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The Partnership for a New Generation of Vehicles: Status and Issues

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Summary

The Partnership for a New Generation of Vehicles (PNGV) was a cooperative research program between the federal government and the “big three” American automakers, Ford, DaimlerChrysler, and General Motors. It was financed by private contributions and the re-channeling of research funds for ongoing federal programs. Partners agreed to share research responsibilities and achievements. The goals of the program were to improve domestic manufacturing capabilities and to develop prototypes of a mid-sized family car with three times the fuel economy of a comparable 1994 model. All three manufacturers developed concept cars, but there were problems with the development of production prototypes. The partnership was criticized for several reasons, and in the second session of the 106th Congress, the House of Representatives voted to eliminate funding for the program, although this funding was later reinstated. Under the George W. Bush Administration, the program was cancelled and funding for this research was redirected to a new program, the “Freedom CAR” program, which will focus on fuel cell vehicles and the related support infrastructure. This report provides background information on the PNGV program and discusses the program’s accomplishments. In addition, it discusses some of the key issues which surrounded the program.

Introduction

On September 29, 1993, the Clinton Administration announced the Partnership for a New Generation of Vehicles (PNGV). The program was created as a public/private partnership between the federal government and the major domestic automakers to improve domestic automobile manufacturing capabilities and significantly increase the fuel efficiency of family cars, while maintaining performance, safety and cost. On the federal level, the program simply coordinated previously authorized research among agencies. Therefore, there was no specific authorizing legislation or executive order that created PNGV. Instead, the basis for the program was a Declaration of Intent signed by the auto manufacturers and then-President Clinton. The partnership was formed to promote automobile research that would not be otherwise undertaken by American manufacturers, and therefore promote energy security.

Participants

The Department of Commerce (DOC) was the lead agency for the program, and coordinated partnership-related research among federal agencies. Other government participants included the Departments of Energy (DOE), and Transportation (DOT), as well as the Environmental Protection Agency (EPA), and the National Science Foundation (NSF).¹ These agencies were partnered with the United States Council on Automotive Research (USCAR), which represents DaimlerChrysler AG, Ford Motor Co., and General Motors (GM) Corp. Other partners included industrial suppliers, universities, commercial research and development institutions, and entrepreneurs.²

Funding

There was no direct federal funding for the partnership per se. The combined research budgets for PNGV-related activities at five agencies made up the funding for the Federal participation in the PNGV.³ Federal programs included research on technologies such as advanced engines, hybrid systems, fuel cells, emission controls, and lightweight materials. The federal government spent approximately \$250 million per year for research related to PNGV, more than half of this through DOE's energy conservation budget. On many projects, industry shared research costs with the federal government. In other cases, research was conducted solely by the industry. According to industry estimates, the auto manufacturers spent approximately \$800 million annually on PNGV and related research.⁴

Goals

According to the PNGV Program Plan, the program had three key goals:⁵ improving manufacturing, implementing new technologies, and developing a "supercar" with three times the fuel economy of a baseline passenger car. However, the third goal was often the only one mentioned in discussions of PNGV. This was because the third goal could be easily measured, while the first two could not. This focus on goal three led to debate over the accomplishments and effectiveness of the program.

The first goal of PNGV was to "significantly improve national competitiveness in manufacturing." This included minimizing production costs and lead times, improving productivity, reducing environmental impacts, and improving product quality.

¹ Other agencies are also considered partners in the program, but federal funding for PNGV only comes from these five entities.

² Partnership for a New Generation of Vehicles (PNGV), *PNGV Program Plan*. November 29, 1995.

³ U.S. General Accounting Office (GAO), *Results of U.S.-Industry Partnership to Develop a New Generation of Vehicles*. March 2000.

⁴ Emilia Askari, "At Last! The Supercars Arrive," *Detroit Free Press*. January 6, 2000.

⁵ PNGV, *PNGV Program Plan*. November 29, 1995

The second goal of the partnership was to “implement commercially viable innovations from ongoing research in conventional vehicles,” including development of technologies that improve fuel economy, reduce emissions, and maintain safety. Ideally, these technologies would then be incorporated in conventional production vehicles.

The third goal of PNGV was to develop a “supercar.” Specifically, the program planned to increase fuel efficiency to up to three times the average of 1994 family sedans—which was 26.6 miles per gallon—without reducing performance, safety, or affordability. The baseline comparison vehicles were the Chrysler Concorde, Ford Taurus, and GM Lumina. Key performance parameters for goal 3 are shown in Table 1.

