TRIBUNE SPECIAL REPORT

First of a three-part series

Tribune photo by Scott Strazzante

DaimlerChrysler's ESX3 was once hailed as a giant leap forward in car technology but lost its luster when the Supercar program was scrapped. Now inoperable, it is being pushed into a Chrysler museum near Detroit.

Supercar: The tanking of an American dream

Dependence on foreign oil helped launch a historic national effort to build an 80-mile-per-gallon automobile. But politics and self-interest killed it.

By Sam Roe
Tribune staff reporter

On a crisp fall morning in 1993, President Bill Clinton and Vice President Al Gore walked side by side out of the West Wing of the White House, past the Rose Garden, and onto a small stage on the South Lawn. There, they greeted three of the most powerful business leaders in the world: the chief executive officers of Ford, General Motors and Chrysler.

Before dozens of dignitaries, the president announced that America was embarking on a technological venture as ambitious as any the nation had ever attempted.

Over the next 10 years, the U.S. government and the American auto industry would combine the full weight of their resources—billions of dollars, the best scientific minds and previously secret Cold War technologies—to build an invention simple in concept yet critical in importance: a family car that achieved 80 miles per gallon.

This "Supercar" not only would be a tremendous boon to the environment, reducing pollution and slowing global warming, but it also would cut the nation's reliance on oil imports from the volatile Middle East and inject new life into a stagnating domestic auto industry.

In short, Supercar would make America a cleaner, safer and more prosperous place in which to live.

"We do not have the choice to do nothing," Clinton told the crowd.

But nine years after it was born in pomp and splendor, Supercar is dead.

The victim of bureaucratic turf wars, a hostile auto industry and self-serving politicians, the car that was supposed to change everything now stands as a sobering reminder of the forces arrayed against greater fuel efficiency and a cleaner environment.

Lost were years of effort, $1.5 billion in taxpayer money and perhaps the best opportunity the nation has had to address some of its most pressing issues.

In fact, the very problems Supercar was supposed to help solve have only worsened.

America now imports 56 percent of its oil—the highest

PLEASE SEE **SUPERCAR,** PAGE 20

The series

▶ **SUNDAY**
PART 1:
STARTING UP
The concept for an 80-mile-per-gallon car is born.

MONDAY
PART 2:
SHIFTING INTO GEAR
After a slow start, engineers make impressive headway.

TUESDAY
PART 3:
HITTING THE BRAKES
70 miles per gallon—and then a dead stop.

SPECIAL REPORT: THE TANKING OF AN AMERICAN DREAM

SUPERCAR: $1.5 billion in taxpayer money spent

CONTINUED FROM PAGE 1

ever and twice the amount of 20 years ago. And at a time when the nation is poised to go to war with Iraq, oil imports from the Mideast continue to rise.

Scientists increasingly agree that global warming is real and worsening and that pollution from millions of cars in the United States is a factor.

The Japanese, who wanted to be part of the Supercar project but were rejected, have raced ahead of the Americans in auto technology, putting on the market in five years what Detroit couldn't in 10: an ultra-efficient car.

And the average fuel economy for new U.S. passenger vehicles is the worst in 20 years, largely because of consumers' desire for gas-guzzling sport-utility vehicles and pickup trucks.

It didn't have to be this way.

A review of thousands of government and industry documents, including dozens of confidential White House records, and interviews with key Supercar participants show that the Big Three automakers and U.S. government officials repeatedly put their own short-term interests and political agendas ahead of what was good for the project and what was good for the country.

The Supercar project had been cited as a cornerstone of America's energy and environmental policies for nearly a decade. When top government officials and automotive executives were pressed about what they were doing to protect the environment or to conserve energy, they frequently pointed to Supercar.

But year after year, officials neglected the project, telling the public it was making solid progress when they knew that it was not. When Supercar finally did get on track, government and industry officials quietly shut the program down.

Detroit was more interested in catering to America's thirst for SUVs and pickup trucks, while Washington officials perpetuated their reputation as bureaucratic bunglers by fighting among themselves and leaving Supercar vulnerable to political attack.

But this is not a story simply about government ineptitude and corporate maneuvering.

It is also about how an unlikely cast of characters, from CIA agents to a summer engineering intern to some of the biggest names in government and industry, came together—often grudgingly so—to attempt a project so technologically daunting that the White House had compared it to putting a man on the moon.

