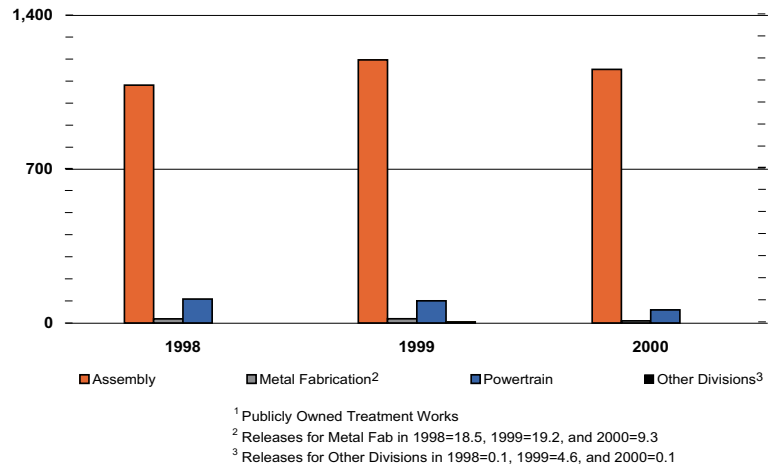
Starting with the 1995 model year, all air conditioning systems installed in our new vehicles have been ozone-friendly (i.e., containing no CFC's or other ozone depleting substances (ODS)). Likewise, since April of 1995, we have not used Class I ODS in the vehicle manufacturing process.

We continue to maintain some stationary equipment, such as building air conditioning systems, which contain ODS. Approximately one-half of such equipment has been replaced or converted to non-Class I refrigerants. The remaining systems will be replaced and the ODS refrigerants recovered and recycled over time as this equipment is retired. The replacement of all halon fire-protection systems with ODS-free materials was completed in 2000.

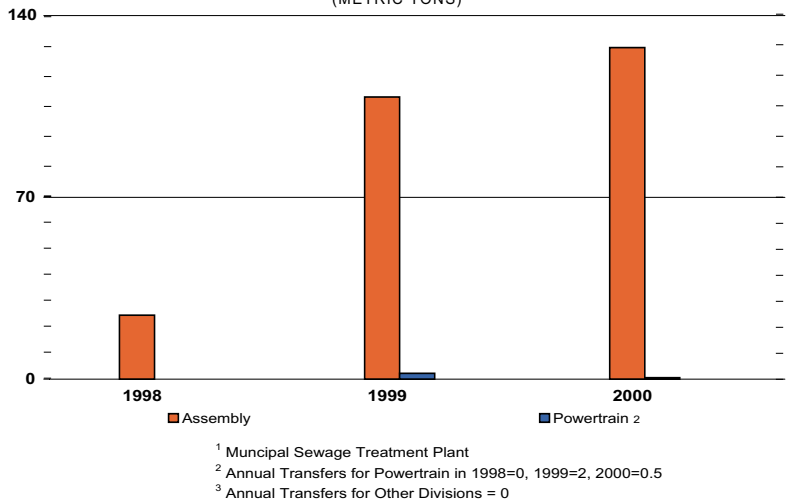
### Emissions to Water

Water effluents in GMNA are tracked using U.S. TRI and Canadian NPRI data. As with air emissions, assembly painting and coating operations and industrial wastewater treatment operations are the main contributors to these effluents. TRI emission levels from assembly plants varied in proportion to U.S. production levels, which were 15% higher in 1999 and 8% higher in 2000 than production levels in 1998. Transfers to water are managed as part of our non-recycled, non-product output (NPO) reduction strategy.

**SARA TRI: TRANSFERS TO WATER (POTW)<sup>1</sup> (U.S.)**  
(METRIC TONS)



**NPRI: TRANSFERS TO WATER (MSTP) (CANADA)**  
(METRIC TONS)



## TRI and NPRI information

### TRI and NPRI Emissions

Emissions and effluents from North American facilities are quantified using U.S. Toxic Release Inventory (TRI) data and Canadian National Pollutant Release Inventory (NPRI) data. Mexico currently does not have a similar data tracking system. U.S. facilities submitted their fourteenth annual report to the TRI for year 2000. Fifty-six facilities reported emissions for 51 chemicals on the TRI out of a total of 637 listed.

GM Canada, Ltd. (GMCL) submitted its eighth annual report to the NPRI for the year 2000. A total of 9 facilities were required to report. These 9 facilities reported on 30 chemicals that met the reporting thresholds, out of a total of 268 chemicals listed under the NPRI.

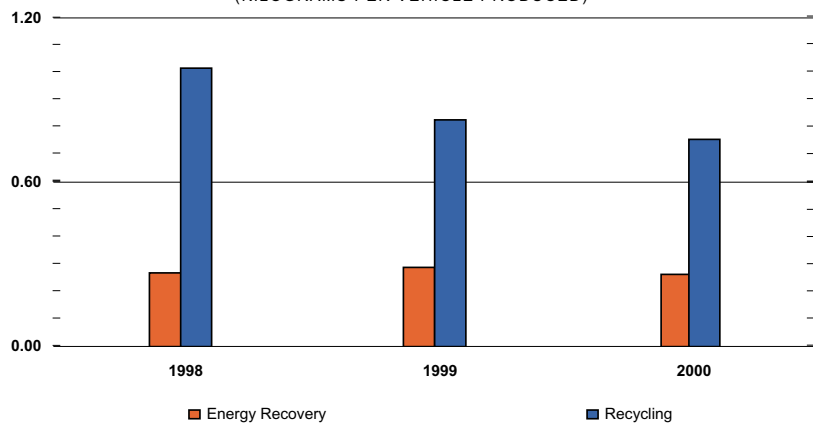
### Recycled TRI & NPRI Substances

A portion of the toxic materials from U.S. and Canadian facilities are managed using recycling and energy recovery. Those amounts in kilograms, adjusted for production, are presented in the following graphs for years 1998 through 2000. The data source is either the U.S. TRI or the Canada NPRI.

On a production-adjusted basis, recycled volumes of U.S. TRI substances decreased by 25% between 1998 and 2000. Energy recovery levels have remained stable during the same three-year period.

On a production-adjusted basis, the total volume of Canada NPRI substances recycled (including energy recovery) was down 27.5% in 2000 over 1998.

SARA TRI: ENERGY RECOVERY AND RECYCLING PER VEHICLE PRODUCED (U.S.)  
(KILOGRAMS PER VEHICLE PRODUCED)



## SOCIAL AND COMMUNITY INFORMATION

## Social Management

### Philanthropy

Through the funding of the GM Foundation and corporate contributions, we support many philanthropic causes. This support comes in the form of cash contributions, as well as in-kind donations and participation in various events. Donations are allocated according to our Philanthropic Mission Statement, which is outlined at right.

We believe that it is essential to invest in organizations and projects dedicated to improving cultural, economic, educational, environmental and social aspects of the communities where we operate.

### Memberships, Sponsorships and Contributions

We have established and maintained memberships, sponsorships and partnerships with organizations that advance common goals on societal issues affecting public policy. These organizations include The United States Council for International Business, The Conference Board, Business for Social Responsibility and others.

### Health and Safety Policy and Management

We have a long history of establishing world-class health and safety programs and reducing risk in the workplace. Joint programs with trade unions and specialized employee training initiatives have helped us become the leader in health and safety performance in our industry. We have developed a practical risk-assessment methodology that is used during the design of machine safety features. Known as Safety 21, the system has dramatically improved machine safety resulting in reduced risk to our employees and increased uptime. Safety 21 is a joint effort between our engineering and safety professionals, the United Auto Worker's Union and our employees.

We are in the early stages of establishing a common global health and safety management system structured around the ISO 9000-2000 Quality Management System. This common process provides the framework for effective management of numerous programs and procedures, including:

- GM Global Best Health and Safety Practices
- Ergonomics
- Safety Through Design
- Contractor Safety
- Skilled Trades Safety
- Employee Wellbeing
- Employee Assistance Programs
- Industrial hygiene evaluation
- Due diligence surveys

We belong to numerous health and safety industry and business associations that focus on employee health and safety. Experience has proven that such partnerships have symbiotic benefits, where we learn from benchmarking against other organizations and in turn share our best practices. GMNA memberships include:

#### GM HEALTH AND SAFETY POLICY

We are committed to protecting the health and safety of each employee as the overriding priority of this Corporation. There will be no compromise of an individual's well-being in anything we do. The implementation of actions to help our employees realize a healthy, injury-free environment is a leadership responsibility. Continuing support of this effort is the responsibility of everyone. We will lead the General Motors team to ensure that we protect the well-being of every member.

**General Motors President's Council (1994)**

- National Safety Council
- American Industrial Hygiene Association
- American Society of Safety Engineers
- Organization of Resources Counselors
- National Association of Manufacturers
- Automotive Industry Action Group
- American National Standards Institute
- Industry Cooperation on Standards Conformity and Assessment

## Diversity Management

Throughout GM, our Diversity Initiative is the process of creating and maintaining an environment that naturally enables our employees, dealers, suppliers and communities to achieve their fullest potential. We believe that diversity is the collective mixture of similarities and differences. This recognizes that managing diversity includes race and gender as well as the broader aspects of age, education level, family status, language, military status, physical abilities, religion, sexual orientation, union representation, and years of service.

We believe that workforce diversity adds to competitive advantage. As a global employer, we understand that working with a diverse group of individuals with differing backgrounds and perspectives, creates and maintains competitive advantage and assists in achieving global success. Through our Diversity Initiatives we seek to create an environment that optimizes the contributions of our diverse work force, our suppliers, customers, and the communities where we work. We recognize that it is essential that our work force structure reflects both the marketplace and our customers.

This program made enormous strides in 2000 with a number of exciting changes and improvements. With a new look, due to the development and marketing of a brand for diversity, *Diversity Initiatives* is fast becoming a very recognizable part of the corporation.

With the introduction of an additional core value — Individual Respect and Responsibility — our goal in 2001 is to integrate *Diversity Initiatives* further into the company and to engage with management. Support for this sixth core value is demonstrated on a Diversity E-card entitled, *It's What's Inside that Matters*. Our Diversity E-card is a multimedia CD-ROM that provides an overview of our current Diversity Strategies. The E-card was distributed to all North American GM Executives in March 2001. Diversity is also being aligned with the corporate "GoFast!" initiative, and the "GoFast!" principle is expressed through the logo with the words, "Many People, One GM, NOW."

In an effort to support the newly developed sixth core value of Individual Respect and Responsibility, the "You Make A Difference" Award has been designed to recognize employees who support diversity. The award is "employee-to-employee" meaning any employee at any level who takes action that supports or values diversity in the work environment is eligible. The "You Make a Difference" Award is now circulating throughout the corporation and is in popular demand.

### Diversity Vision and Strategy

Our diversity strategy is based on three guiding principles:

- Integration of concepts into other change processes in the corporation. Current change initiatives with high visibility are identified as initiatives that should include diversity concepts. Key stakeholders, such as suppliers and our dealers, are also encouraged to support our diversity efforts. The GM University (GMU) offers many courses to employees covering everything from ergonomics to economics. Such courses are being targeted as a perfect venue to spread the diversity message and where appropriate, diversity concepts are integrated into the curriculum. All GMU courses now begin with a diversity protocol, which includes a review of diversity supportive behavior or a videotape that emphasizes inclusive behavior. We believe that focusing on individual behavior will help provide an inclusive environment for all people involved with GM.

- Creation of a "one company" experience for all employees. The thought is that regardless of diversity

Our Diversity Vision:  
**Many People,  
One GM, Now**

dimensions such as race, age and gender, employees should experience "one GM." Diversity Initiatives will monitor progress toward "one company" through employee surveys and we are developing a Global Diversity Action Plan identifying key values and attitudes that are needed globally to help achieve this goal.

- Approaching diversity with "Big and Fast" in mind. Diversity Initiatives aims to use the size of our company to improve the speed with which decisions are made and change is implemented, consistent with our corporate 'GoFast!' strategy. Diversity Initiatives asks senior teams in business units to address diversity gaps with their own teams and commit to immediate change. This encourages employees to hold themselves and each other accountable for action and to behave in a manner that will contribute to our mutual success.

### **Equal Opportunities, Recruitment and Retention**

Our greatest asset is the quality and capabilities of our diverse work force. We strive to attract, retain, develop, nurture, and advance our work force and aim to provide a supportive employee environment, respectful and understanding of people's differences. We believe in fostering an environment that offers the greatest opportunity for everyone, helping to make us an "employer of choice" among an increasingly educated and diverse population and helping us to hold onto our existing workforce.

We remain committed to Affirmative Action as required by the Federal law. As such, we monitor our programs to determine whether recruitment, hiring and other personnel practices are operating in a nondiscriminatory manner. This process includes outreach programs designed to identify qualified individuals of any race or gender who are not fully represented in the talent pools from which we select and promote employees.

All managers are expected to meet or exceed diversity goals set through the Affirmative Action Program. Executive representation goals have been set for each of our business sectors. We expect to fully meet all of our targets.

Employment decisions are based solely on the match of a candidate's qualifications with the organization's requirements. We do not make employment decisions, or place employment related advertisements, on non-job-related criteria such as age, race, sexual orientation, color, gender, religion, or national origin.

### **Integration Systems**

Diversity in the workplace and in our business relationships helps enhance our effectiveness in the global marketplace.

To achieve our diversity goals, we do not tolerate discrimination or devaluing behavior under any circumstance.

While we continue our commitment to Affirmative Action, we are simultaneously widening the diversity agenda and moving towards the broader concept of managing diversity. Our aim is no longer to simply satisfy legal requirements, we are creating an employee environment that optimizes the performance of every employee in pursuit of their business objectives. Additionally, Jack Smith states, "Having people of different ethnic, racial, and social backgrounds in our corporation has not slowed our pursuit of excellence — it has accelerated it."

We are developing systems and initiatives to effectively manage diversity in our company and we are placing these at the center of our continued pursuit of global excellence. These initiatives aim to support our diverse and capable workforce, so that it is ready, willing, and able to respond to the challenges and opportunities that we will face in the new millennium.

As part of our diversity initiatives, we have reached out to other people. For example, we are prominently involved in and support Catalyst, a non-profit research and advisory service organization that works to advance the role of women in business and industry. Catalyst's mission — to enable women to achieve their full potential and to help employers capitalize fully on women's talents and abilities — is reflected in our own programs and initiatives.

"We will continue to do everything possible to bring minority group members and women into both GM and the mainstream economy ... this is a commitment that managers must bring to life by their actions, not their words."

**- Jack Smith, Chairman**

**Supplier Diversity**

We value the importance of our diverse supplier base and for nearly 30 years we have been at the forefront of minority business development. Supplier diversity activities are a part of our overall corporate strategy and our Minority Supplier Purchasing Policy forms a strong part of our traditional support for minority business development. With a total spending of \$2.4 billion in 2000, we exceeded our \$2.1 billion financial commitment .

This year we also established a Mentorship Program, allowing for 16 mentored suppliers. We have identified 53 minority owned suppliers to mentor. Each supplier has a GM executive champion that is in place to help grow their business.

**Marketplace Diversity**

Marketplace diversity has become one of our key priorities. In May 2001, we announced the formation of a diversity marketing and sales organization, the Center of Expertise on Diversity, to focus on the women's market and the growing markets for African American, Hispanic American and Asian American consumers. The new Center is designed to enhance cross-divisional planning and execution, capitalize on our scale and share of voice, increase understanding of multi-cultural consumers, support and leverage local dealer efforts, and disseminate experience through the corporation.

**Dealer Diversity**

For almost 30 years, we have been committed to growing a diverse and financially successful dealer network. We were the first U.S. automaker to institute a structured minority dealer initiative in the industry. By today's standards, minority-owned dealerships are becoming more prominent. The path, however, was completely uncharted for those early pioneers who faced incredible odds in obtaining a retail automotive dealership. Those pioneers found that owning a piece of the "American Dream" and running it successfully, presented an even greater challenge than imagined, but it laid the groundwork allowing us to realize the significant growth today.