Table 1. Performance Parameters for the New Generation of Vehicles⁶

Vehicle Attributes	Parameters
Fuel Economy	80 miles per gallon
Number of Passengers	up to 6
Operating Life	100,000 miles (minimum)
Emissions	meet or exceed EPA Tier 2 standards
Recyclability	80 percent
Safety	Meet Federal Motor Vehicle Safety Standards
Utility, Comfort and Ride Handling	Equivalent to current vehicles
Purchase & Operating Cost	Equivalent when adjusted for economics

To guide work on goal 3, three major milestones were identified:

1. By 1997, the key technologies with the greatest likelihood of meeting the performance parameters were identified. To meet the goal, manufacturers planned to use diesel/electric hybrid engines. These drive systems combine an advanced diesel-powered engine with an electric motor. They tend to be more efficient than conventional vehicles and thus have higher fuel economy.⁷
2. By 2000, each manufacturer was to develop a “concept car” that would be used to evaluate the technical feasibility of the components when integrated for the first time.
3. By 2004, all three manufacturers were to develop a “production prototype” which would demonstrate manufacturing feasibility and meet the performance parameters

⁶ From Table ES-1, PNGV, *Program Plan*. November 29, 1995. p. ES-3.

⁷ For more information on hybrid vehicles, see CRS Report RL30484, *Advanced Vehicle Technologies: Energy, Environment, and Development Issues*.

of goal three.⁸ After a production prototype is presented, it is usually another three to five years before the vehicle is mass-produced

Accomplishments

According to the National Academy of Sciences, PNGV made significant progress in achieving the first goal of the program. Accomplishments included process improvements in producing aluminum sheets and carbon-fiber composites. In addition, manufacturers made advances in cost reduction and improved recycling of composite materials.⁹ However, the General Accounting Office (GAO) questions whether it is possible at this time to assess the potential effects of PNGV on U.S. manufacturing competitiveness.¹⁰

Both NAS and GAO agreed that progress was made on the second goal. All three manufacturers have reported an increase in the use of aluminum and other lightweight materials, as well as improved combustion technologies, in their production vehicles.

In addition, significant progress was made on the third goal. As of February 2000, all three manufacturers had introduced concept cars for the program. These vehicles were the DaimlerChrysler Concept ESX3, the Ford Prodigy, and the GM Precept.¹¹ All three vehicles achieved 70 miles per gallon or more, through the use of hybrid drivetrains, lightweight materials, and other efficiency improvements. In addition, all three manufacturers expected to introduce production prototypes by 2004.¹² However, because of cost constraints and other technical issues, mass-production of these vehicles seemed unlikely. High costs forced Toyota and Honda, which were already selling small gasoline hybrid vehicles in the U.S. market, to heavily subsidize their vehicles to make them affordable.

Issues

Some key issues were raised concerning PNGV. The first is that although the program's purpose was to develop highly-efficient vehicles, there was no federal requirement that these vehicles ever be produced and sold. Environmental groups were concerned that the vehicles would therefore never be produced. In addition, they were concerned that the use of diesel engines would lead to higher pollution, and pollution with potentially more dangerous health effects, such as fine particulate matter.¹³ Another issue was that although the other parameters of the program may be met, it was unlikely

⁸ PNGV, *Program Plan*. November 29, 1995. p. 7-1.

⁹ National Academy of Sciences, *Review of the Research Program of the Partnership for a New Generation of Vehicles: Sixth Report*. 2000.

¹⁰ GAO, *Results of U.S.-Industry Partnership to Develop a New Generation of Vehicles*. p. 10.

¹¹ Secretary of Commerce William M. Daley, *Statement on the Unveiling of the Partnership for a New Generation of Vehicles' Concept Cars*. January 11, 2000; Catherine Strong, "DaimlerChrysler's Hybrid is Affordable," *Detroit Free Press*. February 23, 2000.

¹² GAO, *Results of U.S.-Industry Partnership to Develop a New Generation of Vehicles*. p. 32.

¹³ See CRS Report RL30737, *Diesel Fuel and Engines: An Analysis of EPA's New Regulations*.

that the vehicles could be as affordable as conventional vehicles if they were produced. A final issue was that some questioned whether the federal government should be supporting such research at all.

Mass Production Questions. Although it was a goal of the program for each manufacturer to develop a prototype, manufacturers were not required to mass-produce the vehicles. Therefore, environmental groups questioned the value of the program. Further, they argued that PNGV was used to forestall any increase in federally-mandated Corporate Average Fuel Economy (CAFE) standards.^{14,15} However, as was stated above, some new technologies developed through PNGV are being used in conventional vehicles, indicating that manufacturers saw opportunities in the technology.