The engineers determined to build Supercar included Charles Gray, the brilliant and quirky federal scientist who had dreamed of designing a Supercar ever since he was a teenager tinkering with engines in the back hills of Arkansas.

Also contributing was Francois Castaing, the renowned car designer who helped usher in the era of the SUV but who was now being asked to help undo the damage.

Championing the effort from the White House was Vice President Gore, who personally negotiated the Supercar agreement and then promoted the project for years—at times only when it was politically expedient.

Gore, White House documents show, struck a secret deal with the Big Three in 1993 that was highly favorable to the industry. If the automakers tried to build Supercar, Gore promised that the Clinton administration would back off its 1992 campaign promise of trying to force them to raise the average fuel economy of their cars from 27.5 to 40 miles per gallon by 2000. The automakers, who make more money on large vehicles than small ones, had opposed the 40-mile-per-gallon plan, saying it would greatly reduce their profits.

Tribune photo by Scott Strazzante

The average fuel economy for new U.S. passenger vehicles is the worst in 20 years, largely because of consumers' desire for gas-guzzling SUVs and pickup trucks.

The threat of higher fuel efficiency requirements was perhaps the most powerful weapon in the government's arsenal. Yet for almost a decade the government failed to use it, even as the industry stalled, fell behind and finally moved to kill Supercar.

Tinkering with engines

In many ways, the story of Supercar begins in rural Arkansas, in the tiny town of Fountain Hill, population 159. Back in the 1960s, the town was much like it is today: a loose collection of small farms, wooden shacks and mobile homes in the gently rolling hills just west of the Mississippi River and north of the Louisiana border. Many of the roads were unpaved, there were no traffic lights, and horses outnumbered people.

For teenagers growing up in Fountain Hill, there were few diversions. Boys spent much of their time hunting for squirrels and tinkering with engines. When they were old enough to drive, many souped up their cars and raced them on the back roads.

One of these boys was Charles Gray, a skinny teen with squinty eyes. The son of the local school superintendent, he was a straight-A student with an unusual grasp of science and math. "You know how you can look at kids and see that there's something special?" asks Mary Joyce Gifford, 70, a longtime school secretary. "You could tell he was a genius."

Like the other boys, Charles spent hours fiddling with engines. But instead of trying to make them more powerful, he tried to make them run farther on a gallon of gasoline.

His friends found his hobby strange, but Charles was intrigued by what he had read in a 4-H pamphlet: When gasoline was burned in an automobile engine it created a tremendous amount of energy, but only a small amount of that energy was used to turn the wheels and make the car go. Most of the energy was lost throughout the automobile—during engine idling or because of friction in the transmission, for example.

"I thought, 'What a waste. Someone should do something about that,' " he recalls.

At age 16, he set up a makeshift laboratory in an old water pump house in his back yard. Using a wheelbarrow, he hauled in a Chevy Impala engine and bolted it to a concrete post in the middle of the room.

He adjusted the carburetors, fixed the timing and played with the idle. The results were generally not successful. At times, his mother grew alarmed when she looked out the kitchen window and saw smoke drifting from the pump house.

But Charles Gray had found his lifelong passion.

After graduating No. 1 in his high school class, Gray moved four hours northeast to the campus of the University of Mississippi, where he finished at the top of his class in the college of engineering. He married his high school sweetheart, and in 1970 joined the newly created Environmental Protection Agency.

Over the next three decades, Gray developed a reputation as an energetic and quirky EPA scientist and administrator. He often talked in fits and starts, changing course in mid-sentence or baffling listeners by discussing two ideas at once or simply rambling on.

But he also was known as an intense and deceptively folksy regulator. Generally disliked by the auto industry for his unyielding stands on pollution, he played a leading role in the establishment of the first fuel economy standards in 1975 and the tightening of clean air rules in 1990.

Above all, he knew cars like few others.

That is why the White House called him in 1993.

An idea is born

Fresh off their election victory, Bill Clinton and Al Gore, two Baby Boomers who had vowed to "re-invent" government, started trumpeting technology as a way to combat some of America's toughest problems.

