Mexican Pilot Program

2004 Greenhouse Gas (GHG) Report

Ford of Mexico

July 2005

Executive Summary:

Ford Motor Company is proud to be part of The Mexican GHG Pilot Program. Ford recognizes the importance of the climate change issue and supports emissions reporting at a national level. In this 2004 report, we presented Ford of Mexico data from 1998-2004. Ford will continue to support Mexico's national efforts by providing annual updates to the program.

Ford of Mexico is committed to maintaining and exceeding its environmental standards. Overall, Ford of Mexico has reduced its Greenhouse Gas (GHG) emissions by 36% in 2004 compared to the baseline years (1998-2001) and 7% from 2003. These reductions are attributed to facility implemented projects to reduce energy consumption along with decreased production.

In recent years, the Assembly plants have experienced a production decrease which in consequence increased emissions intensity (emissions per unit built). This increase in emissions intensity occurred because a fixed portion of energy is required for base facility operations, regardless of the number of vehicles produced. However, energy efficiency activities are ongoing at the facilities, and the production levels are expected to increase with the introduction of new products. This will allow the facilities to run at increased capacity reducing emissions intensity.

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1. Introduction:

1.1 Ford of Mexico:

Ford of Mexico was the first vehicle manufacturer in Mexico to begin operations in the country and it has been building cars since its founding in 1925. The first national assembly line in Mexico belonged to Ford Motor Company and it was located at San Lazaro; later on, La Villa Assembly Plant was inaugurated and it became Ford of Mexico's center of operations for over 50 years.

In 1964, the opening of the Cuautitlan Complex took place. In 1983, Ford inaugurated the Chihuahua Engine Plant followed by the Hermosillo Stamping and Assembly Plant, which opened doors in 1986. All three plants have gone through many developments during the past years keeping their commitment to maintaining and exceeding their environmental standards. This can be seen in the current and future products and in the facilities' environmental initiatives taken throughout the years.

Ford of Mexico has participated in voluntary programs such as the one promoted by The Federal Ministry for Environmental Protection (PROFEPA), where Ford of Mexico committed to environmental auditing and inspection. In 2002, all Mexican facilities were awarded with the "Clean Industry" certification by PROFEPA. The certification is given to deserving companies every two years. In 2004, Ford of Mexico was awarded once again.

Since 1997, Ford has carried out various programs to preserve the environment such as: "Let's Save the Pronghorn", endangered species which has a profound impact in the survival of the whole ecosystem "Reserva de la Biosfera El Vizcaino" in South California and "Let's Save the Lacandona Rainforest" the last tropical rainforest in the northern hemisphere.

Over 80 years, Ford Motor Company has proven to be a company that cares not only about offering people an automated transportation means, but is also working to ensure the social welfare of the communities where it operates, showing its leadership in the automotive industry as well as in corporate citizenship, acting always in a responsible and deeply committed manner to Mexico.

One of the most important initiatives undertaken by Ford Motor Company is the implementation of the ISO 14001 environmental management standard in all of its worldwide manufacturing facilities, where all aspects of the plant are included: air emissions, waste, water, and energy. In order to remain certified, a facility must undergo a surveillance audit each year that ensures adherence to guidelines, and measures the plant's progress.

Ford Motor Company has also evaluated different approaches to address climate change, including emissions trading. In fact, Ford is the first auto manufacturing participant in various voluntary initiatives including The Chicago Climate Exchange (CCX), the UK Trading Scheme, the Australian GHG Challenge Programme and the Mexico GHG Pilot Program. Ford recognizes the importance of the climate change issue and is taking action to address this problem. Ford will continue to work on reducing the greenhouse gas emissions of its vehicles and facilities by introducing advance technology vehicles and improving energy-efficiencies of our manufacturing operations.

1.2 Mexican Facilities:

Ford of Mexico consists of the Hermosillo Stamping and Assembly plant, the Chihuahua Engine plant and the Cuautitlan industrial complex.