Since 1972, we have been providing industry-leading training opportunities to minorities to prepare them to become future dealers and to help them succeed once they become dealers. We are now beginning to see second generation minority dealers in their own stores. GM has increased the number of minority-owned dealerships to the highest number since the program began. Today, of the 361 minority dealerships GM includes in its ranks, more than 75 percent of the dealerships are privately owned. Our numbers are increasing, and the profitability of our minority dealerships is performing at a level consistent with the overall General Motors dealer portfolio.

In January of 2001, we announced the Women's Retail Initiative to attract more women into our retail dealer network as owners and operators. Again, General Motors is the first automobile manufacturer to develop a structured program aimed exclusively at placing more women into automotive retailing. The program mirrors our Minority Dealer Development Initiative. Currently, GM has 219 female operators in our dealer network.

To support our goals of increasing minority and women representation in our dealer network, we formed Dealer Development, a new umbrella organization that is the centerpiece of the dealer development diversity effort within General Motors. GM Dealer Development includes Minority Dealer Development, the Women's Retail Initiative and Candidate Development. Through this effort, we are creating an arena through which potential minority and women dealers can be nurtured to success in the retail network. Support for minority and women dealers is provided from candidate selection through dealership operations.

The result is a "win-win" combination for everyone because managing dealer diversity increases opportunities and economic empowerment for others while strengthening GM's competitive global advantage.

## Supplier Management

Our agreed guidelines for supplier conduct are discussed in Winning With Integrity — Our Values and Guidelines for Employee Conduct, and in the supplemental booklet, Integrity in the Marketplace.

The GM Worldwide Purchasing Policy includes a number of policies that guide us and our suppliers in purchasing activities throughout the world. Our suppliers, and any goods or services supplied, must comply with all applicable regulations or standards of the country(ies) of destination or that relate to the manufacture, labeling, transportation, importation, exportation, licensing, approval or certification of goods or services, including, but not limited to, those relating to environmental matters, wages, hours, conditions of employment, subcontractor selection, discrimination, occupational health and safety, and motor vehicle safety. Additionally, neither suppliers nor their subcontractors may utilize slave, prisoner or any other form of forced or involuntary labor in the supply of goods or provision of services. In order to ensure successful implementation of these policies, suppliers must adhere to the terms and conditions outlined in the GM Purchase Order Terms and Conditions, and must certify their compliance with these terms and conditions at our request.

## Social Performance

### Employee and Job Satisfaction

Our Employee Enthusiasm Strategy focuses on engaging our employees with positive leadership behavior and effective systems and strategies for managing our employees. We emphasize personal safety and economic stability and have pledged to develop and promote policies and programs that assist our employees both at work and in their home environments.

#### Job Satisfaction Levels

Employees are a key component in assuring our success and since the 1940's we have researched how our employees feel about the company. During 2000 the first global employee communications survey was carried out expanding on the international pilot launched in 1998. Overall, 40% of employees participated in this first global census and the goal is to increase participation in next global census scheduled for 2002. The survey includes questions about corporate goals and objectives, a sense of urgency, product and customer focus, innovative products and services, improved business results, leadership, integrity, communication, involvement, teamwork, and learning and development.

Looking forward to the 2002 census, our aim is for a greater number of work teams in individual locations around the globe to develop action plans for improvement based on the census results. This has happened on a limited basis with the first global census completed in 2000 and teams will be responsible for understanding the data for their site or region, benchmarking against local norms, and developing local action plans that aim to improve employee satisfaction and survey ratings.

### Wages and Benefits

We are proud of our compensation policies and practices around the globe. Jobs at our facilities are highly sought wherever we operate. Compensation and benefit practices vary widely around the world, according to local customs, competitive markets, and local regulations. Our market-based compensation meets or exceeds all legal requirements. Health care is provided to all employees, in accordance with local laws, customs, and practices.

Wages and benefits are not, in all cases, negotiated with local unions. In locations where our employees are represented by unions they typically are negotiated. Not all of our locations are represented by unions.

Pensions are not provided to all employees. Our philosophy with respect to benefits is to provide them whenever it is customary to do so in the specific country of operation. While in many, if not most, countries it is customary to provide pensions, in some countries where we operate it is not, e.g., Poland, Colombia, and



Hungary, and, therefore, we may not provide such a benefit.

Labor issues, such as wages, benefits, hours, and working conditions within our GME operations are managed to respect European Union and national legislation and through the collective bargaining process, where applicable. Internal employee representation systems are established in all countries in which we operate.

### **Employee Health Benefits**

We are the largest private purchaser of health care in the United States and in 2000 provided health care cover coverage to 1.23 million employees, retirees and their dependents at a cost of \$3.9 billion. Through focused initiatives, including many joint GM-union programs, we are working to improve the quality of health care for employees, retirees and their families, and the communities in which they live. Key focus areas include:

- Improving quality in the care delivery system
- Reducing waste and inappropriate care
- Encouraging the appropriate use of prescription drugs
- Promoting wellness and disease prevention
- Improving patient safety

We are leading the effort to improve patient safety and quality, so that patients have access to the right care and service, at the right time and in the right place. In 1999, Chairman Jack Smith called on the Business Roundtable, comprised CEOs from the largest U.S. companies, to work with other Fortune 50 companies to make health care a priority.

The results of this effort led to the creation of the Leapfrog Group which was created in 2000 by 70 Fortune 500 companies committed to quality and safety standards for purchasing services. It includes the following three standards which can reduce serious medical errors. Our goal in 2000 was for all of our health plans to work with providers to comply with these procedures by 2001.

- Computer Physician Order Entry: This is a system in hospitals which prevents medication prescription errors and can reduce death and serious injury by more than 50%;
- Volume-based Referrals: Referring patients to hospitals that meet specific criteria for certain medical treatments is a key ingredient in the fight against medical errors;
- Intensive Care Unit Staffing Standards: These standards ensure the correct staffing resources and skills in intensive care units.

GM and Medscape have announced a three-year partnership to improve the quality of health care for our employees, retirees and dependents. Medscape® is a leading provider of digital health records and online medical information This e-business health care alliance seeks to reduce medical errors and reduce health care costs by using hand-held point-of-care technology - PDAs - and a digital health care records (DHR) system.

Selected healthcare organizations that we are partners or members of are shown below.

- Greater Detroit Area Healthcare Council
- The Leapfrog Group
- National Committee for Quality Assurance
- Michigan Antibiotic Reduction Resistance Coalition

### **Employee Pension Benefits**

In the U.S., we manage two separate pension plans for employees — one for hourly employees and one for salaried employees. The Hourly Pension Plan and the Salaried Retirement Program both compare very favorably as measured by leading U.S. benefits consulting firms against the retirement programs for employees at other leading U.S. manufacturing companies.

### **GM Hourly Pension Plan**

Our GM Hourly Pension Plan was adopted in the U.S. in 1950 following negotiation and agreement with our affiliated trade unions. The benefit plan covers all hourly employees who have worked for the company for more

than five years. No contributions are made by employees. Vesting under the Plan is achieved once an employee accumulates five years of credited service. The retirement age under the Plan is 65 but employees can retire at any age once they have completed 30 or more years of credited service. If an employee is eligible for the Plan, supplements are payable until age 62, the earliest date when Social Security benefits are available. Upon the death of a retiree, an eligible surviving spouse would receive 65% of the retiree's lifetime pension benefit.

Significant improvements have been made to the Plan in its more than 50 years of existence. This table summarizes the actual benefits in 2000.

AGE	BENEFIT FROM OUR HOURLY PENSION PLAN, WITH 30 YEARS+ CREDITED SERVICE
Up to 62	\$2,480 per month (\$29,760 annually)
62 and over	\$1,300 per month (\$15,600 annually) + Social Security benefit
Upon the death of a retiree	An eligible surviving spouse would receive 65% of the retiree's lifetime pension benefit.

In the U.S. there were 338,200 hourly retirees and surviving spouses at the end of 2000 and payments under the Hourly Pension Plan totaled \$4.6 billion for the year.

#### **GM Salaried Retirement Program**

The current Salaried Retirement Program is a benefit pension plan applicable to all regular salaried employees and was adopted in 1950. It includes features of the Hourly Pension Plan. The current monthly voluntary employee contribution rate is minimal — 1.25% of monthly base salary over \$3,000. However, the benefits upon retirement are very favorable as a vested employee could receive in retirement 100% of their employee contributions in one year and continue to receive such additional benefit for their lifetime.

For all new employees recruited after January 1st, 2001, we will contribute a percentage of basic monthly pay, based on the employee's age, into an individual account for each new employee. The account is vested with the new employee after five years of credited service. No employee contributions are permitted under this new feature of the Program. The new feature was adopted, in part, to address the changing nature of the salaried workforce.

In the U.S. we had 114,400 salaried retirees and surviving spouses at the end of 2000, and payments under our salaried Retirement Program totaled \$2.0 billion.

#### **Employee Investment Schemes**

We make available to employees the Promark Social Equity, Domini Social Equity, and Neuberger Berman Socially Responsive Fund. These investment portfolios consist of only the stock of companies deemed socially responsible.

## **Equal Opportunities and Diversity**

In the United States, individual civil rights are protected by both state and federal laws. The majority of state civil rights laws mirror federal law. These civil rights laws generally prohibit an employer from discriminating against an individual based on certain characteristics such as age, sex, race, color, national origin, disability, marital status, etc.

In addition to our commitment to comply with state and federal laws protecting individual civil rights, we have available a written and widely distributed policy on equal employment opportunity and harassment. This prohibits all forms of harassment such as sexual harassment, and harassment based on characteristics such as age, gender, race, color, religion, disability, national origin, sexual preference or veteran status. The policy clearly states that there will not be any retaliation against employees who bring harassment to the attention of appropriate management.

The Integrity in the Workplace booklet in our Winning With Integrity series, published in 1998, addresses the

issues of the rights and responsibilities of employees toward one another and our commitment to equal employment opportunity. Specifically, these materials make it clear that our company policy is to hire, promote, train and pay based on merit, experience and other work related criteria. The Corporation values diversity and strives to create an environment which is supportive and tolerant of differences.

We have also adopted the Global Sullivan Principles, which include support for universal human rights and promotion of equal employment opportunity for employees at all levels of the company with respect to matters such as color, race, gender, age, ethnicity and religious beliefs.

**Gender**

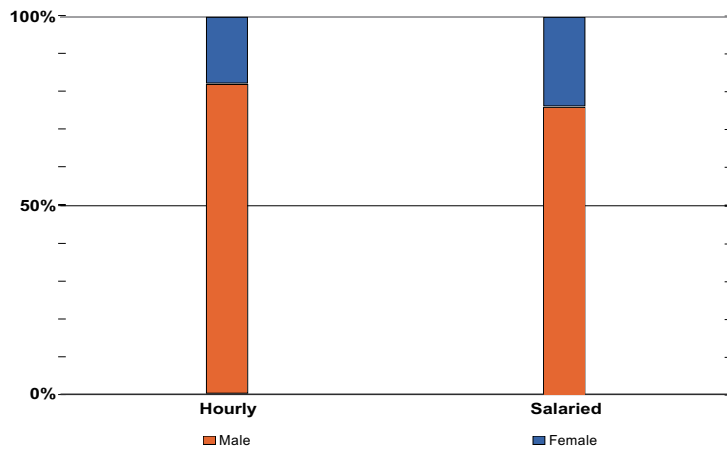
**GMNA**

In the U.S., the ratio of male to female employees is four to one with female employees making up 19.2% of the workforce. Broken down by hourly and salaried employees, women make up 17.6% and 23.7% respectively, as shown in the graph.

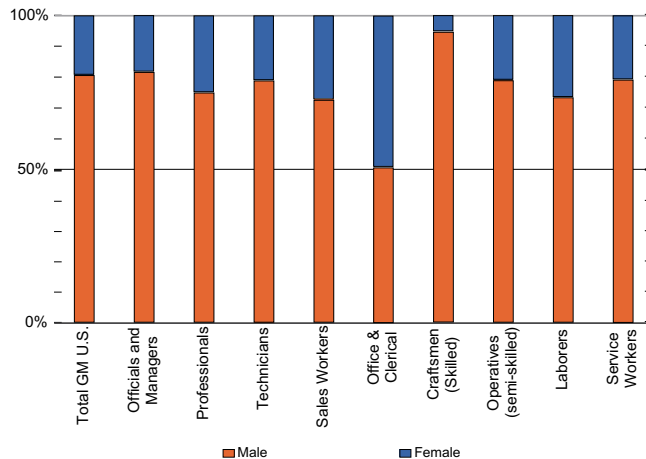
The next graph gives the breakdown of male and female employees by job type in the U.S.

In the U.S., women occupy 18.2% of all official/management positions and 24.9% of all professional positions. Including Saturn, GMAC, and MIC the figures are 19.3% and 26.9% respectively.

**U.S. GENDER PROFILE FOR HOURLY AND SALARIED EMPLOYEES 2000**  
(US ONLY; GM CORPORATE, INCLUDING SATURN, GMAC AND MIC)



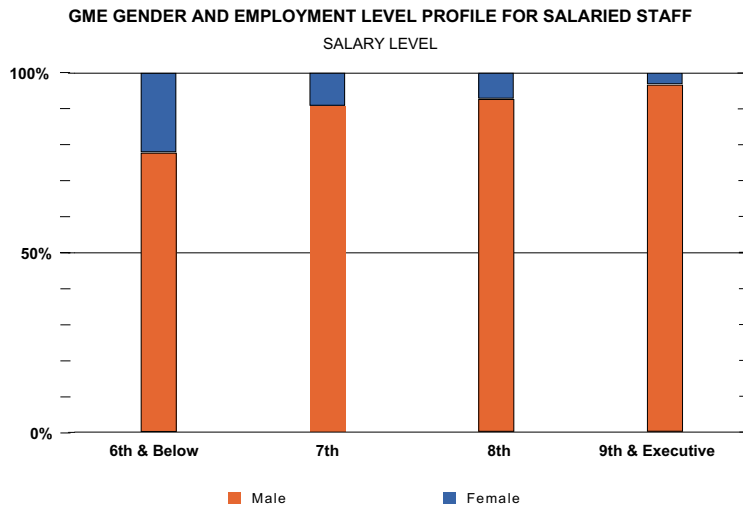
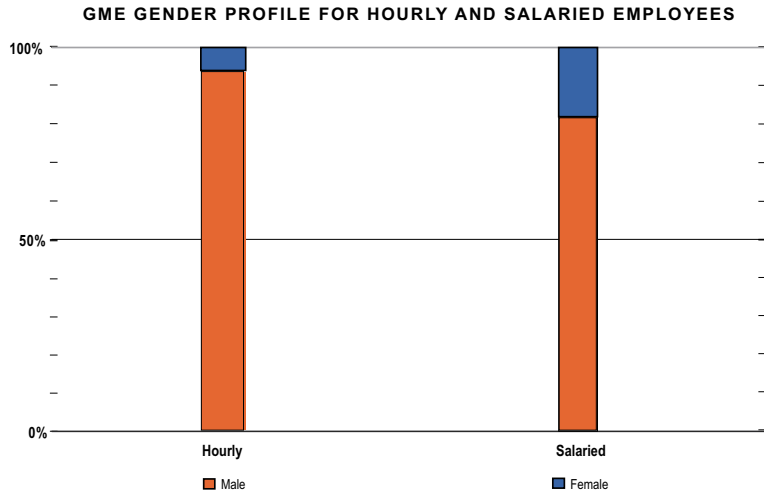
**U.S. GENDER PROFILE BY JOB TYPE 2000**  
(US ONLY; GM CORPORATE, INCLUDING SATURN, GMAC AND MIC)



### GME

In GME facilities, the percentage of women in the hourly and salaried workforces are 6% and 18% respectively. The data vary significantly between countries. For instance, in GM Turkey, there are very few women in the hourly workforce but women make up 28% of salaried employees there, second highest behind Hungary with 31% female employees.

The gender profile of the GME workforce across different salary grades is shown in the next graph.