One of their ideas was for the government to conduct a massive research project with the Big Three to improve fuel efficiency. U.S. passenger vehicles were not getting any more mileage than they had eight years earlier, and the new administration was concerned that Mideast oil imports had doubled over that time and that global warming was becoming a household phrase.

The administration knew that if the U.S. fleet could improve just two miles per gallon, about 700,000 barrels of oil could be saved each day. But the White House was struggling to come up with a specific plan that would capture the public's imagination.

Henry Kelly of the White House's Office of Science and Technology Policy decided to telephone Gray, whom he had known since the 1970s when they collaborated on a book about the environment.

Gray told his old partner that the problem of fuel efficiency was relatively simple—and not much different than what he had learned from the 4-H literature as a teenager.

He now knew the numbers broke down this way:

Sixty-two percent of the energy that begins as gasoline in a car's fuel tank was lost as heat in the engine combustion process; 17 percent was lost to engine idling; 6 percent to the transmission; and 2 percent to accessories such as air-conditioning and power steering.

In the end, just 13 percent of the energy in the gas tank made the car go—and half of that was subsequently lost to wind and tire resistance.

Inventors had long demonstrated that these figures could be improved and that vehicles could achieve spectacular mileage. But these inventions were invariably little more than auto-show curiosities or one-seat contraptions.

One that captured media attention was the University of Saskatchewan's "Greased Gopher." Weighing less than 100 pounds, it had a steel-tube frame, bicycle wheels and a lawnmower engine. It got 2,199 miles per gallon.

Gray wondered: What about the best-selling cars on the road? Just how far could they go on a gallon?

Working out of his EPA laboratory in Ann Arbor, Mich., Gray began to pull together scientific data on some of the Big Three's top models: Ford Taurus, Chevy Lumina and Chrysler Concorde. Over the next few days, he and his staff pored over the information to learn more about the cars' aerodynamics, their weights, their engine efficiencies and their tire resistances.

They calculated how much energy could be saved in each of these areas and how much energy could be added to the mix if they could somehow capture the braking energy of each car. When brakes slow a vehicle, all of the energy of the car's motion is lost. Gray figured that most of that energy—80 percent—could be captured, stored and reused.

When he added it all up, he concluded that if the nation put its mind to it, it could build a mid-size, safe and affordable car that got 80 miles per gallon.

The White House loved the idea, particularly Gore, whom Clinton had tapped to take the White House lead on the effort.

Gore asked that a government team go to Detroit to see what the automakers thought of the idea.

Detroit, D.C. at odds

For decades, Detroit had been the country's industrial powerhouse, transforming the car into a national icon and reflecting, for better or for worse, America's signature values: self-reliance, competition, freedom.

The automakers defended their interests relentlessly, particularly when Washington demanded new rules on safety, pollution and fuel economy. Detroit complained that Washington was often seeking new regulations without considering whether the industry had the money or the technology to meet those standards.

But Washington thought Detroit was not trying hard enough—that it frequently claimed it could not meet new standards, then proved that it could.

The fiercest battles—and some of the most heated ever in Congress—were over fuel economy rules, established in the 1970s in the wake of the Arab oil embargo and the national energy crisis.

Almost overnight, the crisis reshaped America's way of life: Thermostats were dialed down to 68, the speed limit was dropped to 55 and skylines were dimmed. People who rarely thought about energy suddenly formed pre-dawn gas lines, added driving costs to their budgets and carpooled to work.

In Detroit, the automakers were caught flat-footed. Most of their cars were big and heavy, averaging 15 miles per gallon—far below the smaller Japanese imports.

"Before the oil shock, you couldn't give the Japanese cars away," recalls former GM executive Craig Marks. "The day after, you couldn't give away the big cars."

Detroit closed factories and laid off tens of thousands of workers. To save fuel, Congress passed the corporate average fuel economy laws, or CAFE, requiring manufacturers to nearly double the average mileage of their passenger cars to 27.5 miles per gallon by 1985.

The industry objected, saying it would force motorists into tiny, unsafe vehicles. But Detroit eventually found a way to cut car weight and meet the new standard without sacrificing safety. In the process, the industry became more competitive.

For the next eight years, from 1985 to 1992, when gas prices were relatively low, Congress did not require additional fuel economy for automobiles, and mileage figures remained flat.