Use of Diesel Engines. Another key concern with PNGV was the planned use of diesel engines in the hybrid designs. Some critics argued that even advanced diesel engines would not meet the new Tier 2 emissions standards,¹⁶ and that even if these vehicles were produced, they would be illegal to drive under Clean Air Act limits on particulate matter.¹⁷ For this reason, a considerable portion of PNGV funding was focused on reducing emissions from the diesel hybrid engine. According to some critics, the program should have focused on cleaner technologies, such as fuel cells.¹⁸

High Cost. The potential cost of these vehicles was also a key issue. According to GM, the use of advanced lightweight materials in its Precept made it too expensive for production.¹⁹ In order to control costs, DaimlerChrysler chose to develop a concept that had lower fuel economy than the target (72 mpg instead of 80). Nonetheless, the ESX3 was still approximately \$7,500 more expensive than the Intrepid, the manufacturer's family sedan. However, according to DaimlerChrysler, this was an improvement from its earlier model, the ESX2, which would have cost \$15,000 more.²⁰ It remained to be seen whether consumers were willing to pay such a premium for these vehicles, but successes among smaller hybrids like the Honda Insight and the Toyota Prius were promising. Despite an incremental purchase price of approximately \$7,000 for the Insight as compared to a conventional Civic hatchback, Honda expects to completely sell its

¹⁴ Union of Concerned Scientists (UCS), "'Supercar' Program's Mid-Course Report Card: 'D' for Diesel," *News Release*. September 24, 1998.

¹⁵ For given model year, the average fuel economy of automobiles that a manufacturer sells must be 27.5 miles per gallon or greater. For more information on CAFE standards, see CRS Issue Brief IB90122, *Automobile and Light Truck Fuel Economy: Is CAFE up to Standards?*

¹⁶ On February 10, 2000, EPA finalized stricter rules for vehicle emissions that will take effect in model year 2004. For more information on Tier 2 emissions standards, see CRS Report RS20247, *EPA's Tier 2 Emissions Standards for New Motor Vehicles: A Fact Sheet*.

¹⁷ David Malakoff and Dennis Normile, "U.S. Supercars: Around the Corner or Running on Empty?" *Science*. July 30, 1999. p. 680-682.

¹⁸ UCS, "Gore and Carmakers Tout Flawed 'Supercar' Program," *News Release*. March 30, 2000.

¹⁹ "GM Unveils Concept Car that Gets 80 Miles a Gallon," *Reuters*. January 1, 2000.

²⁰ Catherine Strong, "DaimlerChrysler's Hybrid is Affordable," *Associated Press*. February 23, 2000.

production runs for 2001 and 2002.²¹ However, the premium would have been considerably higher without subsidies from the manufacturers to promote sales.

What is the Government's Proper Role? Another issue that was raised was whether the federal government should support this research at all, and that the program amounted to “corporate welfare.” According to the Cato Institute, “taxpayers should not be forced to help private companies develop profitable new products in the first place.”²² This concern contributed to a June 14, 2000 House of Representatives vote to eliminate funding for PNGV in the FY 2001 appropriations bill (P.L. 106-291), and to use the funds for debt reduction. In the final conference, PNGV funding was reinstated. Because consumers generally do not make fuel economy a high priority, supporters of PNGV argued that it may be necessary for the federal government to intervene to limit petroleum dependence. Further, according to industry estimates, auto manufacturers spent three times as much as the government per year on PNGV research. A related issue is the question of whether the program “picked winners” through its selective technology focus. Critics argued that too much funding was being directed at the technologies chosen for implementation in goal 3 of the partnership. PNGV supporters countered that research was continuing on topics unrelated to goal 3 (the supercar), but which may have helped the partnership meet goals 1 and 2 (improved domestic competitiveness, and implementation of new technologies in conventional vehicles, respectively). These technologies included research on fuel cells and other advanced technologies. Other concerns that were raised at the beginning of the partnership centered on questions of anti-trust and intellectual property rights.

Current PNGV Status

On January 8, 2002, the George W. Bush Administration announced that the PNGV program would be replaced with a new initiative, the “Freedom Car” program.²³ This new program will still be a partnership between USCAR and the federal government, but with DOE taking the lead role. While hybrid vehicle research will continue,²⁴ the program will focus on the research and development of fuel cell vehicles, and the infrastructure necessary to support them.²⁵

²¹ James R. Healey, “High-Profile Drivers Crave Hybrids,” *USA Today*. March 14, 2001. p. B1.

²² Dean Stansel and Stephen Moore, Cato Institute, *Federal Aid to Dependent Corporations: Clinton and Congress Fail to Eliminate Business Subsidies*. May 1, 1997.

²³ Neela Banerjee, “U.S. Ends Car Plan on Gas Efficiency; Looks to Fuel Cells,” *The New York Times*. January 9, 2002. p. A1.

²⁴ For FY03, the Administration’s budget request to congress reallocates PNGV/Freedom CAR-related research funds among various research objectives, but does not significantly change the overall funding level.

²⁵ For information on fuel cells, see CRS Report RL30484, *Advanced Vehicle Technologies: Energy, Environment, and Development Issues*.

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