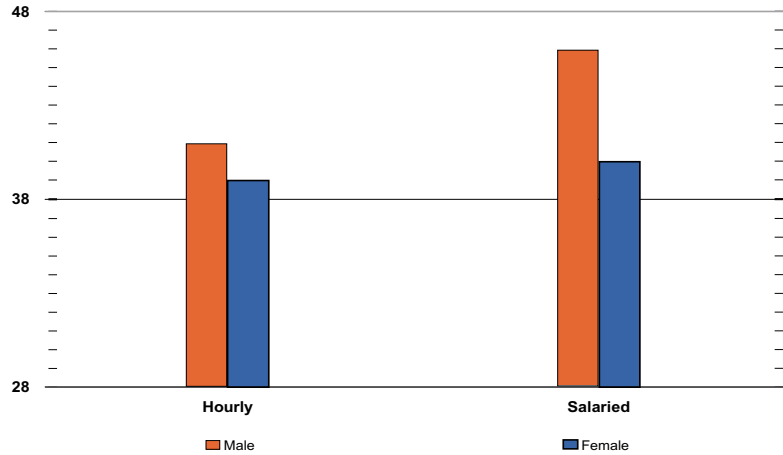
### Age

#### GME

The age profile of the GME workforce shows that for hourly employees the average age is 41 compared to 43 for salaried employees.

For hourly workers the average age for males is 41 and for females 39. For salaried workers the average age for males is 46 and for females 40.

GME AGE PROFILE OF HOURLY AND SALARIED EMPLOYEES



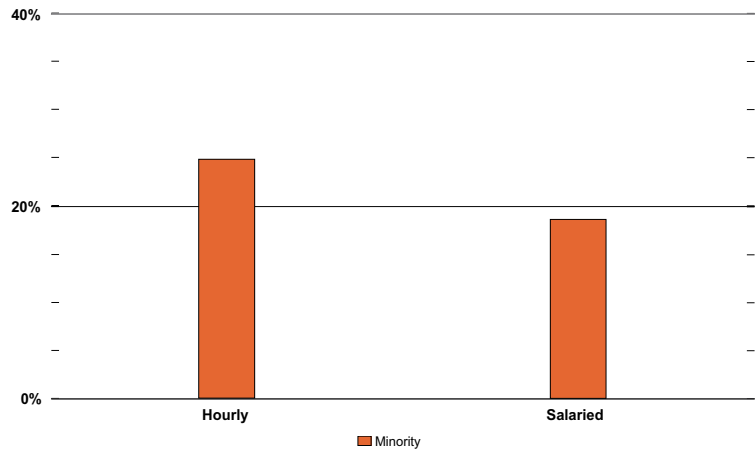
### Minority Employees

#### GMNA

The chart at right shows the distribution of minority employees in hourly and salaried ranks in U.S.

The next chart indicates representation of individual minority groups in the salaried and hourly workforce in the U.S.

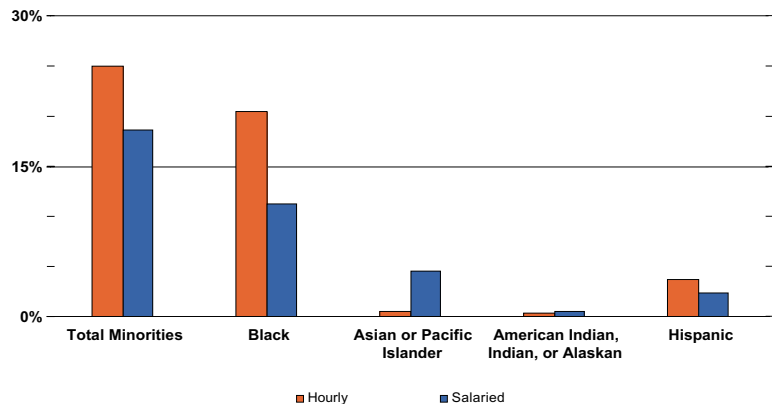
PERCENTAGE OF MINORITY EMPLOYEES IN THE U.S. HOURLY AND SALARIED WORKFORCE  
(US ONLY; GM CORPORATE, INCLUDING SATURN, GMAC AND MIC)



### Discrimination-Related Litigation

During 2000 in the U.S., we received 271 discrimination charges compared to 314 in 1999, a 13.7% reduction. This equates to just over 1 charge filed per 1,000 employees. The basis upon which these charges were filed includes race, gender, age, disability, national origin, religion and sexual harassment. During 2000, 95% of all charges resolved were either withdrawn (48%), administratively closed (34%) or found to have no probable cause (13%). The remaining 5% of cases were resolved through settlements and conciliation with the respective governmental agency and employee. The data

MINORITY PROFILE FOR U.S. HOURLY AND SALARIED EMPLOYEES  
U.S. ONLY; GM CORPORATE, INCLUDING SATURN, GMAC AND MIC



suggest that we have done a good job of trying to eradicate discriminatory behavior in the workplace.

In 2000, the U.S. Office of Federal Contracts Compliance Programs conducted four compliance reviews at selected facilities. Two of the facilities reviewed were found to comply with the government regulations. The other two facilities did not comply but the cases were successfully resolved within specified timeframes.

In Europe, with GM's German Works Council (labor union leaders), we have signed formal agreements on racism and tolerance. Litigation regarding discrimination is rare in Europe.

## Human Rights and Labor Standards

Support for human rights at GM begins with treating each other with respect and dignity. Our employees are responsible for respecting one another in their business relationships and in the communities in which we operate. We acknowledge the rights of our employees and believe that our policies on fairness and respect show our support for employees rights.

We honor all local laws and respect local customs throughout our global operations and our approach to specific human rights and labor issues is outlined below.

### Child Labor

We believe that education should be a primary objective for children. We therefore respect all local laws regarding compulsory school attendance and do not employ children under the legal age for employment in any location. Our Worldwide Purchasing Policy prohibits our suppliers, and their subcontractors, from using child labor in the supply of goods or provision of services when under contract with GM.

### Forced Labor

The decision to seek employment is voluntary, and we do not condone involuntary servitude in any form. Our Worldwide Purchasing Policy prohibits the purchase of goods produced with the use of forced or slave labor. This policy applies to our global operations and to all of our joint ventures.

### Indigenous Rights

In various geographic locations, we employ executives in decision-making capacities that represent the indigenous people. These locations include, but are not limited to, Taiwan, Indonesia, India, Japan, Korea and Thailand.

### Freedom of Association

As part of our corporate policy, we respect the right of all employees to choose whether to belong to a union. This concept is also outlined in the Global Sullivan Principles and, in adopting these principles, we have specifically endorsed respect for employees' voluntary freedom of association.

We are also committed to complying with all laws relating to the rights of employees to organize for purposes of collective bargaining. In this regard, the legal right of employees to support or oppose union membership without fear of coercion or retaliation is recognized by the corporation.

In recognizing these rights, our employees will not be subject to coercion from GM, or from any individual or external organization.

### GM AwareLine

We have a 24-hour toll-free telephone reporting system that is available on a global basis seven days a week. The GM Awareline allows employees to anonymously report various concerns, such as: possible criminal wrongdoing by the company, our management, supervisors, employees or agents; actions believed to be contrary to corporate policy; emergency or life threatening situations; or allegations of harassment. Appropriate personnel investigate every complaint that comes into the AwareLine.

Our business units around the world have customized this reporting process to meet local language and cultural needs. Our operations that choose not to use the AwareLine process in a given country or location because of legal or cultural reasons are required to implement an alternate process, which must be approved by our General Director of Global Security.

In addition, we have the following processes in place throughout the our operations:

### **The Grievance Process**

Grievances or complaints by U.S. hourly employees are handled pursuant to the procedures specified in national and local collective bargaining agreements. These differ from procedures for salaried employees.

### **Open Door Policy**

For salaried employees, complaints in the U.S. are managed according to the Open Door Policy, detailed in "Working with GM." The objective of the Open Door Policy is to ensure an open channel of communication with management when employees have a question, concern or complaint about any aspect of their employment.

## **Training and Education**

Total customer enthusiasm is at the core of all of our initiatives. This means continuous improvement in everything we do. We believe that it is essential to invest in organizations dedicated to improving the educational, economic, social, and cultural well-being of the communities we serve. To the educational community, this means partnerships focusing on creating educational opportunities for many, including minorities and women, as they prepare for a career in tomorrow's workplace. We have consistently been a leading contributor to education, both in terms of the support provided to the educational community and the quality of the programs receiving support. We provide education with funding from elementary through to post-doctoral level.

### **GM University**

In 1997, we formed General Motors University (GMU), a global network of education and training resources to help GM executives, management staff and technical and professional employees continuously improve business performance. GMU has grown to be one of the world's largest universities of its type.

GMU's mission focuses on improving business performance and aims to:

- Build professional skills and capabilities linked to performance and results;
- Develop leadership programs that enable participants to lead challenging business efforts and enterprises;
- Enable corporate-wide change management initiatives such as GoFast!, e-GM, and Order-To-Delivery.

GMU currently has 15 functional colleges aligned with the professional needs and challenges facing employees at business, divisional or regional levels. Examples of college functions include communications, engineering, finance, health and safety, human resources, planning and quality. Currently, GMU offers approximately 1,300 courses to 88,000 managerial, executive, professional and technical employees. In 2000, GMU provided approximately 230,000 student days of learning.

GMU provides real world education using innovative learning techniques in class and online. GMU's Interactive Distance Learning system has ten broadcast studios that support a satellite delivery infrastructure across more than 7,300 dealer and corporate sites, and GMU uses Distance Learning and e-Learning in company and dealership training in North America and increasingly world-wide.

Since its inception, GMU has been improving its delivery both in terms of course effectiveness and global accessibility for learners. While quality levels are satisfactory (4.1 on a 5.0 scale), global access is just beginning. The recent alliance with UNext and its Cardean University will help jumpstart our efforts to offer critical courses, especially leadership development, on a global basis.

### **Training in Europe**

In GM Europe, the number of training hours for each GM employee varies from 25-40 hours per annum. The target set for training hours is 40 across GME.

## Health and Safety Performance

Following the introduction of a major world-wide health and safety initiative early in 1995 our health and safety performance has improved markedly across the three areas of recordable injuries, lost work day cases and occupational fatalities.

Between 1995 and 2000 the recordable injury rate per 100 employees for our global operations dropped by 71% and for the same period, lost work day cases per 100 employees fell by 83%. Between 1990 and 1994, there were 22 occupational fatalities; for the period 1995 to 2000 there were 12, a reduction of 45% between the two periods.

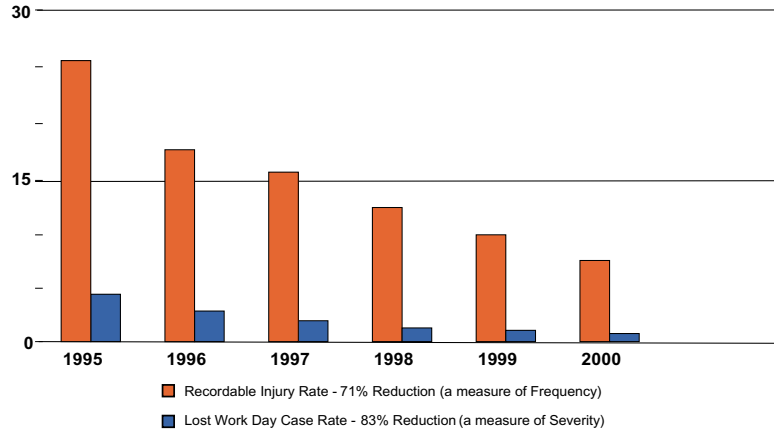
Overall, improvements in managing health and safety risk mean our operations are safer than ever before for our employees, with the figures proving that accidents in our facilities are much less frequent and much less severe.

### GM HEALTH AND SAFETY POLICY

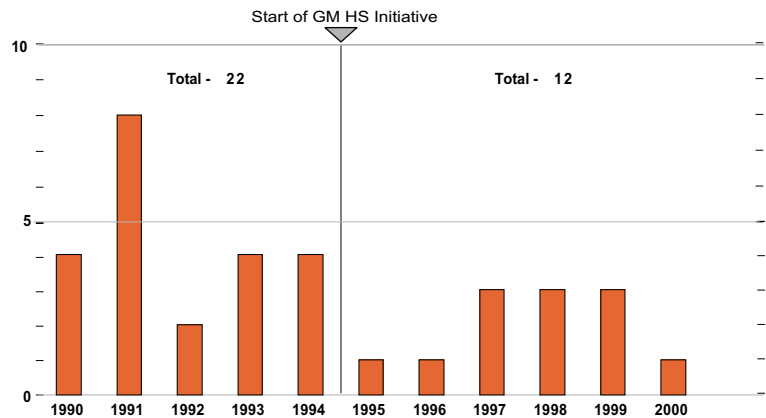
We are committed to protecting the health and safety of each employee as the overriding priority of this Corporation. There will be no compromise of an individual's well-being in anything we do. The implementation of actions to help our employees realize a healthy, injury-free environment is a leadership responsibility. Continuing support of this effort is the responsibility of everyone. We will lead the General Motors team to ensure that we protect the well-being of every member.

### General Motors President's Council (1994)

GM'S GLOBAL HEALTH & SAFETY PROGRESS  
RATES (CASES PER 100 EMPLOYEES)



GM EMPLOYEE OCCUPATIONAL FATALITIES  
(WORLD WIDE)

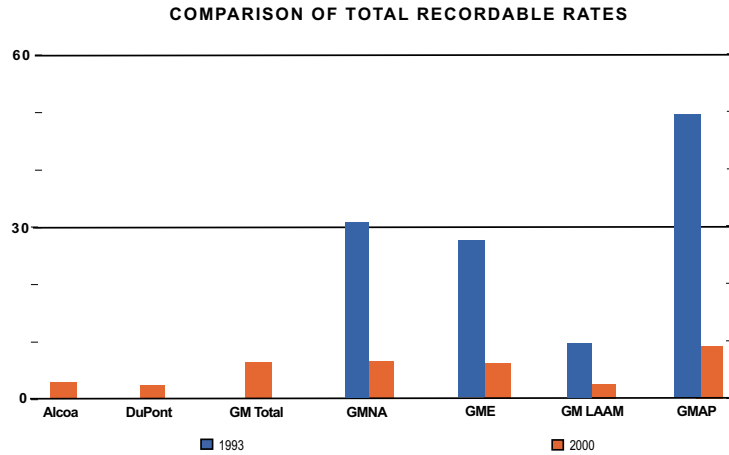




**Recordable Injury Rate**

Our worldwide recordable injury rate (per 100 employees) in 2000 was 6.11, an improvement of 24% over 1999.

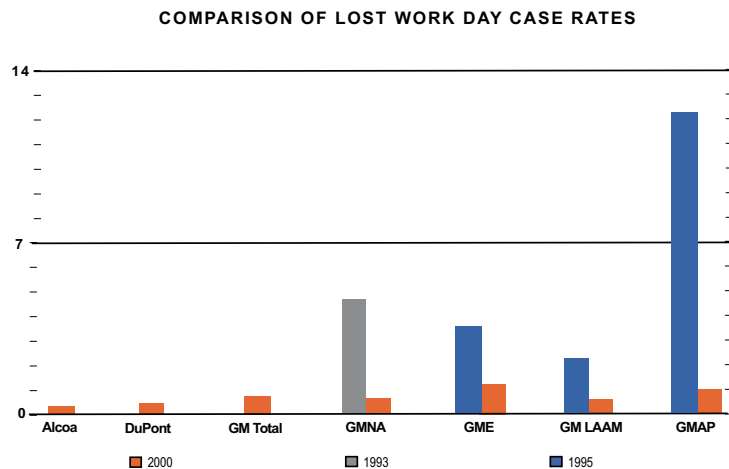
- GMNA recorded a rate of 6.44 in 2000 down from 29 in 1993
- GME recorded a rate of 6.02 down from 24.8 in 1993
- GMLAAM recorded a rate of 2.53 down from 4.98 in 1993
- GMAP recorded a rate of 8.9 down from 48 in 1993



**Lost Day Rates**

Our global operations in 2000 experienced favorable lost workday rates (per 100 employees) compared to available benchmarks (see chart below). Overall our lost workday case rate was 0.63 in 2000 an improvement of 27% against 1999.