Hermosillo Stamping and Assembly Plant:

Figure 1.1 Hermosillo Stamping & Assembly

Figure 1.2 Ford Fusion

Location: Carretera a la Colorada, Km 4.5, Parque Industrial

Product: Ford Fusion,

Mercury Milan, Lincoln Zephyr.

Founded: November 16, 1986

Plant Capacity: Approximaly 305,000 Units

Operation: Stamping & Assembly

Employees (2004): Overall 2,100 employees

Site: 1,128,803 m^2

Floor Space: 228,811 m^2

ISO 14001 Certified: June 18, 1998

Figure 1.3 Chihuahua Engine Plant

Chihuahua Engine Plant:

Location: Mexico Km 11.5 Carretera Chihuahua-Juarez, Complejo Industrial Chihuahua

Product: Four Cylinder Duratec I4

Founded: November 1983

Plant Capacity: Approximately 315,000 engines.

Operation: Machining and Engine Assembly.

Employees (2004): Overall 773 employees

Site: 1,000,000 m^2

Floor Space: 104,200 m^2

ISO 14001 Certified: June 1998

Figure 1.4 Ford Duratec Engine

Cuautitlan Industrial Complex:

Location: Kilometro 36.5, autopista Mexico-Queretaro Cuautitlan Izcalli Estado de Mexico

Product: F150, 250, 350, 450, 550 and Fiesta Ikon car

Founded: November 1964

Plant Capacity: Approximate 66,000 Units

Operation: Assembly of vehicles

Employees (2004): Overall 886 employees

Site: 1,066,100 m^2

Floor Space: 461,472 m^2

ISO 14001 Certified: June 1998

Figure 1. 5 Cuautitlan Industrial Complex

Figure 1.6 Ford F-150 Truck

1.3 Corporate Practices on Climate Change:

Ford Motor Company is proud to participate in various climate initiatives around the world. Ford believes that climate change is a serious environmental issue and, recognizing that it is not possible to wait for all the scientific uncertainties to be resolved, Ford has taken action by participating in the following climate change programs.

Mexico GHG Pilot Program:

The Mexico GHG Pilot Program is a two year partnership between La Secretaria de Medio Ambiente y Recursos Naturales (SEMARNAT), World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). It is a voluntary program established to help Mexican companies to quantify greenhouse gas emissions. Ford Motor Company is proud to be part of the first phase of the program where we are committed to report emissions annually.

Chicago Climate Exchange (CCX):

The Chicago Climate Exchange (CCX) is a greenhouse gas (GHG) emission reduction and trading program for emission sources and projects in North America. It is a self-regulated, rules based exchange designed and governed by CCX members. These members have made a voluntary, legally binding commitment to reduce their emissions of greenhouse gases by four percent below the average of their (1998-2001) baseline by 2006. Ford is the first and only auto manufacturing participant.

UK Emissions Trading Scheme (UK ETS):

Launched in March 2002, the UK emissions trading scheme is the world's first economy-wide greenhouse gas emissions trading scheme. All thirty-one participants have committed to voluntarily reduce their emission targets from their 1998-2000 levels, delivering 11.88 million tones of additional carbon dioxide equivalent emission reductions over the life of the scheme (2002-2006). In the first year, the participants achieved emission reductions of 4.64 million tones of CO_2e (carbon dioxide equivalent) against their baselines and in the second year they have

achieved emission reductions of nearly 5.2 million tones of CO_2e against their baselines. Ford was the first and only auto manufacturing participant.

EU Emissions Trading Scheme (EU ETS):

Ford participates in the EU ETS which commenced in January 2005 and is one of the policies being introduced across Europe to reduce emissions of carbon dioxide and other greenhouse gases. The first phase runs from 2005-2007 and the second phase will run from 2008-2012 to coincide with the first Kyoto Commitment Period. Further 5-year periods are expected subsequently.