Clinton raised the ire of the auto industry when he ran for president and advocated raising the standard to 40 miles per gallon by 2000—a dramatic increase that the carmakers said would cost thousands of jobs. Later in the campaign, Clinton softened his position, calling his idea merely a "goal" and not necessarily a proposed law.

Automakers were even more suspicious of Gore. In his 1992 book "Earth in the Balance," Gore called for eliminating the internal combustion engine in 25 years, saying the damage it caused the environment posed "a mortal threat to the security of every nation."

Now, President Clinton and Vice President Gore wanted a joint research project on fuel economy. Washington and Detroit had collaborated before—to develop high-tech car batteries, for example—but never on such a contentious issue.

And so far, the White House had not spelled out precisely what it wanted from the industry on this big research project.

Making the pitch

On May 18, 1993, a team of three government officials, including the EPA's Gray, left for what would be the first of several trips to Detroit to sell the Supercar idea.

Their first stop was Ford, where, before a packed conference room of engineers and executives, they made their pitch for an 80-mile-per-gallon car in 10 years.

The Ford officials were aghast. "They almost ran us out of the room," Gray recalls.

They said 80 miles per gallon was impossible—not in a family-size car and not at an affordable price. And even if they could do it, they worried that Congress might force them to mass produce the cars regardless of whether the automakers could make money on them.

At GM, the reaction was similar: interesting idea, but too difficult and too expensive.

Disappointed, government officials went to their final stop: Chrysler, the smallest of the Big Three and therefore the corporation with the most to gain from a joint R&D project.

There, the officials met Castaing, Chrysler's chief engineer.

Born in France, Castaing was widely admired as a charismatic, no-nonsense engineer who embraced challenges. He had designed race cars for the Renault Racing Organization in the 1970s, and,

AP file photo

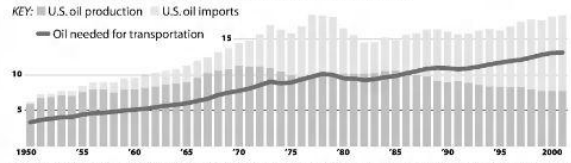
In 1973, cars line up at a New York gas station. Some of Congress' fiercest battles were over fuel economy rules, established in the wake of the Arab oil embargo and the national energy crisis.

PLEASE SEE FOLLOWING PAGE

The U.S. continues to rely on foreign oil to meet its transportation needs . . .

Beginning in 1986, the United States needed more oil for transportation than it produced, increasing the dependence on foreign oil.

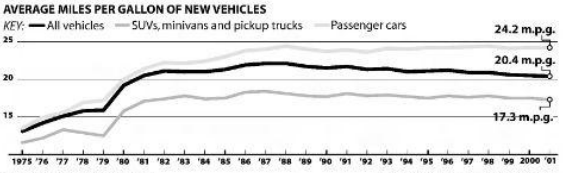
OIL PRODUCTION AND CONSUMPTION IN MILLIONS OF BARRELS PER DAY



. . . while the drive for higher gas mileage stalls

The average fuel economy of new vehicles on U.S. roads is at a 20-year low, largely because of an increasing market share of SUVs and pickup trucks, which are less fuel-efficient than passenger cars. The average takes into account the number of sales for each model.

AVERAGE MILES PER GALLON OF NEW VEHICLES



Sources: U.S. Department of Energy, Transportation Energy Data Book; "Light-duty automotive technology and fuel economy trends" report by the U.S. Environmental Protection Agency

Chicago Tribune/Haeyoun Park and Phil Gelb

SPECIAL REPORT: THE TANKING OF AN AMERICAN DREAM

AP file photo

Auto executives Robert Eaton of Chrysler (from left), John Smith of General Motors and Harold Poling of Ford talk with then-Vice President Al Gore during their first meeting in Washington. To Gore's right is John Gibbons, who was President Bill Clinton's science adviser.

CONTINUED FROM PREVIOUS PAGE

after joining American Motors Corp. in 1980, helped create the Jeep Cherokee and Grand Cherokee, popular vehicles that helped spark the SUV craze.

So indirectly, Castaing contributed to the very problem that a team of government officials was now asking him to help fix.

At the meeting, Castaing ordered all the policy analysts, lobbyists and corporate-types from the room. Only a handful of his best engineers could stay.

Castaing told the bewildered government officials that he was going to treat them like any other design team with a radical idea.