- GMNA recorded a rate of 0.48 in 2000 down from 4.5 in 1993
- GME recorded a rate of 1.12 for GME down from 3.49 in 1999
- GMLAAM recorded a rate of 0.7 for GMLAAM down from 2.08 in 1995
- GMAP recorded a rate of 0.9 for GMAP down from 12.4 in 1995



**Security**

**Security of GM Premises**

We are committed to providing a safe and secure work environment. Our security personnel support the entire corporation in this commitment to provide a safe and healthy work environment for all employees. Our security personnel also strive to protect property assets, including proprietary information, and to reduce interruption to business operations.

Security employees subscribe to the same code of conduct that all GM employees do - *Winning with Integrity, Our Values, and Guidelines for Employee Conduct*. Supplier employees subscribe to their own codes of conduct, but while on GM property, are held to at least the same level of conduct as employees.

Primarily, we contract for security services. The vast majority of site contractors are guided by an agreement

and statement of work that references GM Security policies and standards found in the GM Global Security Manual. We are working to ensure that similar agreements and statements of work cover the few remaining site security service contractors. As its name implies, the Global Security Manual is applicable on a global basis and is available to sites through the GM Intranet.

All security services must apply for approval from the head of the corporate security organization and pass a rigorous review prior to providing armed security personnel. One of the criteria is training in the use of force. Very few sites have armed personnel and only in countries with a high level of threat.

We rely on federal, state, provincial and local law enforcement personnel to enforce existing laws designed to protect citizens and businesses from unlawful actions that could harm employees, contractors, visitors and property. We provide assistance upon request to law enforcement, but do not direct the efforts of government personnel.

## Philanthropy Performance and Initiatives

We are at the forefront of applying modern technology to philanthropy. For example, we have implemented an electronic pledge process, GM Global Aid, to capture employee contributions through payroll deductions. Our North American employees are now able to make direct salary contributions to the United Way and other not-for-profit organizations. This project was a joint effort between affiliated trade unions, and GM. Throughout the charitable community this project has been recognized as a innovative example of "high tech / high touch" philanthropy.

### Civic and Community Support

Together with the GM Foundation, we support a variety of activities in the communities where we operate and sell our products. Our philanthropic and community relations mission is designed to ensure that we maintain our leadership position as a valued and responsible corporate citizen. We plan to achieve this by enhancing the quality of life in the communities where we do business, consistent with our business goals and objectives. Our support is centered on linking financial contributions with volunteer efforts, academic research partnerships, marketing sponsorships and memberships.

The GM Foundation also supports organizations that strengthen community awareness and improvement. Together with our employees, retirees and dealers we make a top priority of responding to the needs of the communities where we live and work, both in times of crisis and on a daily basis. In communities throughout the world we are committed to serving the public interest through contributions of cash, products and that most precious of resources, personal volunteering time. In 2000, the combined contributions from the GM Foundation and GM totaled \$5.6 million for civic and community efforts.

The GM Foundation supports many plant-city activities. These initiatives have helped to establish us as a preferred employer, and have helped facilitate awareness of local governmental and community matters. Some of the more unique initiatives that we have undertaken in 2000 are listed below:

- Following the school shooting of a 6-year old girl by one of her classmates in Flint, Michigan, our plants in Flint, the United Automobile Workers, and the GM Foundation partnered to provide support to help the community begin to recover from this tragic event. Together we launched a contribution campaign that raised money to fund new playground equipment for the children of Buell Elementary School. The campaign was so successful, and generated such tremendous grassroots support in the community, that it has been expanded with the hopes of building many new playgrounds at various schools over the next few years.

- Our facilities in Lansing, home of Oldsmobile, and the GM Foundation collaborated in an initiative led by the Mayor to establish "Common Ground," the area's newest multi-day festival featuring music, food and fun outdoor activities for all ages. This is an example of our employees joining with local residents in demonstrating our ongoing collaboration with and investment in communities. This undertaking enhanced our reputation as being a good corporate citizen, and was especially significant in light of the recent announcement regarding the future of the Oldsmobile brand.

- We are a major contributor to the Michigan Humane Society (MHS), which organizes several high profile events each year. MHS operates three shelters and charitable animal hospitals in the Detroit-area, providing care for over 85,000 animals each year. Other MHS initiatives include injured animal rescue and cruelty investigation

services, as well as pet visitation therapy, in-school education, wildlife rehabilitation and legislative programs. We support the efforts of humane societies and animal protection organizations throughout the United States, and applaud their increasingly visible role in protecting the rights of animals.

- GM and GMAC sponsored a Habitat for Humanity project in Gliwice, Poland. In addition to providing funds to cover the cost of the home being built, employees from our local Polish units of GM and GMAC, Opel Polska and Opel Bank, volunteered their time to help with the construction.

### **Employee Volunteerism**

We actively encourage and support employee volunteerism. A number of initiatives are currently in place which encourage our employees to donate their personal time and reward them for doing so.

### **GM Volunteer PLU\$**

Launched in 1999, GM Volunteer PLU\$ enables employees in the U.S. to direct a monetary gift from the GM Foundation to local charities where they regularly participate as volunteers. We aim to initiate the program globally and in 2000 international pilots were conducted in Columbia and China. We will be communicating this initiative to our units across the globe.

In 2000, more than 1,100 employees were recognized and rewarded for the time they spent volunteering with charities in their community. Contributions directed from the GM Foundation to the charity they volunteer with totaled \$357,000 and we aim to increase this figure by expanding the program to include volunteer teams.

### **Global Leadership Volunteer Project - Give Kids the World (GKTW)**

In September 2000, over 3,500 General Motors executives were given the opportunity to experience volunteering first hand and to "act as one company" at the Global Leadership Conference in Orlando, Florida. Conference attendees were asked to donate an unwrapped toy representing their country of origin and more than 3,000 toys were collected and donated to Give Kids the World (GKTW). GKTW is a magical village, based in Orlando, Florida, created for children with life-threatening illnesses and their families to experience the wonder of Disney World and other Central Florida locations. The donated toys are given out as presents to the children when they arrive at the GKTW village in Orlando.

### **Environment and Energy**

We support a variety of environmental organizations whose objectives, goals and activities are aligned with the General Motors Environmental Principles. In addition, special consideration is given to organizations which are internationally recognized and that support programs that have a worldwide scope, and applicability irrespective of national origin.

We also seek to support organizations that advocate an approach that seeks solutions to unite economic, environmental and social goals.

### **Safety Initiatives**

We have a long-standing commitment to motor vehicle safety, embodied in the many product and policy innovations such as the implementation of daytime running lamps in North America, side impact air bags that do not pose a risk of serious injury to children and policy initiatives that help reduce the risk of injuries to roadway users. We have devoted more resources to

#### **The Nature Conservancy: A unique relationship**

In 1994, we began an unprecedented relationship, in size and scope, with The Nature Conservancy (TNC). General Motors supports TNC because of its collaborative approach to promoting a healthy economy and a healthy environment. We have pledged \$10 million in cash and trucks over a ten-year period. Over the past seven years, we have donated \$5.1 million in cash and more than 100 trucks to aid the conservation work of TNC and help protect and save precious places around the world.

In 1999 and again in 2000, we invited GM Card holders to donate a portion of their earnings to TNC through the Cardmembers for Conservation program. In 2000, cardmembers contributed 19 Chevrolet trucks, including four Chevy S-10 Electric pickups, and \$125,000 in cash. Our employees have also been very generous. Since 1998, they have donated more than \$183,000 to TNC through payroll deductions.

In addition, in 2001 we launched the Atlantic Rainforest Restoration Project, a partnership between GM, TNC and leading Brazilian Conservation organization, the Society for Wildlife Research and Environmental Education (SPVS). Our \$10 million contribution will help to restore 30,000 acres of critically endangered rainforest in south Brazil.

safety research and development than any other automaker in the world. In addition, we have been a leader among contributors to organizations devoted to improving safety on the nation's highways. The following are examples of road safety initiatives that we have championed in the past year:

**National SAFE KIDS Campaign®**

In a five-year partnership to promote the correct installation and use of child restraint systems in motor vehicles, we have contributed millions of dollars to a partnership with the National SAFE KIDS Campaign®. The partnership draws upon the Campaign's established network of nearly 300 state and local SAFE KIDS Coalitions in all 50 states, childcare and health providers, and our network of dealers to disseminate key child safety messages. The SAFE KIDS BUCKLE UP® partnership helps provide education and hands-on instruction for parents and other caregivers by offering "Car Seat Check Up Events" throughout the U.S. Recently, our partnership with SAFE KIDS began expanding into our global markets.

**Mothers Against Drunk Driving (MADD)**

We are continuing our efforts to help rid America's highways of drunken drivers — the leading cause of traffic fatalities — through a multi-year commitment to Mothers Against Drunk Driving (MADD). Corporate sponsorship of MADD, with a potential \$2.5 million value, helps to underwrite a variety of programs, including a number of projects in honor of MADD's 20th anniversary. In an effort to continually remind our employees about the dangers of drunk driving, the GM Charitable Giving Campaign now includes MADD as a possible payroll deduction selection.

## PRODUCT DESIGN AND PERFORMANCE

# Impacts of Motor Vehicles

With such a heavy reliance on motor vehicle transportation around the world, the vehicles we produce with today's technologies have an impact on the environment.

We recognize the potential to eventually remove the vehicle from the environmental equation while continuing to improve its positive effects for society. Our vehicles and products have been developed to achieve high levels of energy efficiency, very low levels of emissions and high recyclability, while meeting customer expectations in terms of comfort, style,

## Meeting Customer Demands

The rate of innovation and change within the motor vehicle industry is accelerating. This is driven partly by changing customer needs. Customers are ever more demanding in what they expect from their vehicle and how it meets their needs. Our customers, however are not the only agents behind change. New technology allows designers to challenge every aspect of car design, from styling through body construction. Intense industry competition, has led to a search for new winning vehicle concepts, resulting in the development of new vehicle segments and hybrid vehicles. Further legal and regulatory requirements for new products add to the picture of a rapidly changing industry.

### Product Design

Meeting customer demands in a dynamic market place is not just a question of developing an acute understanding of current customer needs and designing vehicles to meet them. It is also essential to identify future customer needs and requirements as well as trends in style and taste. This is particularly important in the motor vehicle industry.

### Vehicle Quality

According to J.D. Power and Associates Initial Quality Study, we now lead the big three producers with only 1.46 problems per vehicle, compared with 1.54 for DaimlerChrysler and 1.62 for Ford. The 2001 study also recognized GM as the most improved and highest-ranked U.S. automaker, with an 11% improvement over 2000.

### Product Portfolio Implications

Customer enthusiasm is central to our corporate vision. Producing the right range of products, our Product Portfolio, is key to developing enthusiastic customers. In fact, as a direct consequence of the collective effect of our customers' individual purchase decisions, it is our customers who ultimately determine the type and number of products that we produce.

The product portfolio determines when, where, and how much of a given product is produced. Supporting this production is a manufacturing portfolio of facilities. Changes in consumer preferences eventually impact the Manufacturing Portfolio and drives decisions regarding the location of facilities including openings, closings, expansions and contractions.

We analyze a variety of factors to predict future customer needs and requirements including: sales experience, customer feedback, market research, competitive market analysis, option portfolio development, auto shows and economic trend analysis. Our products must also address additional requirements including: occupant safety, fuel economy, vehicle emissions, serviceability, affordability, and manufacturability. Our planners use this information to develop a multi-year product portfolio strategy to balance the customer's needs with the product requirements mentioned above. Our Automotive Strategy Board is responsible for approving the final product portfolio strategy.

## Safety

Our aim is to continually improve motor vehicle safety for customers and other roadway users. For many consumers, motor vehicle safety is a basic threshold when considering a vehicle for purchase. They want vehicle technologies that help them avoid crashes and to help reduce the risk of injury when vehicles are involved in crashes. We strive to meet and exceed these expectations in order to protect customers and their families while they are on the road.

Motor vehicle safety is a function of the design of the vehicle, the manner in which it is used, and the environment in which it is driven. We are committed to the research and implementation of features and systems that enhance the safety of the driver and other occupants by assisting drivers in the operation of their vehicle and avoiding hazards, and helping protect occupants in the unfortunate event of a vehicle crash. We support policies that are effective in encouraging drivers and other vehicle occupants to take actions that help assure their safety when driving.

Our motor vehicle safety priorities are guided by analysis of "real world" safety, rather than theoretical assertions. An understanding of injury risk and potential ways to reduce it are the main factors guiding us in setting safety policies, undertaking advanced safety research, and implementing product safety systems, features, and public policy programs. Our public policy positions and partnerships are founded on a commitment to encourage governments and policy leaders to pursue safety policies that are based on science and the real world ability to reduce societal harm.

### Safety Features

#### Daytime Safety Lamps (DRLs)

An independent study concluded that our North American customers have avoided more than 17,000 vehicle crashes, representing more than a 5% reduction in daytime, multi-vehicle, non-rear-end collisions, since we began equipping vehicles with daytime running lamps in 1995. As the name suggests, this safety feature increases a vehicle's visibility to other drivers during daylight hours by illuminating lamps on the front of the vehicle whenever the headlamps are not turned on.

Using data from Scandinavian countries where DRLs were mandatory, we petitioned the National Highway Traffic Safety Administration (NHTSA) in 1990 to allow automakers to install the feature voluntarily. Once NHTSA allowed DRLs in 1993, we began installing them. By the 1997 model year, all of our passenger vehicles sold in the United States had DRLs. To date, we have sold more than 20 million vehicles in the United States equipped with DRLs as standard equipment.

#### Air Bags

We have started to introduce a dual level frontal air bag system. The system helps to reduce the risk of air bag-related injuries in moderate to severe crashes when full force air bags may not be necessary to supplement the safety belt system. The dual level system inflates with a higher or lower pressure, depending upon crash severity, occupant proximity to the air bag module, and safety belt use. The system analyzes the driver and passenger safety belt use individually and helps to reduce the risk of air bag-related injury for some front seat occupants who fail to buckle seat belts.

In fall 2001, Opel and Vauxhall in Europe will make another significant addition to the comprehensive safety package in the current range by installing state-of-the-art, full-size curtain air bags on both sides of the vehicle providing front and rear passengers with further protection in the event of a collision at the side of the vehicle. Developed by safety engineers at GME's International Technical Development Center (ITDC), these air bags, with a volume of around 25 liters, inflate like a curtain along the side window area within 25 to 30 milliseconds. They thus cushion the heads of the occupants from the effects of a lateral impact and significantly reduce the risk of injury. The full-size curtain air bags will initially be available for the Corsa, Astra and Zafira, with other models following later.

*The decision to introduce full-size curtain air bags in our best-selling models first, and particularly in our versatile Zafira compact van, is part of our successful strategy of making practical, modern technology available to as many customers as possible at affordable prices.*

**- Hans H. Demant, Executive Director ITDC.**

The full-size curtain air bags considerably reduce the force of the impact on the passengers, especially if the side of the vehicle collides with a post or tree. In tests carried out according to criteria set by independent safety assessors, NCAP, the car is propelled sideways at 29 km/h into a rigid pole. Under these impact conditions, the risk of head injury is reduced by around 90%.

Saturn was the first vehicle in the U.S. small car segment to introduce a side impact head curtain. The head curtain is designed to help increase the protection for an occupant's head and upper torso in a side impact collision.

In developing side impact air bags, we tested the with small child test dummies seated close to the deploying air bag. We were the first manufacturer to globally install side impact air bags that provide increased protection in side impact crashes and do not pose a threat of serious injury to children. Our initiative led the U.S. to focus on side impact air bag design guidelines for all manufacturers.

### **Tire Monitoring System**

Helping consumers with tire safety has been one of our priorities for many years. As early as 1987, we began equipping some vehicles with tire pressure monitors. Currently, more than two million of our cars are equipped with tire pressure monitors - more than any other manufacturer.