Australian GHG Challenge Plus Programme:

Greenhouse Challenge Plus builds on the success of the Australian Greenhouse Challenge programme established in 1995. Ford was the first automotive company to join the voluntary program. Ford joined The Greenhouse Challenge Program in 1997 where it signed a five year commitment. During those five years, Ford reduced its GHG emissions 6.3 percent. Ford continues to report its emissions voluntarily under the new program.

2. Methodology

The data used to calculate the baseline and reporting year is based on actual electricity and natural gas invoices. The emissions data reported was generated following the greenhouse gas calculation tools contained in the Corporate GHG Accounting and Reporting Guide, which was developed by The World Resources Institute (WRI) and The World of Business Council for Sustainable Development (WBCSD). The report includes "direct" emissions characterized as scope 1 in the WRI/WBCSD protocol and "indirect" or scope 2 emissions from the same protocol. All CO2 emissions are included and reported in units of metric tons of carbon dioxide (CO_2). Other Greenhouse gases listed (CH_4, N_2O, HFCs, PFCs, SF_6) do not apply to the company's manufacturing facilities and are considered deminimus.

Consistent with the Chicago Climate Exchange (CCX), the factor of 0.59 Tons/MWh was used to convert electricity usage to indirect CO2 emissions and 0.05311 Tons/MMBTU was used to convert natural gas usage to direct CO2 emissions (Table 2.1). Also, the submitted data for years 1998-2001, 2003 and 2004 has been verified by a third party (National Association of Securities Dealers - NASD) to meet CCX requirements. 2002 data was not required by CCX and therefore is unverified. However, it was prepared in the same manner as the other years.

Table 2.1 Direct and Indirect Factors

Type of Emissions	Factor
Natural Gas	0.05311 Tons of CO2/MMBTU
Electricity	0.59 Tons of CO2/MWh

3. Base Years:

3.1 Quantification:

For 2004 and subsequent reporting periods, the baseline is calculated as the average of emissions during years 1998, 1999, 2000, and 2001. This baseline serves as a benchmark for all projections and emissions targets, and was selected to be consistent with the North American CCX baseline.

Tables 3.1 and 3.2 show the direct and indirect emissions used to obtain the baseline.

Table 3.1 Direct emissions (natural gas consumption) used to calculate baseline

Facility	Total Direct Baseline (1998-2001) Average Metric Tons of CO2 Scope 1	Annual Direct Emissions Metric Tons of CO2			
		1998	1999	2000	2001
CHIHUAHUA ENGINE	1,442	1,197	1,316	1,795	1,461
CUAUTITLAN SITE	9,665	10,100	9,298	10,455	8,808
HERMOSILLO ASSEMBLY	11,951	13,082	11,906	12,343	10,474
Totals	**23,060**	**24,379**	**22,520**	**24,593**	**20,743**

Table 3.2 Indirect emissions (Electricity purchased) used to calculate baseline

Facility	Total Indirect Baseline (1998-2001) Average Metric Tons of CO2 Scope 2	Annual Indirect Emissions Metric Tons of CO2			
		1998	1999	2000	2001
CHIHUAHUA ENGINE	37,290	25,556	27,953	47,136	48,516
CUAUTITLAN SITE	35,036	29,348	30,359	44,831	35,607
HERMOSILLO ASSEMBLY	55,859	54,346	56,781	63,094	49,214
Totals	**128,185**	**109,250**	**115,093**	**155,061**	**133,337**

3.2 Direct and Indirect Emissions

Greenhouse gas emissions are primarily the result of energy consumption by means of electricity usage (indirect) or natural gas combustion (direct). The rate of energy consumption depends heavily on production, and if production increases, so will energy consumption. One of Ford's ongoing goals is to identify new methods that improve energy usage per vehicle built. Tables 3.3 and 3.4 show direct and indirect emissions for the years 2002, 2003, 2004.