"Prove to me," he said, "that this 80-mile-per-gallon car is possible."

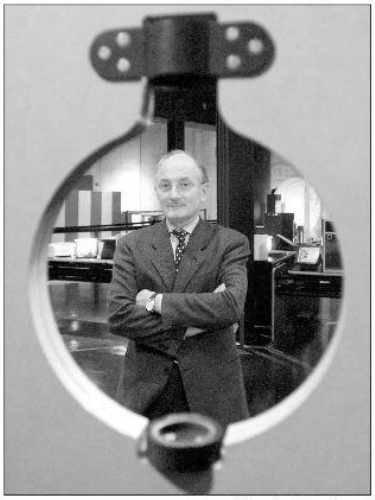
For the next three hours, the two sides scratched out calculations and equations on a large note board as Castaing and his engineers peppered the government officials with questions:

How do you know that for sure? Where does that number come from? Has anyone actually done that?

The EPA's Gray pushed reports around the table, threw slides on and off the overhead projector, answered questions as fast as they were asked.

When the meeting was over, the influential Frenchman was impressed.

Supercar would be nearly impossible to build, he said, but it was worth a shot.



Tribune photo by Scott Strazzante

Chrysler's Francois Castaing, a renowned car designer who helped usher in the era of SUVs, was asked to join the project.

New roadblocks

With Chrysler appearing to be on board, the talks with the Big Three automakers picked up steam. Over the next few weeks, drafts of a deal were exchanged, and lawyers signed off on key language.

White House aides, confident an agreement was near, started checking the schedules of Clinton and Gore in anticipation of holding a major press event, perhaps on July 4.

But in the halls of the Capitol, trouble was brewing.

John Dingell got wind of the Supercar idea and wrote to the White House to say he had some questions — 48 of them.

Gruff and intimidating, Dingell was the longtime Democratic congressman from Michigan and perhaps the auto industry's most ardent defender. At 6-foot-3, he towered over opponents and earned the reputation as one of the toughest lawmakers on Capitol Hill. As chairman of the House Energy and Commerce Committee, he oversaw the largest budget and staff of any House panel. A photograph of Earth hung in his staff's committee room, and people often said that it represented Dingell's domain.

The White House responded carefully to Dingell, knowing that he would have a major say over any funding for Supercar.

But Dingell's concerns did not abate.

"History is replete with the government screwing the industry," he told John Gibbons, Clinton's science adviser, according to Gibbons' notes of the telephone call.

Dingell said the White House was asking the Big Three for too much and offering too little, particularly in terms of protection against future regulation.

When Dingell voiced similar concerns to the Big Three, the automakers began to pull back on the Supercar plan, telling the White House they did not want to get in the middle of a fight between Dingell and the Clinton administration. Talks slowed considerably.

Over the next six weeks, White House aides struggled to assuage Dingell. They wrote letters to him, exchanged phone calls, and met with him at least once. Aides even decided to get the vice president to call Dingell on his birthday.

"Dingell wanted to make sure Detroit didn't get sideswiped by the federal government sweet-talking them into some research project and then turning it into a regulation," Gibbons recalls. "I said, 'Now, John, we're not going to do that.' "

Finally, on Aug. 13, the automakers submitted their version of a new draft proposal for Supercar. But missing were substantial portions that both sides had already agreed to. The White House was furious.

"In effect, much of the earlier months spent in good faith by government negotiators was wasted," an aide wrote to Gore.

The White House restored the deleted language, but the Big Three rejected the changes and requested a meeting with the vice president.

At 5 o'clock on Sept. 3, a Friday afternoon when temperatures in Washington approached 100 degrees and many federal workers were leaving early for the long Labor Day weekend, the Big Three CEOs—John Smith of GM, Harold Poling of Ford, and Robert Eaton of Chrysler—pulled up at the White House.

White House advisers leaned out of an office window across from the West Wing to catch a glimpse of the auto executives walking in. An hour later, the aides watched them walk out.

"They looked grim," one of the advisers, Henry Kelly, recalls, "and we rushed over to get debriefed on what happened."

Their suspicions were right: The meeting did not go well.

According to White House notes of the meeting, the CEOs would not budge on their refusal to try to build an 80-mile-per-gallon car.