Our vehicles that have the ability to monitor tire pressure use either the antilock brake system (ABS) or separate sensors mounted in each wheel. A warning light on the instrument panel or message displayed on the driver information center, along with an audible warning, alerts the driver to check the air pressure in their tires. An estimated 83% of tire pressure loss occurs gradually - often without being noticed by the driver.

The ABS system uses the same sensors that communicate with the antilock brakes to measure the difference in rotational speed between wheels. A smaller tire diameter or rolling radius, due to lower tire pressure, will rotate faster. When a tire is at least 10 pounds per square inch below that of the vehicle's other tires, the indicator will identify this increased rotation rate as an underinflated tire and signal the driver that a tire needs attention.

The wheel sensor system continuously measures pressure and is programmed to display a message to the driver when any tire drops six psi below the recommended pressure. An audible warning is also given, and the location of the low tire is displayed.

Tire safety has been an area of intense research at GM for more than three decades, beginning in 1968 with the opening of our Tire and Wheel Systems Laboratory at the Milford, Mich., Proving Ground. The research lab, with its team of 70 engineers and technicians, has enabled us to mount an ongoing effort to help the original equipment tires on our vehicles perform safely and effectively, from the time the car or truck is driven off the dealership's lot.

Our focus on tire safety also includes warranty protection, our exclusive Tire Performance Criteria (TPC) system, and an ongoing and close working relationship with tire suppliers. We cover original equipment tires under our bumper-to-bumper New Vehicle Limited Warranty. Over 25 years ago, we introduced the Tire Performance Criteria (TPC) specification system. The TPC spec number provides information on over a dozen critical performance specifications, and allows us to specifically match tires to the vehicle on which they are installed. Finally, and also important, our tire suppliers work on site with our tire and wheel engineers. In addition, we review warranty records monthly and meet with tire companies twice a year to verify the performance of tires used on our products.

### **OnStar**

OnStar is a unique blend of cutting-edge technology and attentive personal service that provides an unparalleled level of safety, security, and information. With this innovative service, at the touch of a button, an OnStar Advisor is available to contact emergency help. In a crash, when the air bags deploy, OnStar will automatically send a call for help with the exact location of the car or truck to the OnStar Center, where trained advisors will immediately contact emergency services. Or, if a vehicle is reported stolen, OnStar will assist the

police in attempting to track it.

OnStar uses the Global Positioning System (GPS) satellite network and cellular technology to link vehicle and driver to the OnStar Center, where advisors are available 24 hours a day, 365 days a year. OnStar is a completely embedded system that relies on voice recognition and audio-based services and content. There are no screens or displays.

General Motors and OnStar have an ongoing commitment to motor vehicle safety. In line with this we have developed common-sense principles to help guide how information delivery systems are designed into our vehicles. The goal is to design systems that limit unnecessary or excessive attention demands on the driver while driving.

Currently, OnStar is active on about 1.4 million vehicles. In the 2002 model year, 36 of our 54 U.S. models will offer OnStar as either standard equipment or as part of a preferred equipment package.

### **Child and Adult Restraint Systems**

In the mid 1990s, we conducted research on a universal attachment system for child restraints. We shared the results of the research with government, restraint system suppliers, and other auto manufacturers. Today, all of our vehicles in the U.S. are equipped with the top tether anchorage element in the Lower Anchorages and Top tethers for Children (LATCH) system to help secure the child restraint to the vehicle. The common LATCH lower anchorage system is available on some models of 2001 model year GM vehicles.

An integral child restraint for toddlers is available on some of GM's vehicles that are popular with families. The integral seat addresses a concern of parents: properly installing and positioning the child restraint in the vehicle. (Parents must still assure that the child is properly secured in the integral child restraint.)

We offer several features on the safety belt systems that help improve comfort for occupants and safety belt performance, if the vehicle is involved in a crash. Safety belt pretensioners are pyrotechnic devices that rapidly snug the safety belt if the air bag deploys. Pretensioners are available in the front seating positions of some GM vehicles. Safety belt energy management devices provide a slight amount of slack to the safety belt during the crash event. The device helps the safety belt system retain the occupant in a manner that helps to manage the energy of a crash. Rear seat shoulder belt comfort guides are unique on GM vehicles. Elastic tethers attached to the safety belts in rear outboard seating positions move the torso part of the shoulder/safety belt away from the neck to help improve comfort for short occupants.

### **Trunk Anti-Entrapment Technologies**

Our commitment to motor vehicle safety goes beyond restraint systems. We responded quickly to the tragedies in the summer of 1998 when 11 children died while trapped in car trunks. In only 17 weeks, with help from the National SAFE KIDS Campaign, we developed a child resistant trunk retrofit kit which was tested by children.

Our research showed, however, that many of the children tested became passive while inside the trunk and that an escape handle alone was not the sole appropriate intervention. Thus, our engineers are developing the auto industry's first production sensor that can detect the presence of people inside car trunks and automatically open the trunks. The system uses an infrared sensor mounted in the trunk just below the rear window. The sensor detects both motion and temperature differential which could be generated by a person's presence in the trunk. Soon after detection, the system will sound the car's horn in a distinctive fashion using a pattern of three chirps. Shortly after that, the system will automatically unlock the trunk.

### **Occupant Compartment Sensor**

When left in the direct sun on a hot day, the climate within a passenger vehicle resembles that of a greenhouse, concentrating the energy of the sun. The temperature inside can soar to 160 degrees in as little as 20 minutes. For a child, or an animal, resulting heatstroke can be fatal. We are developing a radar sensor to detect the breathing motion of a sleeping child or pet. If breathing is detected the radar will set off a horn alarm. We intend to begin introducing the technology on vehicles in the U.S. beginning in the 2004 calendar year.

### **Vehicle Handling Systems**

Vehicle Stability Enhancement Systems (VSES) help drivers maintain a better "grip" on the road. We offer the system across our brands using several names: StabiliTrak, Precision Control, and Active Traction.



VSES helps the driver maintain vehicle control in sudden maneuvers, particularly in low traction conditions, in emergency lane changes, and during avoidance actions. The system works by recognizing wheel- skid slippage. Sensors detect the difference between steering wheel angle and the direction the driver is actually turning by "reading" the steering wheel position, amount of sideways force in play, and the vehicle's response to steering wheel input. The system then uses the brakes to enhance control of the vehicle's direction and to help keep the vehicle on course. It automatically reduces the engine torque and applies precise amounts of pressure to front right or left brakes to help keep the vehicle "on track."

Additional vehicle control systems help drivers in challenging driving conditions. Traction Control helps drivers maintain traction when accelerating on wet or snow-covered roads. The system automatically applies brake pressure and reduces engine power when sensors detect wheel slippage.

Magnasteer uses an electronically controlled magnetic field to continually adjust the effort a driver feels when steering at all vehicle speeds. The system helps provide ease for drivers while parking yet enables the driver to retain a firm, solid feel at highway speeds.

#### **Parking Aids**

Two new systems fitted on selected vehicles help drivers avoid collisions with objects while moving in reverse at very slow speeds. The Ultrasonic Rear Parking Assist helps warn drivers of stationary obstacles behind the vehicle. The system uses visual and audible methods to alert the driver of objects up to five feet behind the vehicle when the vehicle is moving at or below speeds of 3 mph.

The Parallel Park Assist Mirror helps drivers who are operating a vehicle in reverse. The feature tilts the passenger side outside rear-view mirror down to provide a curb view whenever the driver places the vehicle in reverse. When the vehicle is shifted out of reverse, the passenger side mirror returns to its original position.

#### **Crash Response**

SAAB, our Swedish subsidiary has developed a unique command car capable of fast communications with units that are involved when major accidents and disasters occur. The car is being used by emergency services in the West Götaland Region of Sweden.

"It means that it's now easier for us to organize rescue work, making optimum use of the available resources," says Per Örtenwall, the senior medical officer at the West Götaland Region's emergency services unit.

The new command car, a converted and specially equipped red SAAB 9-5, is the most advanced mobile liaison center to be found anywhere in Sweden. Its base is the West Götaland Region's emergency unit, where experienced doctors and nurses specially trained to deal with disasters and to mount major medical operations are available round the clock, all the year round.

"Experience gained from major accidents and disasters reveals that the rescue work is very complicated and involves numerous participants. You have to have fast communications with alarm centers, the emergency and medical services, the police, and various organizations and government agencies," explains Per Örtenwall.

The command car has ordinary two-way radio, communication radio on the VHF band, GSM and NMT 450 mobile telephony, portable radio, computers, GPS-based map-reading support and navigational systems. The car can be integrated into wireless networks, communicating with ambulances on the scene of the disaster. The screen of the navigational system can also be used as a television for monitoring the media.

"The command car can be transported by a Swedish Air Force Hercules to a disaster site where the command function needs reinforcement," says Björn Berglöf, who is responsible for special vehicles and motor sport at Saab Automobile AB. "Extra eyebolts have been welded onto the car so that it can easily be lashed down in the aircraft. It also has a connection point to take an external power supply, so that its equipment will work during the flight as well."

## Design for Environment

### Product Life Cycle

We are committed to reducing waste and pollutants, conserving resources, and using recycled materials at every stage of the product life cycle. The embodiment of life cycle thinking in the design, manufacture, use, and disposal of our vehicles continues to grow and positively affect product programs. Life cycle assessment provides the information base on which to balance the environmental, social, and economic consequences of decisions.

Environmental impact can take many forms and must be considered as part of the total life cycle of the product, including material production, manufacturing process, use phase and end of life/disposal. Our Design for the Environment (DFE) Group has the task of reporting positive environmental effects/ features for each new vehicle program. An environmental feature is considered to be any improvement that has lessened the effect of our product on the environment. This includes any part of the product life cycle such as reducing mass, eliminating scrap, designing parts for easy disassembly, avoiding hazardous material usage, longer life parts and the use of recycled or reprocessed materials.

DFE initiatives continue to be developed for our new product programs. The goal of these initiatives is to optimize the environmental compatibility of the vehicle. DFE engineers are assigned by platform to assist vehicle teams. Tools have been developed for the teams to use.

*"A design that's right first time is the key to the minimum possible environmental impact during the entire life-cycle of the product. This influences the entire chain from development and production, up to regular use and recycling. Moreover, environmental thinking cuts costs and improves efficient use of resources in the company."*

**- Lars Olsson, SAAB Technical Development Department**

### The Global Design Process

Environmental and recycling requirements are put into technical specifications for all future vehicles. A common global template is used to establish these requirements regardless where we develop the vehicle. The requirements are then tracked as a vehicle is designed to make sure they are achieved. The requirements include specifying vehicle recyclability and recoverability, use of recycled materials, compliance with restricted and reportable materials requirements and end-of-life vehicle treatment.

In meeting these requirements, design engineers continue to use the specifications on recycling as well as restricted and reportable materials tools.

### Choosing the Right Materials

Choosing the right materials is vital to gain both maximum quality and to protect the environment. Designers are required to seek materials that are non-toxic, take account of renewable resources, increase the percentage of recyclable materials and give preference to recycled goods over virgin materials. Over the last decade, for example, our European subsidiaries have been progressively increasing the content of recycled plastics in their vehicles. During 2000, more than 30,000 tons of recycled materials were incorporated in new Vauxhall and Opel vehicles, six times more than in 1991. Over the last decade, we have been progressively increasing the content of recycled plastic in our vehicles.

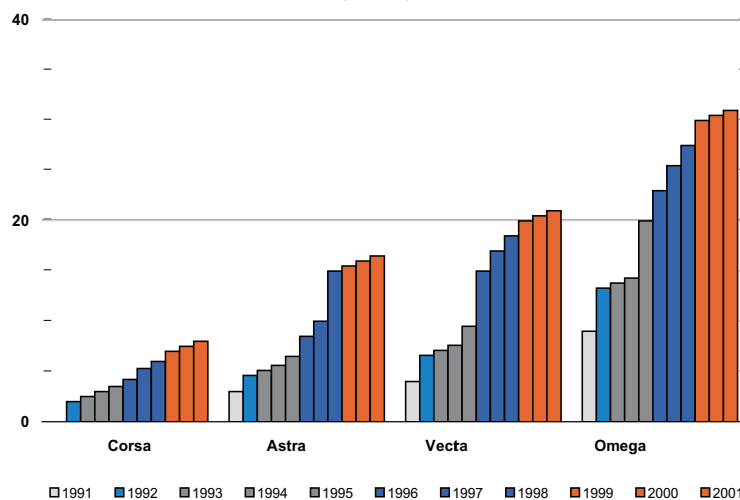
Materials recommended for use in our products and manufacturing processes are assessed prior to approval for potential health and environmental impacts. This occurs through the utilization of two complementary processes. The first, the Productive Materials Review Process (PMRV), supports the release and material engineering community and is part of the Design for the Environment process. If a material is approved through this process, the information is then sent to the plant Hazardous Materials Control Committee (HMCC) the second process, for local review and implementation.

The PMRV team provided critical support for the assessments of the materials proposed for use at our new Lansing, Michigan Grand River Assembly facility. Timely review and communication with the design and release

engineers and local HMCC assisted the plant in meeting start-up deadlines. Additionally, similar support for our new truck assembly plant in Shengyang, China occurred, including the special assignment of a GMNA industrial hygienist to the plant in China for six months to assist in the development of health and safety and HMCC programs consistent with comparable facilities elsewhere.

Various mutually-complementary environmental information systems and guides are used in product development to provide the relevant information and ideas for environmentally-reasonable product design. Product specifications list external and internal requirements with references to further data sources. The "Global Legal Database," developed by ITDC and available online throughout the company, contains detailed information on currently applicable and known future product regulatory requirements around the world. Internal specifications such as the "GM Environmental Quality Guidelines" provide both engineers and suppliers with information on material inputs which are either prohibited or subject to declaration requirements. Our proprietary hazardous material management system includes information on exact locations where such materials are used and corresponding additional safe use instructions. It is also available online.

KG OF RECYCLED MATERIAL AUTHORISED FOR EACH OPEL/VAUXHALL MODEL  
KG PER CAR



### Renewable Natural Resources

Opel and Vauxhall are increasingly using flax, hemp, jute, coconut, sisal, and wood-fiber molding material or rubberized hair - mostly in door and roof linings, boots, rear-window shelves and seat backrests. In the Zafira alone, about 1,300 metric tons of renewable natural resources are used annually. Renewable natural resources constitute a compelling alternative to synthetic materials for both ecological and functional reasons. Flax and hemp, for instance, offer the advantage of being lightweight on account of their low density. Moreover, skin irritations - such as may occur when handling fiberglass mats without proper protection in production and assembly - are avoided if natural materials are used. Cotton is noted for excellent silencing properties. Sisal and wood-fiber molding material are considered to be extremely shockresistant and have the added benefit of not splintering.

### Performance in Reducing Exhaust Emissions

There are two main traditional concerns about exhaust emissions. First, there can be environmental and health impacts from emissions such as nitrogen oxides (NOX), particulates, unburned hydrocarbons (HC) and carbon monoxide (CO). Secondly, there is concern about the emissions of greenhouse gases, mainly carbon dioxide (CO<sub>2</sub>) which is non-toxic.