Table 3.3 Direct Emissions Years 2002-2004

Facility	Annual Direct Emissions Metric Tons of CO2-Scope 1		
	2002	2003	2004
CHIHUAHUA ENGINE	1,486	1,371	1,525
CUAUTITLAN SITE	8,047	10,641	3,791
HERMOSILLO ASSEMBLY	8,928	6,212	6,797
Totals	**18,461**	**18,224**	**12,113**

Table 3.4 Indirect Emissions Years 2002-2004

Facility	Annual Indirect Emissions Metric Tons of CO2-Scope 2		
	2002	2003	2004
CHIHUAHUA ENGINE	45,398	36,299	30,755
CUAUTITLAN SITE	26,161	25,784	20,657
HERMOSILLO ASSEMBLY	44,136	32,066	32,241
Totals	**115,695**	**94,149**	**83,653**

Table 3.5 Total Ford of Mexico Emissions (1998-2004)

	Metric Tons of CO2						
Facility	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
CHIHUAHUA ENGINE	26,753	29,269	48,931	49,978	46,885	37,670	32,280
CUAUTITLAN SITE	39,448	39,658	55,286	44,415	34,208	36,425	24,448
HERMOSILLO ASSEMBLY	67,428	68,687	75,438	59,689	53,064	38,278	39,039
Total (Tons of CO2)	**133,629**	**137,614**	**179,655**	**154,082**	**134,157**	**112,374**	**95,768**

4. Analysis:

Ford of Mexico has always been committed to reducing its emissions. All plants in Mexico have implemented projects to reduce their electricity and gas consumption. Activities to reduce electricity include: installation of equipment to reduce energy, programming of air conditioning units, energy shutoffs in non-operating areas, adjustments on the automatic startup of compressors, turning off compressors during the weekends, and repairing air leakages. Efforts to reduce natural gas usage include: Starting paint ovens one hour later, following instructions to turn on ovens efficiently, and turning off paint equipment during the night. In 2004, Ford of Mexico reduced its indirect emissions (electricity consumption) by 35% and its direct emissions (natural gas usage) by 47% compared to the baseline average. The analysis of each facility is listed below. For analysis purposes, the facilities have been grouped by type of operation as shown in Table 4.1.

Table 4.1 Facilities grouped by Type of Operation

Operation	Facilities Included
Engine	Chihuahua Engine Plant
Assembly	Hermosillo & Cuautitlan Assembly Plants

Production data played an important role on this analysis and it is listed below in Table 4.2.

Table 4.2 Production Data by Type of Operation (1998-2004)

Production	1998	1999	2000	2001	2002	2003	2004
Engine	225,714	273,051	398,857	448,413	409,803	312,724	304,811
Assembly	190,939	196,747	278,986	236,691	182,895	136,160	93,290

4.1 Engine Plant (Chihuahua Engine Plant):

In 2004, the Chihuahua Engine Plant has had significant emission reductions in terms of emissions intensity (emissions/unit built) and absolute emissions (total GHG emissions) levels relative to the baseline (illustrated in Figures 4.1 and 4.2). In 2004 absolute emissions were 14% lower than in 2003 and 17% lower than the baseline emissions. Chihuahua Engine plant is now more energy efficient, and as a result has reduced the greenhouse gas emissions intensity by 12% since 2003 and 8% since the baseline years. The implemented projects not only contributed to significant cost savings, but also helped to protect the environment.

Figure 4.1 Engine Plant GHG Emissions Intensity

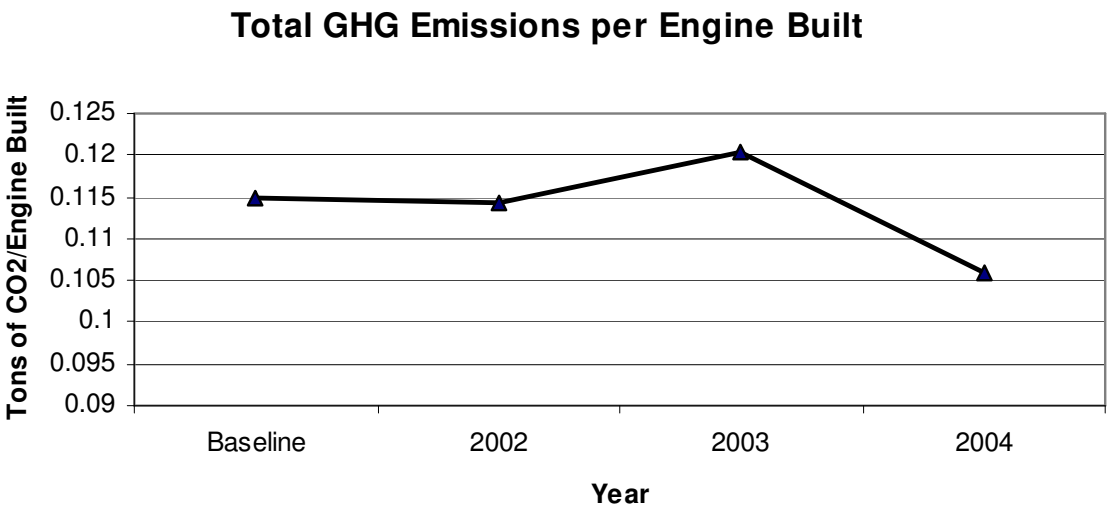
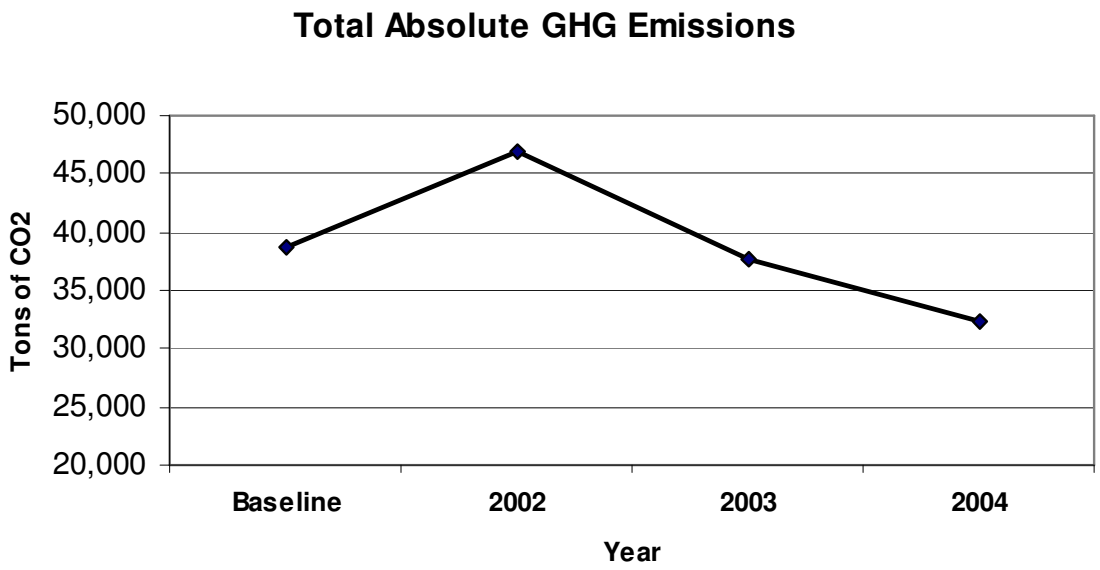


Figure 4.2 Engine Plant Absolute Emissions



4.2 Assembly Plants (Hermosillo and Cuautitlan Assembly Plants):

The assembly plants have also worked hard to reduce their GHG emissions. The facilities combined have decreased their absolute emissions by 44% compared to the baseline and 15% from 2003 (Figure 4.4). In the last couple of years, the plants have experienced a production decrease which in consequence increased their emissions intensity. In fact in 2004, intensity emissions increased 24% in comparison to 2003 (Figure 4.3). This is largely due to the plants not running at capacity when they would be expected to be more energy efficient and produce lower emissions per vehicle. However, with the introduction of new models, like the Ford Fusion, Mercury Milan, and Lincoln Zephyr, at the Hermosillo Assembly Plant, production is expected to increase considerably in the future impacting both GHG emissions intensity and absolute emissions.