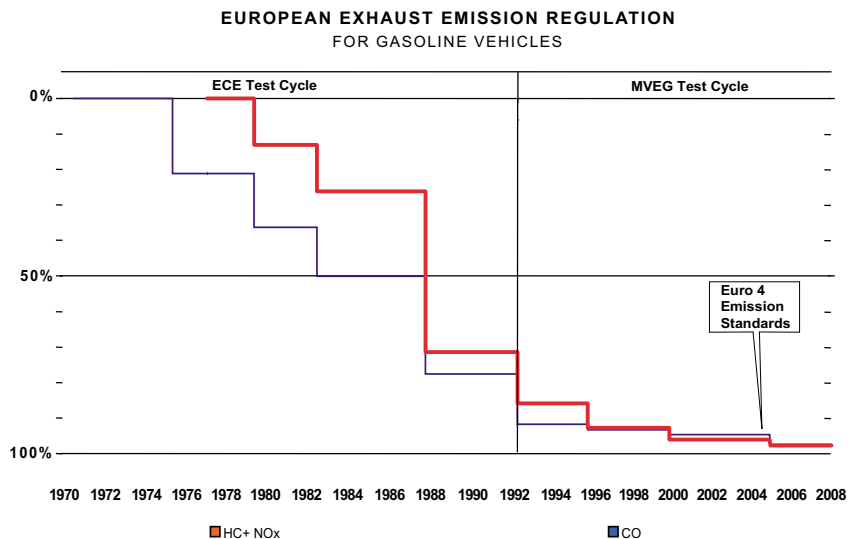
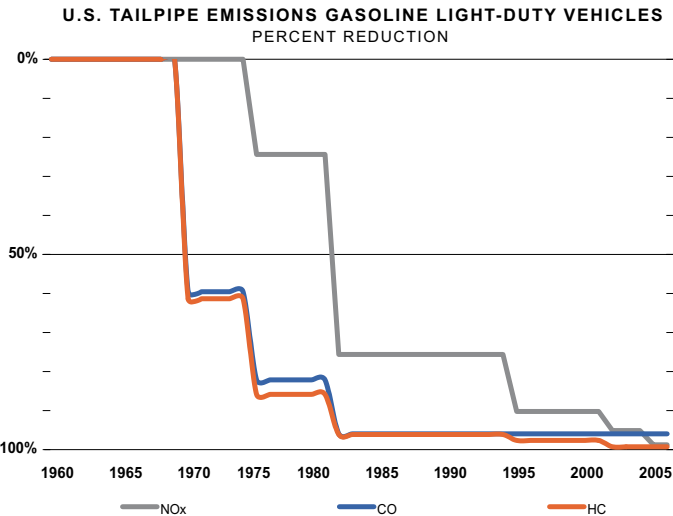
Since the mid-1960s, vehicle tailpipe emissions of hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOX) have significantly decreased. In the United States and Canada, HC, CO, and NOX of passenger cars have decreased by 99 percent, 96 percent, and 95 percent, respectively, (see below). We are achieving these reductions by producing Low Emission Vehicles (LEVs) for sale throughout the United States and Canada as part of the National Low Emission Vehicle (NLEV) Program that we initiated. Offering these Low Emissions Vehicles

nationwide could have put a severe strain on the availability and pricing of the required platinum group metals needed to produce the very efficient catalytic converters. Our engineers, however, through technological improvements in our powertrain controls were able to meet these Low Emission Vehicle standards while maintaining a cost effective supply of platinum, palladium, and rhodium for the present and helping to ensure a sustainable supply for the future.

To meet the even more stringent Tier 2 and LEV II emissions standards starting in 2004 and realize the full potential of our powertrain emissions control technologies, cleaner fuels are also needed. We continue to be an industry leader in moving governments worldwide toward regulations for low-sulfur and improved quality fuels, both gasoline and diesel. Sulfur in fuel reduces the effectiveness of the three-way catalytic converter even in today's vehicles, but improved fuel quality is essential in meeting the new Tier 2 and LEV II emission standards. For the

purpose of speeding the development of advanced engines and propulsion systems for the future, such as fuel cells, we have formed relationships with leading energy companies including British Petroleum, ExxonMobil, and Shell. Through the joint efforts of these relationships, advanced engine/fuel systems will be developed that will enable us to continue to provide improved vehicle efficiencies and lower emissions while meeting the performance expectations of our customers.

In Europe, our new range of ECOTEC engines, introduced in almost all models during 2000, has achieved a further reduction in exhaust emissions. Our new ECOTEC powered gasoline vehicles meet stringent Euro 4 emission standards 4 years ahead of time. These standards mean that almost all Opel/Vauxhall gasoline vehicles meet emission standards for carbon monoxide (CO) and for the combined emissions of hydrocarbons and nitrogen oxides (HC + NOx) that are 97% lower than the 1970 standard. Our engineers are still working on further diesel engine technologies to



achieve Euro 4 standards as far ahead of the 2005 introduction as soon as possible. In order to improve exhaust emissions further, our European subsidiaries are actively encouraging the introduction of sulfur-free fuel, which will enable the introduction of new, cleaner diesel and petrol technologies that are already developed.

### **Green Apple Awards**

Vauxhall collected a number of prizes at the second UK Green Apple Awards ceremony hosted by the Environmental Transport Association.

Vectra, with the super efficient 2.0 litre 16v turbo diesel engine was outright winner in the large family car class, Zafira was second in the MPV category and Corsa was third in the supermini class.

The three awards made Vauxhall the most successful volume car manufacturer in 2000.

The Environmental Transport Association produces the ETA Car Buyers' Guide which ranks the environmental impact of vehicles that are judged in several categories including exhaust emissions, fuel consumption and noise.

Of Vectra the judges said: "The powerplant that helped the car to top spot in this class is one of a whole series of new engines that are giving Vauxhall an edge in the marketplace. It helps the Vectra produce better performance than before at no penalty and still meet tougher than ever European emissions legislation."

## **Reducing Fuel Consumption**

Greenhouse gas emissions from our vehicles are closely related to the fuel efficiency of those vehicles. Carbon dioxide (CO<sub>2</sub>), a greenhouse gas, is emitted by the clean combustion of gasoline or diesel fuel in an engine. Greater fuel efficiency therefore means fewer CO<sub>2</sub> emissions.

### **Our Approach**

The new millennium has seen a increase in pressure, both at an industry level (see details of regulatory pressures around the globe), and on ourselves individually, to improve the fuel efficiency of our products and to reduce their impact on the environment. Continued concerns about global warming, recent increases in the price of gasoline, and a focus on sport utility vehicles in the U.S. have added to the call for higher fuel economy by the U.S. Congress, environmental groups, media, and others.

We believe that technology and innovation as well as partnerships are required to meet these challenges.

### **Technology and Innovation**

In terms of technology and innovation, we have near-term and long-term plans for improving both fuel economy and emissions of CO<sub>2</sub>.

In the near-term we will be:

- introducing new and more efficient engines using technologies such as direct injection, displacement on demand, and innovative weight savings ;
- designing and adapting engines to use alternative fuels such as ethanol, LPG, CNG, and biofuels;
- introducing hybrids that combine an extremely efficient internal combustion engine with electric motors.

In the long term, our plans include continuing to make the internal combustion engine more efficient, while developing new technology such as the fuel cell. Fuel cells have the potential to reduce CO<sub>2</sub> emissions dramatically when running on fossil fuels — and to eliminate them completely when running on hydrogen produced using renewable energy such as wind, solar and hydro-electricity.

### **Partnerships**

The challenges faced in developing and introducing new break through technologies — and the infrastructure to support them — are enormous. We believe that the quickest and most effective way to overcome these challenges is to work with others in our industry, with those in associated industries such as energy companies, and with government and society.

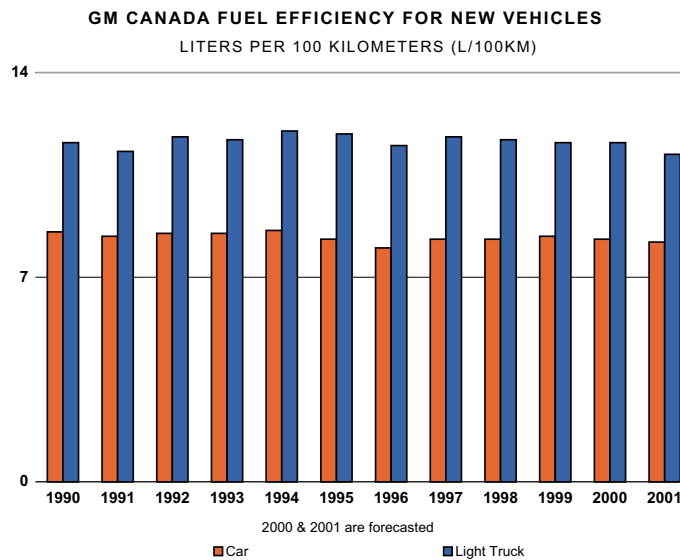
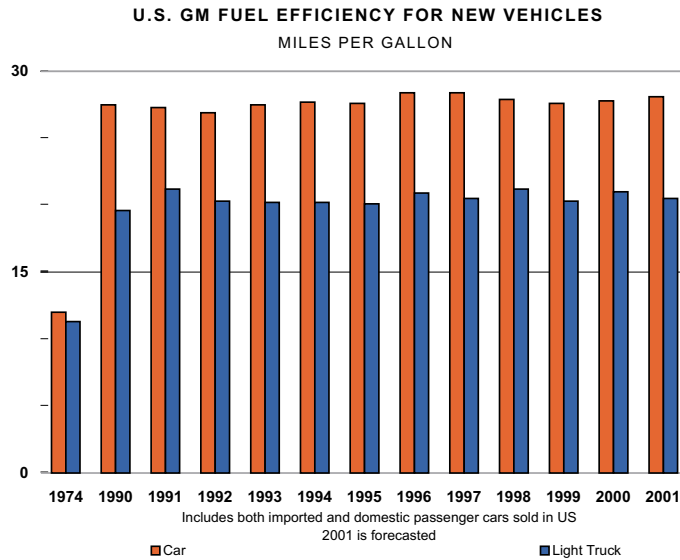
Significant resources are being devoted for collaborative research and development programs. We also support partnerships with government. Such collaborative programs have resulted, for example, in the 80-mpg hybrid Precept concept vehicle, announcement of a parallel hybrid full-size truck for 2004, and fuel cell breakthroughs in Europe and the U.S.

### Performance in Reducing Fuel Consumption

In the United States, the average fuel economy of our new cars and light trucks has increased 130% and 75%, respectively, since 1974 (see graph below). Since 1990, new vehicle fuel economy has been relatively constant as consumers chose larger vehicles with increased performance and more features.

For the 2001 model year, we lead all major manufacturers in model-to-model truck fuel economy comparisons based on US EPA data. In addition, we lead all other domestic manufacturers in model-to-model passenger car fuel economy performance.

We have met the U.S. Corporate Average Fuel Economy (CAFE) standard for our passenger car fleet in the 2001 model year, but because of consumer demand, meeting the truck standard has been a challenge. While our 2001 model year light truck is projected to be 0.2 mpg under the CAFE standard, flexibility in the CAFE law allows compliance to be demonstrated by applying credits earned in other model years. Since 1990, Canadian average fuel efficiency (measured in liters per 100 kilometers or L/100 kilometer) has followed a similar trend.



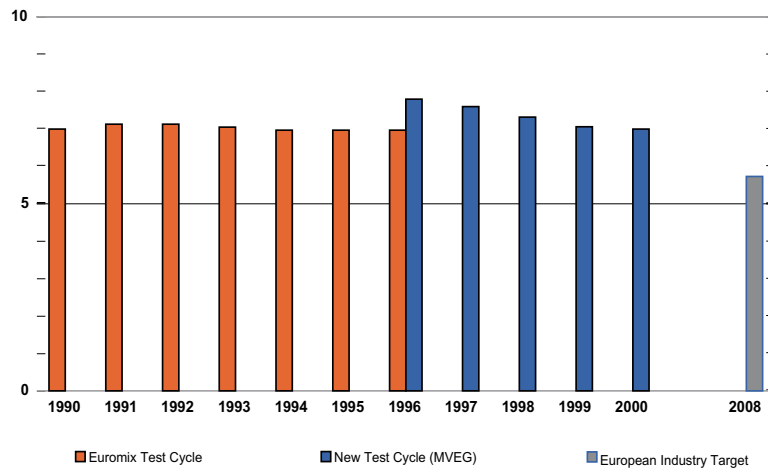
With gasoline prices in Europe two to three times higher than in the U.S., there is large customer demand for fuel efficiency. GME's goal is to offer automobiles that deliver outstanding efficiency, thereby coupling responsive performance with low fuel consumption.

In 2000 Opel's average fuel consumption in Germany amounted to 7.0 liters per 100 kilometer (l/100km) measured in the MVEG test cycle. Compared to 1978 this results in an improvement of more than 30%. A change in test procedure in 1996 and early 2000 effectively increased the fuel consumption measurement by approximately 10%.

In 1998, together with the European automobile industry we agreed to increase fuel efficiency improvements year on year, to reach a target of approximately 5.7 litres per 100 kilometers on average for new passenger cars by 2008. This corresponds to approximately an average of 4.0 miles per gallon (mpg).

#### GM EUROPE FUEL EFFICIENCY FOR NEW PASSENGER

LITERS PER 100 KILOMETERS (L/100KM)



#### Astra Eco 4 tops 120 mpg (1.953 l/100 km)

Starting from 5 different locations in Germany, 100 drivers in identical Astra Eco 4 hatchbacks covered distances of up to 380 km (236 miles) in competition to find Germany's most fuel-efficient driver. The best competitor, Beate Herzog achieved a remarkable average consumption of only 1.953 litres of diesel/100 km (120.4 mpg). Indeed the average fuel consumption of all 100 participants was only 3.9 litres per 100 km (60 mpg) - well under the Eco 4's official combined consumption figure of 4.4 litres per 100 km (53 mpg). This impressive fuel efficiency was in part attributable to the drivers, but also pays testament to the engine, a 1.7 litre direct-injection turbo diesel, and the car's aerodynamic design.

## Performance in Reducing CO<sub>2</sub> Emissions

Automotive carbon dioxide emissions occur because the internal-combustion engine of today runs on fossil fuels such as gasoline and diesel. The clean burning of fossil fuels releases carbon-dioxide (CO<sub>2</sub>) into the air. CO<sub>2</sub> is a greenhouse gas. We are concerned about the impacts of greenhouse gases on the earth's climate — climate change — and have therefore made long-term and near-term plans for reducing these emissions.

**U.S. and Canada**

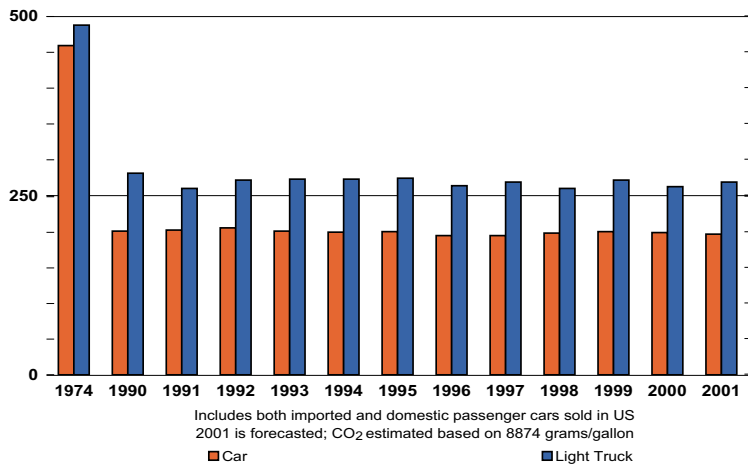
Each gallon of gasoline results in about 9 kilograms of CO<sub>2</sub> when burned. The emissions of CO<sub>2</sub> from our cars and light trucks have decreased significantly since the mid-1970s as fuel efficiency has increased. CO<sub>2</sub> per kilometer from new U.S. vehicles has been reduced 56% for cars and 44% for light trucks since the mid-1970's (see below). Since 1990, CO<sub>2</sub> per kilometer has been relatively constant, as consumers have chosen larger vehicles with more features and more powerful engines, thus offsetting much of our fuel economy gains. Our cars and light trucks produced in Canada have followed the U.S. trend since 1990 (see graph).