Figure 4.3 Assembly Plant GHG Emissions Intensity

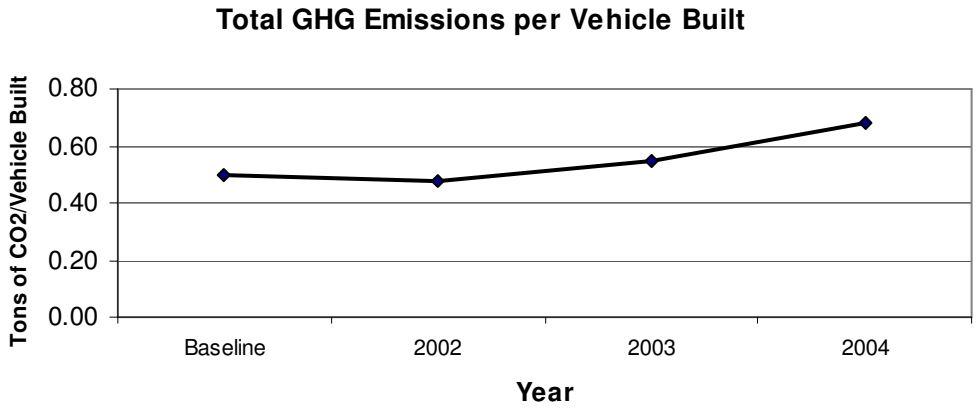
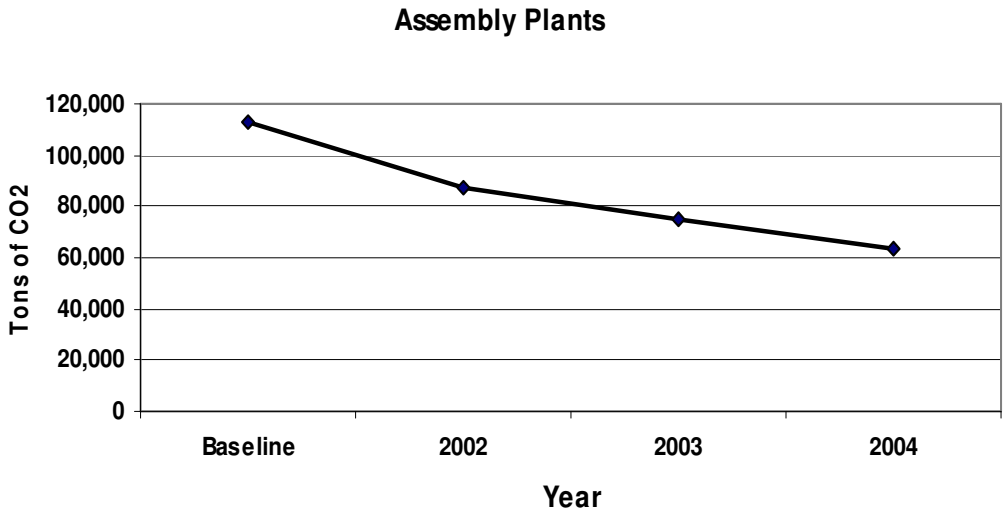


Figure 4.4 Assembly Plant Absolute Emissions



5. Conclusion:

Ford Motor Company is proud to be part of The Mexican GHG Pilot Program. Ford recognizes the importance of the climate change issue and supports emissions reporting at a national level. In this 2004 report, we presented Ford of Mexico data from 1998-2004. Ford of Mexico is committed to maintaining and exceeding its environmental standards. Overall, Ford of Mexico has reduced its Greenhouse Gas (GHG) emissions by 36% in 2004 compared to the baseline years (1998-2001) and 7% from 2003. Ford will continue to support Mexico's national efforts by providing annual updates to the program.