**Europe**

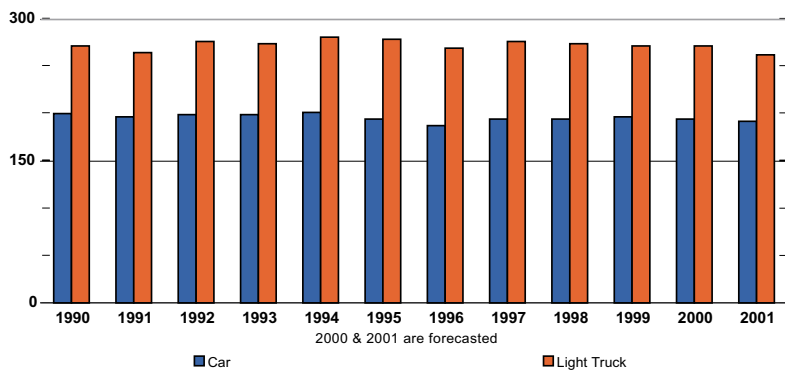
We have reduced CO<sub>2</sub> emissions per kilometer in our European vehicles by approximately 10% since 1990, although this has been influenced by a change in the test procedure that occurred in 1996, effectively offsetting the efficiency gains made.

Together with other European automakers we have committed to a CO<sub>2</sub> reduction program with the European Commission to reduce the average CO<sub>2</sub> emissions for new passenger vehicles by 25% from 1995 to 140 grams CO<sub>2</sub> per kilometer by 2008 (see graph).

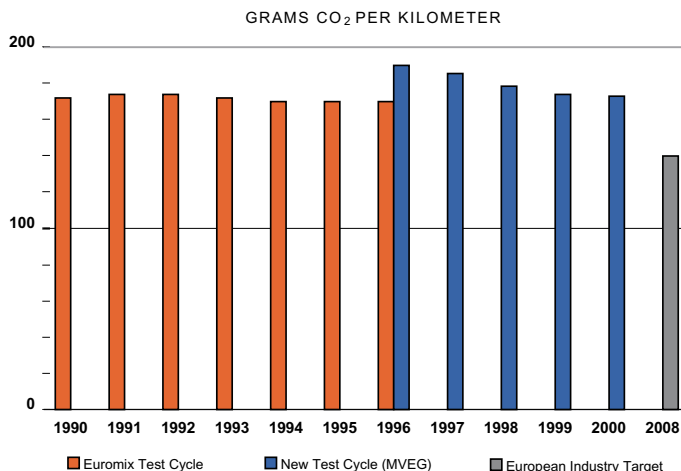
**U.S. GM AVERAGE CO<sub>2</sub> EMISSIONS PER KILOMETER FOR NEW VEHICLES**  
GRAMS CO<sub>2</sub> PER KILOMETER



**GM CANADA AVERAGE CO<sub>2</sub> EMISSIONS PER KILOMETER FOR NEW VEHICLES**  
GRAMS CO<sub>2</sub> PER KILOMETER



**GM EUROPE AVERAGE CO<sub>2</sub> EMISSIONS PER KILOMETER FOR NEW PASSENGER VEHICLE FLEET**  
GRAMS CO<sub>2</sub> PER KILOMETER



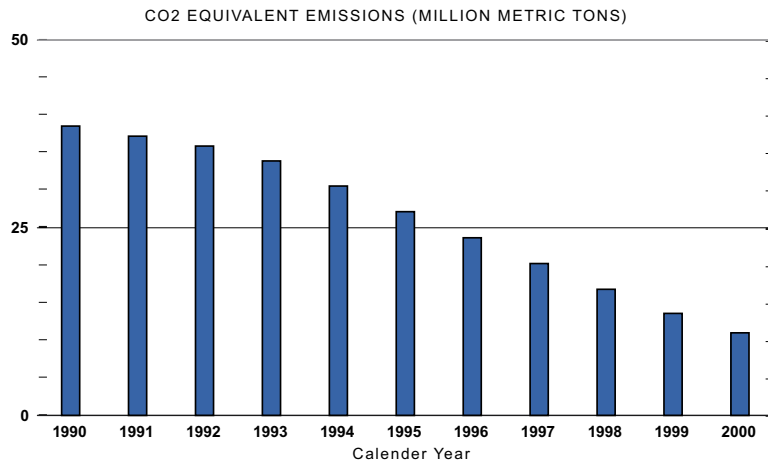


### Chlorofluorocarbons (CFCs)

CFC's are a group of refrigerants used in vehicle air conditioning systems prior to 1996. CFCs are also a greenhouse gas. The refrigerant that replaced CFC12 in new vehicle air conditioning systems is R134a and has zero ozone depletion potential. This hydrofluorocarbon, like CFC, is also a greenhouse gas but has 80% lower global warming potential than CFC12. Under the U.S. Department of Energy's Voluntary Reporting of Greenhouse Gases, we have reported an estimate of the total greenhouse gas

emissions from the refrigerants used in new vehicle factory-fill air conditioning. These estimates are based on the amount purchased for factory installation in new vehicles in the United States and an estimate of leakage from the vehicle's air conditioning system. Despite improvements, refrigerants escape to the atmosphere during recovery and recycling processes as well as through the vehicle refrigeration system such as hoses. Estimated greenhouse gas emissions during 1990 to 2000 from our vehicles produced in the U.S. are shown below. Since 1990, the estimated emissions have decreased 72%, as CFCs were phased out and were replaced by R134a. In Europe, Opel models phased-out of CFCs in 1993 and provide retrofit air conditioning parts to enable R134a use in 1986 and later models.

US GREENHOUSE GAS EMISSIONS FROM CFCs & R134A REFRIGERANTS  
IN VEHICLE AIR CONDITIONING SYSTEMS



(Estimates based on purchases and an assumed emissions rate of 10%/yr of purchased amount)

### Increasing transmission efficiency

#### Manual Transmission Auto Shift (MTA)

In Europe, Opel and Vauxhall launched the new Corsa in 2000 with an Easytronic (MTA) transmission option, providing the convenience of an automatic with the fuel efficiency of a manual transmission. It is highly efficient, because there is no power loss due to slip as is the case in conventional automatic torque converter transmissions. See further details.

#### Continuously Variable Transmission (CVT)

We are also developing another type of transmission — known as the continuously variable transmission (CVT) — that provides the benefits of seamless shifting and the selection of the ideal ratio for any given condition, which also helps to improve fuel economy. This will debut in the US on the 2002 Saturn Vue. Read more on the CVT.

#### Lightweight design

With ever increasing customer demands for extra comfort, convenience, security and safety features, weight saving is a great challenge for our development teams. Our vehicles contain a host of weight-saving measures, including the latest lightweight materials such as all-aluminium engines and intelligent glass. Design techniques such as bionics that enable computers to "grow" a component with the lightest and strongest shape are combined with advanced production processes to further enhance weight savings.

## Advanced Engine Technology

### Variable Valve Timing (VVT)

Variable valve timing enables fuel economy improvement by changing the timing of the valve opening event. This can be used on the intake valves, exhaust valves or both. We have this in production on our 2002 Trailblazer, Envoy and Blazer models.

## Alternative Fuels and Propulsion systems

*"I believe that the only realistic technology strategy is to continue to improve traditional fossil fuel technologies to meet current consumer demands while simultaneously investing heavily in more environmentally-friendly technologies for which there is little market demand or economic incentive, but that ultimately will prove competitive with fossil fuels."*

- John F. Smith Jr., Chairman

The development of our revolutionary EV-1 electronic vehicle has set the pace in the arena of alternative fuels and propulsion systems. It represents the

### EV-1 electronic vehicle

first vehicle in modern times to be designed specifically from the ground up as an electric car. In addition to being the most fuel-efficient and cleanest running vehicle ever built, the EV-1 was the world's most technologically advanced vehicle platform, with 23 new patents in a variety of new technologies.

We have also established ambitious targets for developing vehicles with other alternate propulsion sources and systems, including fuel cells and several hybrid combinations of alternate propulsion and traditional internal combustion.

At the 2001 National Clean Cities Conference and Exposition in Philadelphia, we demonstrated our commitment to "the Alternative Fuels Revolution," showcasing a number of alternative fuel vehicles, including the Chevrolet S-10 E85 pickup, the GMC Sierra CNG-powered full-size pickup, the GMC Savana and Chevrolet Express Bi-Fuel CNG-powered passenger vans, and the propane-powered Chevy medium-duty truck, and the all electric EV1.

Together with Toyota we have entered into a 'Collaboration for Advanced Technology' that outlines joint development of technologies in three main areas: Hybrid Electric Vehicles, Fuel Cell Electric Vehicles (FCEV), and Battery Electric Vehicles. For example, our Global Alternative Propulsion Center (GAPC) and Toyota are collaborating on FCEV technologies. Research continues on packaging, performance, economic, and infrastructure development.

### Fuel cells

The fuel cell is a realistic alternative to the internal combustion engine, and is now under intense development. The fuel cell uses the reaction between hydrogen and oxygen to produce electricity. It takes its oxygen from the air we breathe. Hydrogen and oxygen combine in the reaction, the end products being electricity and water. The electricity can be used for running an electric motor that propels the car.

Hydrogen can be provided in various ways. One way is to split water into hydrogen and oxygen. The hydrogen can then be put into a tank aboard the vehicle. However, there are obstacles to be overcome.

The infrastructure for the distribution and storage of hydrogen has to be realizable in practice. Another way of supplying the fuel cell with hydrogen is to complement the cell with an onboard reformer that will extract

### Cultural Priorities:

- Act as one company - putting aside our history of internal competition and leveraging the global capabilities of our organisation.
- Embrace stretch targets - setting aside our tradition of conservative goal setting, and striving to achieve the best that we can.
- Move with a sense of urgency - working to accelerate everything that we do, and using speed as a competitive advantage.
- Enhance our product and customer focus - building long term relationships with our customers by providing great products and services, and keeping a keen external focus in all of our activities.

hydrogen from fuels such as gasoline and methanol. Varying amounts of carbon dioxide will be emitted during the reformation process, depending on the kind of fuel used.

Our ultimate goal is to put hydrogen-powered fuel cell vehicles on the road by 2010. In the meantime we are researching a bridge technology - gasoline-fed fuel cells - to promote this clean, quiet form of transportation.

#### **Working in Partnership**

We have formed two new fuel cell partnerships to put hydrogen-powered vehicles on the road by the end of the decade. As part of the first partnership, we have purchased a 20% equity stake in QUANTUM Technologies, Inc., a wholly owned subsidiary of IMPCO Technologies, Inc., for the development of hydrogen storage devices that could make future fuel cell electric vehicles competitive with today's gasoline vehicles in terms of range.

One hurdle to producing fuel cell vehicles is the ability to efficiently store compressed hydrogen at high pressure. We chose QUANTUM for hydrogen storage because the company has set a mass performance record of 11.3% hydrogen storage by weight in a tank at 5,000 pounds per square inch (psi). This tank holds nearly double the amount of hydrogen compared with similar tanks used by competing technologies. Further, QUANTUM has demonstrated a proof of concept storage tank that could potentially store hydrogen at 10,000 psi.

The second partnership is a 25-year collaboration with General Hydrogen, which was formed to speed the introduction of fuel cell vehicles in North America, Europe, Asia and emerging economies. This strategic alliance will focus on hydrogen storage, fuel cell vehicle refueling, energy services, advanced materials, power electronics, and electric power production.

#### **Hybrids**

We have developed hybrid power systems capable of powering many of the vehicles in our various vehicle classes. Announced plans for production include buses (Allison Hybrid System), full-size pickups (PHT), and a future powertrain for front-drive cars and trucks (ParadiGM). The biggest gains in fuel savings from hybrid technology are in the largest vehicles with the highest fuel consumption. By focusing on these vehicles first we can make a greater impact on emission reductions and fuel economy.

#### **Hybrid trucks**

The hybrid powertrain is one of a wide range of technologies we are using to maintain our leadership in light truck fuel efficiency. We are planning to introduce a hybrid pickup truck which features a conventional powertrain and driveline with an electric motor integrated between the engine and transmission. The engine provides the same performance as today's V-8 Vortec engines, but improves fuel efficiency by 15%. Full-size pickups with parallel hybrid technology - versions of the Chevrolet Silverado and GMC Sierra - will be available in 2004.

#### **GM's Hydrogen1 Fuel Cell powered Zafira uses highly advanced 'Stack 2000'**

Stack 2000 is a major advancement in fuel cell stack development that eliminates the need for numerous components in the vehicle system, resulting in smaller system size, less complex electronic controls, faster starts at lower temperatures, increased tolerance to freezing and lower cost. The membrane at the core of each fuel cell needs no external moisture to maintain its efficiency. This is accomplished with a unique and proprietary method of water management in the stack. Fuel cells need humidification to properly function. Stack 2000 set 11 endurance records for vehicles powered by fuel cells in May 2001. The HydroGen1 completed 862 miles in a 24-hour endurance run at our Desert Proving Grounds in Mesa, Ariz.

#### **Gasoline Powered Fuel Cells - Turning Gasoline into Hydrogen**

An integral component of a gasoline-powered fuel cell is the fuel processor. It extracts a high-quality stream of hydrogen from the gasoline to feed the fuel cell stack. The hydrogen is combined with oxygen from the air to create electricity, which runs an electric motor that moves the wheels. Our "Gen III" fuel processor, demonstrated in a Chevrolet S-10 on August 7, 2001, is 50% smaller and 40% more efficient than the previous generation. In addition to reducing the size and weight, other targeted areas of improvement are increasing durability and improving below-freezing start-up.

### Hybrid Buses

In seeking a reliable and clean technology for its Hybrid Bus Demonstration, New York City Transit looked to Allison Transmission, a division of GM. A cornerstone of the NYC Transit Hybrid Bus program is the company's Allison Electric Drives system, a diesel-electric hybrid mass transit vehicle, featuring the EP System technology. In California, the Orange County Transportation Authority became the first transit agency on the West Coast to place a full size hybrid-electric transit bus into commercial service.

The state-of-the-art transit vehicle is powered by an advanced hybrid-electric powertrain that dramatically reduces vehicle emissions - an environmental plus in smog-challenged Southern California. Allison Transmission developed the propulsion technology for the bus.

Allison Electric Drives provide an improvement in fuel economy of about 60% over a conventional diesel system in a transit bus application. The technology also can reduce soot particulate by 90%, hydrocarbons by 90%, carbon dioxide by 60% and nitrous oxide by 50%.

There are about 13,000 transit buses in service in the nine largest U.S. cities. If those buses were replaced with ones featuring the GM hybrid system, the country would use nearly 40 million fewer gallons of diesel fuel every year -- the equivalent fuel savings of 584,000 small cars with hybrid propulsion systems.

### Alternative Fuels

Alternative fuels in today's motor vehicles offer environmental benefits while helping to bridge the transition from the internal combustion-gasoline powered vehicle to tomorrow's advanced technology vehicles. The use of alternative fuels offers benefits in the reduction of some vehicle tailpipe emissions. Further, the use of alternative fuels, especially those made from renewable sources, can reduce greenhouse gas emissions. GM offers vehicles in the U.S. that operate on either E85 ethanol or gasoline fuel or any blend. In the UK, the government pays for 75% of the cost of the LPG option on our Vauxhall DualFuel vehicles.

Together with British Petroleum we are working on several joint projects to encourage the development of clean fuel technologies and clean fuel infrastructure. For example, the two companies have reached an agreement to have E85 fuel available at a fueling station in southeastern Michigan to enable refueling, among others, of our expanding E85 Truck fleet that has been created by requiring a portion of the Product Evaluation Performance (PEP) fleet operated in that area to be refueled on E85. In the UK Vauxhall is working with BP to encourage the introduction of LPG at filling stations to help spread the use of this cleaner fuel.

During the 2000 model year both Chevrolet and GMC began to offer base engines capable of dual-fuel operation on their North American small pickup offerings (S10 and Sonoma). The vehicles are capable of operating on E85 (85% fuel ethanol and 15% conventional gasoline) or conventional gasoline or any combination. We plan to offer E85 flex-fuel capability on our full-size 2002 model year utility vehicles equipped with the 5.3L V8 engine and federal emissions. Chevrolet and GMC continue to make available in the U.S. previously existing models that are capable of Bi-Fuel compressed natural gas (CNG)/gasoline operation and dedicated liquid propane gas (LPG) operation.

Opel builds versions of its Zafira and Astra models that are powered by natural gas only - making the greatest use of the environmental benefits of this fuel.

#### The Benefits of E85

E85 is a clean renewable fuel which reduces greenhouse gas emissions and petroleum use. Today, ethanol is made primarily from corn but in the future it could also be produced using waste wood, sawdust or grasses or any cellulose containing materials. E85 is an ethanol based, renewable fuel comprised of 85% ethanol and 15% gasoline.

#### Vauxhall Astravan

Vauxhall, our UK subsidiary, leads the way with 80% market share

Vauxhall DualFuel vehicles offer significant reductions in emissions of harmful exhaust fumes when running on liquid petroleum gas instead of petrol and are eligible for the highest level of support from the UK Government's Powershift programme designed to encourage the use of cleaner fuels. Customers also benefit from fuel prices around half those of gasoline, lower road tax and company car tax rates. Sales of DualFuel vehicles rose almost threefold in 2000, representing around 80% of the new factory-fitted car market and further demonstrating Vauxhall's 3-year leadership in promoting the use of cleaner-burning LPG.

## Noise

Vehicle noise reduction measures improve driving comfort and make a significant contribution to lower traffic noise.

In the European Union the noise limit for accelerated pass-by noise is 74 dB(A), Opel/Vauxhall passenger cars scored an average value of 72.7 dB(A) at recent type-approval tests. Some models are up to 3 dB(A) quieter than the regulatory limit, representing one-half the sound energy. In other words, it takes two 71 dB(A) vehicles to make as much noise as one 74 dB(A) vehicle.

## Responsible Product Use

Between 80 and 90% of the overall lifecycle environmental impact of vehicles arises during their use with the remaining 10-20% arising during manufacture and disposal. Driver behavior can affect fuel consumption and tailpipe emissions during the use phase and is even more important for vehicle safety. We believe it is important to encourage responsible use, both to minimize emissions and to increase safety. We encourage responsible use of our vehicles through a range of driver information training programs and public campaigns. We work with governments, environment and road safety groups, the motor industry and other interested parties.

### Environmental Protection

Our vehicles provide good pre-conditions for responsible resource use. If drivers act responsibly, they can reap the benefits of the vehicles' considerable technical potential in the areas of fuel efficiency, low emissions, and moderate noise.

Fuel consumption is highly dependent on individual driving habits. A smooth and defensive driving style is not only easy on the environment and on the driver's wallet, but also helps extend the life of all vehicle components. A hectic driving style with frequent starts and stops and rapid acceleration and braking, conversely, leads to substantially higher fuel consumption. The intelligent on-board computer in many of our models enables the driver to check current fuel consumption at the touch of a button. We also provide detailed information in the operating manual regarding environment-friendly and fuel-efficient driving habits.

### Safer Driving

There is much evidence to show that encouraging safer use can help increase safety for road users.

- Mature automotive markets with high levels of safety belt and child restraint use have lower fatality rates than countries with lower restraint use rates.
- Countries with strong anti-drunken driving laws experience lower incidence of alcohol-involved driving fatalities.
- Programs that enable young drivers to learn to drive over time under graduated licensing laws have proven to

#### Encouraging work at Vauxhall

During 2000 Vauxhall launched its "Drive to Survive" campaign, encouraging owners to adopt a safer driving style during the winter months; provided an advanced driving day for VX220 owners and launched a booklet for safe long-distance driving. This is complemented by numerous other initiatives and through regular articles in Vauxhall's customer magazine, VM, covering such issues as drinking and driving, speeding, pedestrian and child safety, winter driving, security, emissions reduction, better fuel economy, child seat safety, safe cycling, rear impact injury prevention and driving overseas. An example of Vauxhall promoting responsible car use is the company's support of car clubs. Such clubs benefit both society and the environment by reducing unnecessary car journeys. They also increase use of alternative modes of transport where appropriate and provide access to personal transport for those currently excluded. Vehicles are selected for having the best environmental performance in their class and are well maintained thereby minimizing pollution per mile travelled. Vauxhall support the Community Car Share Network (CCSN) and sponsored a national conference on car sharing in March 2001. Vauxhall have also supported, through the CCSN, the startup of car share programmes in several U.K. cities: Bristol, Bath and Coventry and have supplied vehicles to a program in Oxford.

help reduce the disproportionate fatality involvement of young drivers.

- Guidelines to help reduce distractions for drivers are intended to help reduce the incidence of crashes by helping drivers maintain their focus on the driving task.

We fully support such initiatives and have active programs in a number of areas to help encourage safer driving.

### **Child Restraint and Safety Belt Use**

The majority of people killed in traffic crashes in the U.S. are unrestrained. We support a societal norm in which all occupants properly use restraints - every time, on every trip. In the U.S., we are a founding member of the Air Bag & Seat Belt Safety Campaign, whose objectives are to educate the public on the facts associated with restraints, to pass strong restraint use laws, and to effectively and equitably enforce restraint use laws. In 1998, the Campaign initiated Operation ABC Mobilization, a national traffic safety initiative focused on child safety. During two Mobilization weeks each year, over 10,000 law enforcement agencies focus on enforcement of restraint use laws during concurrent high levels of public awareness.

Motor vehicle crashes are the leading cause of accidental death for children. To help educate families on child restraint use, in the U.S., in 1996 we partnered with the National SAFE KIDS Campaign®, under a multi-million dollar program called SAFE KIDS BUCKLE UP®. This partnership promotes correct child restraint and safety belt usage through education efforts, including child seat checkup events at GM dealerships. In January 2001, GM and SAFE KIDS announced a five-year extension of the partnership.

In 1998, we joined with the United Auto Workers GM in donating \$5 million to America's Promise. In partnership with SAFE KIDS, National Council of LaRaza, and the NAACP, the partnership distributes child restraints and provides education to low-income families. Through July 2001, this partnership has donated 112,000 child restraints. With each seat, families are educated on the proper use of the child safety seat.

In January 2000, we donated 51 Chevrolet Venture vans to local SAFE KIDS Coalitions in each state and the District of Columbia to expand the SAFE KIDS BUCKLE UP program. The mobile vans enable local SAFE KIDS Coalitions to take child seat checkups and education to additional locations convenient for families - to child care centers, retail locations, parks, festivals, and many other events.

Through July 2001, the partnerships with SAFE KIDS have checked over 197,000 child seats at dealerships and at other locations using the mobile vans. The mobile vans have reached over 2.8 million people.

Following our lead, other manufacturers in the U.S. have initiated child safety programs, in some cases, implementing elements of the GM-initiated programs. We support the actions of all auto manufacturers in helping to encourage all occupants to be properly secured on every trip, every time.

To learn more about child safety and proper restraint use, see [www.safekids.org](http://www.safekids.org), [www.gm.com](http://www.gm.com), and [www.nsc.org/airbag.htm](http://www.nsc.org/airbag.htm).

### **Drunken Driving**

In the U.S., alcohol is a factor annually in over 6,000 fatalities or 38% of all traffic fatalities. We commend the action of the U.S. Congress for its leadership in passing incentives in 2000 to encourage states to enact 0.08 Blood Alcohol Concentration (BAC) drunk driving laws by September 2003. To help decrease the risk of drunken driving fatalities and injuries, we have supported Mothers Against Drunk Driving (MADD) for many years.

In 1999, we committed to a multi-million dollar, multi-year relationship with MADD. Through this commitment, we are the co-sponsor of the annual "Tie One On For Safety" Red Ribbon Campaign. Our contribution underwrites DRIVEN, MADD biannual magazine. In MADD's programs focused on children, our contribution supports the "Protecting You, Protecting Me" school program for children in kindergarten through fifth grade. In addition, our funding sponsored a national conference commemorating MADD's anniversary in September 2000, the International Candlelight Vigil and Victim Conference for victims of drunk driving in December 2000, and, with the NHTSA, a legislative reception in Washington, D.C., in fall 2001. Our support also helped further MADD's efforts to reach out to people of diverse ethnic backgrounds.

To learn more about the consequences of drinking and driving, please see [www.madd.org](http://www.madd.org) or [www.gm.com](http://www.gm.com).

**Focus on Occupant Compartment and Truck Anti-entrapment**

In 1999 and again in 2001, GM led the auto industry in announcing research on technologies to help prevent people from dying or suffering permanent injuries when trapped in the trunk or the occupant compartment of motor vehicles. Concurrent with GM research, GM launched public awareness efforts to help prevent truck entrapment and occupant compartment heat-related deaths and injuries. In 1999, GM produced the brochure, "Trunks are for elephants" and distributed millions of copies through GM dealerships and public health organizations. In 2001, GM produced the brochure, "Never Leave Your Child Alone," which is available on GM's website and is being distributed through local SAFE KIDS Coalitions and public health and traffic safety organizations.

**Focus on Young Drivers**

In many countries, young drivers are disproportionately represented in crash fatalities and injuries. Enactment of graduated licensing laws in several automotive markets is proving to be a success, helping to reduce the risk of crash involvement for young drivers. We support the passage of these graduated license laws.

**Focus on Distracted Driving**

Drivers are distracted for many reasons: state of mind; vehicle systems, such as entertainment and climate control; non-vehicle activities, such as shaving and eating; other occupants; and non-vehicle technologies, such as cell phones and hand-held computer devices. We are conducting research on the issue and have established a common-sense guide for the development and implementation of telematic and information delivery systems in our vehicles.

Our principles are:

- Minimize hands-off-wheel and eyes-off-road time.
- Minimize the number of steps required to complete any given task.
- Create common interface (look and function) systems.
- Limit availability of particularly demanding tasks while driving.

Other international organizations are now using these principles as a basis for discussions on voluntary standards.

Public research identified the potential benefit of increased driver awareness and education to help reduce and eliminate actions that contribute to driver distraction. In March 2001, we launched the SenseAble Driving program in the U.S. The program is intended to help address public misinformation and increase driver's awareness of situations that contribute to distraction from the driving task. The SenseAble Driving program includes an interactive computer demonstration on our website [www.gm.com](http://www.gm.com), a poster and brief video initially displayed in State of Michigan Secretary of State (motor vehicle licensing) offices, and a brochure on driving safety tips.

## 'End-of-Life' Vehicles

### Minimizing the Impact

To meet regional requirements on end-of-life vehicles, we have organized a global End-of-Life Vehicle Team. The team ensures that we provide the necessary data to various regions in a common manner. In North America, a centralized effort was initiated to provide material and disassembly information to the dismantling industry. A system is in place to generate this information for all vehicles that are marketed into regions that have special ELV requirements. In both Europe and North America, we continue efforts to improve the end-of-life vehicle infrastructure through appropriate consortia efforts. In 1999 this resulted in eight vehicle dismantling manuals being completed for North American export vehicles going to Europe. Opel and Vauxhall are committed to working with industries involved in taking back, treating, and scrapping ELVs to reduce the amount of automotive waste going to landfill to 5% of a car's weight as compared to 25% in 2000— over the next 15 years.

## European Union Directive on End-of-Life Vehicles

We have long recognized the need for positive action to reduce the level of automotive waste going into landfill, particularly at the end of vehicle use. In September 2000 the European Parliament passed a directive to address this issue. The European Directive on End-of-Life Vehicles (ELVs) requires final vehicle owners to return ELVs to authorized collection networks to obtain "certificates of destruction" required to deregister vehicles. According to the Directive, the delivery of the vehicle to an authorized treatment facility shall occur without any cost for the last holder and/or owner as a result of the vehicle's having no or a negative market value.

The Directive has three major consequences for the auto industry:

- Obligation to cover "all or significant part" of the costs for new cars put on the market as of July 2002 and all ELVs in 2007 (Member States may bring this latter date forward if they wish)
- The Directive's target values for the recovery or recycling of ELVs are:
  - a) to be achieved by 2006 - 85% by weight re-use/recovery and 80% by weight re-use/recycling,
  - b) to be achieved by 2015 - 95% by weight re-use/recovery and 85% by weight re-use/recycling.
- Materials and components of vehicles put on the market in July 2003 shall not contain lead, mercury, cadmium and hexavalent chromium other than in those cases defined in the exemption list (Annex II of the Directive). Some uses of banned materials are still under discussion; a special technical committee will review this list and revise Annex II as necessary.

In response to this, Vauxhall, Opel, Saab and our other companies operating in Europe formed a global task force. The group is working closely to increase the use of recycled materials across our entire product range and to establish markets for recycled material to make recycling economically viable. On the dismantling side, our European companies are part of the International Dismantling Information System. We have adopted the Design for Recycling (DFR) concept for all newly designed vehicles. DFR includes, for example, reduced complexity of materials and improved fixing technology (easy to dismantle). All plastic components are marked to identify the material content.

We support harmonization of environmentally sound ELV treatment in Europe. Opel, Vauxhall and Saab are working together with all businesses and associations involved in collection and recycling to reduce the burden on landfills in accordance with the EU directive.

Since legislation, or voluntary agreements, on handling ELVs already exist in many cases, we are working to build on these national models wherever possible, for example in Austria, France, Germany, the Netherlands, and Spain. In countries where no programs of this type exist, we will create a collection system in cooperation with other interested economic operators. Opel Italy, for example, recently entered into an agreement on collection and environmentally sound treatment of Opel ELVs with that country's Association of Car Dismantlers.

Through increasing availability and use of recycled materials, product development is also helping to accelerate the creation of markets for these materials. Opel and Vauxhall are committed to working with industries involved in taking back, treating, and scrapping ELVs to reduce the amount of automotive waste going to landfill to 5% of a car's weight as compared to 25% in 2000 - over the next 15 years.

## Dismantling and Recycling

### North America

In a first among U.S. automakers, we are making our vehicle recycling information easily accessible by posting the manuals to our web site.

End-of-Life Vehicle (ELV) manuals are available at [www.gmability.com](http://www.gmability.com).

ELV manuals provide automotive dismantlers with information on which parts of a vehicle can be recycled. Currently, 75% of a car is recycled because the majority of it is metal. But few plastics on vehicles are recycled due in part to lack of information available to dismantlers. With ELV manuals now easily accessible, there is potential to significantly increase the percentage of the vehicle that is recycled.

These manuals provide the basis for increasing the recycling of plastics and other materials not currently recycled. Posting ELV manuals on [www.gmability.com](http://www.gmability.com) is part of the corporation's overall sustainability effort to



balance business, social and environmental goals.

Manuals currently available detail how to dismantle for recycling the 2000 and 2001 models of the Oldsmobile Alero, Cadillac Seville, Chevrolet Camaro, Chevrolet Corvette and the entire family of light-duty trucks with the exception of the Chevrolet Astro.

### **Europe**

In Europe, Opel and Vauxhall provide all contracted dismantlers with a dismantling manual that contains detailed information on all removable plastic components, their weight, composition, and the time it takes to dismantle. It is important for mechanical recycling that incompatible types of plastic are not mixed after shredding, as different materials can only be separated afterwards with great difficulty.

The information in the dismantling manual is now also available in a user-friendly CD, a result of the International Dismantling Information System (IDIS) to which Opel and Vauxhall contributed. The IDIS consortium, originally a development project of European vehicle manufacturers, now comprises 21 vehicle producers from around the world.

The latest release of the CD, containing information in eight languages on environmentally sound pre-treatment and dismantling of over 360 different vehicle models from the world's most important manufacturers, was distributed free of charge to European dismantlers in early 2000.

Rapid and cost-effective solutions can be found through close cooperation with dismantlers. For example, we have provided dismantlers with detailed information on how to centrally de-activate air bags to eliminate potential hazards during dismantling.

To optimize the dismantling operations, we address issues of this sort early in the vehicle development cycle. The company is also making a significant contribution to creating a market for recycled materials. Use of recycled materials in Opel/Vauxhall vehicles rose to 30,000 metric tons in 2000. This helps stimulate the demand for recycled plastics, thereby encouraging greater levels of recycling in the future.

### **Reporting Progress in Recycling/Recovery**

Methodologies for calculating the recoverability of a vehicle and the basis for monitoring reports that some governments require are being developed jointly with vehicle manufacturers around the world through the respective automotive trade associations. Since 1994, we have participated in a series of car recycling workshops to promote responsible treatment of end-of-life vehicles regardless of where they are used and retired.

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