Instead, Ford CEO Poling proposed that the automakers build a 40- to 55-mile-per-gallon sedan over the next three years—mileage about 1¼ to 2 times greater than that of the average car.

"That won't fly," Gore said, according to the notes of the meeting. "We need a goal on the other side of the divide."

"We're in agreement on everything except the goal," Poling reminded Gore.

Tribune photo by Scott Strazzante

EPA engineer Charles Gray (right) conceived the Supercar idea, then helped the White House sell the plan to the Big Three.

"The number must stretch beyond the threshold of what one can reasonably expect," Gore responded.

"Exactly," Chrysler CEO Eaton said. "But the 80-mile-per-gallon goal goes too far into the unknown."

With negotiations at a standstill, the CEOs thanked the vice president and said they would get back to him.

White House advisers went home that night thinking Supercar might be dead.

"We were convinced the whole thing had blown up," Kelly says.

Twisting arms for project

Charles Gray knew what was at stake. Never before, he thought, had the highest office in the land and the largest manufacturing industry in the country come so close to an agreement that could save so much fuel.

Unwilling to see the opportunity slip away, Gray decided on his own to do something that he thought might force industry's hand: He began making threats.

He started calling industry officials who understood his crucial regulatory power and warning that if they did not agree to the Supercar plan, he would vigorously push for stricter fuel economy rules.

"I said, 'I will dedicate myself and my staff will, too, to guaranteeing the most aggressive set of CAFE standards you could imagine,'" Gray recalls. He told them he would move from Michigan to Washington and "dedicate the next at least four years of my career to delivering on that promise."

Other government negotiators made similar calls. "There was a virtual hammer in the air, waving around," recalls Gibbons, the White House science adviser.

Shortly after these calls, the Big Three automakers notified the White House that they were willing to compromise but wanted to meet again with Gore.

A meeting was set for the following week. Aides, according to briefing papers, advised Gore not to waive the government's right to regulate the automakers. But he could assure them that if they agreed to Supercar, "it would not be in our interest to, and we will not, impose short-term fuel economy requirements that would be inconsistent with achievement of the long-term goal."

The Clinton administration position was clear: If it got Supercar, it would lay aside the "virtual hammer" of forced fuel economy.

At the meeting, the CEOs sat in Gore's office on a long couch facing a fireplace at the far end of the room. Gore sat in a chair nearby, with his usual Diet Coke on a small table. Over the CEOs' shoulders he could see a poster-size photograph of the planet Earth hanging on the wall.

The CEOs told Gore that they would agree to build an 80-mile-per-gallon car, but they wanted some wiggle room. They wanted the agreement to read "up to" 80 miles per gallon, according to Gibbons' notes of the meeting.

Gore said that was fine, provided that engineers set their sights on 80.

Next, the industry wanted some reassurances on fuel economy rules.

Chrysler CEO Eaton said the automakers would make some incremental improvements in fuel efficiency, but that they didn't want to be forced by law.

"We are prepared to be flexible on the interim stuff," Gore said.

The vice president then mentioned how he and Clinton indicated during the campaign that they wanted cars to average 40 miles per gallon by 2000.

"How do we back off?" he asked, according to notes of the meeting. Perhaps, he went on, "a shift away from such a number would be much aided by other actions, such as the partnership's progress."

In the end, Gore said the administration would back off its campaign promise as well as veto any legislation that tried to turn the 80-mile-per-gallon Supercar goal into law. In an interview with the Tribune, Gore says he believes he did not give up much in this trade-off. Congress, he felt, was not going to approve such a large increase anyway.

"It was a weak bargaining chip," he says.

The deal was sealed with a handshake, and Gore led the CEOs down to the Oval Office to inform the president.

"There were high fives," Kelly says, "and everybody was happy."

Shooting for the moon

Six days later, the Supercar project was announced to the public on the South Lawn of the White House.

The night before the event, Gray helped prepare press packets, while early the next morning other government and industry employees set up small displays of the latest in auto technology on the White House grounds. Back and forth they went, smiling, introducing themselves, lending one another a hand. When some of the workers from Detroit spotted Socks, the president's cat, they rushed over for photographs.

"We were actually behaving like a team for the first time," Kelly recalls.

About 200 attended the announcement, including members of Congress, the Big Three CEOs, and local schoolchildren brought in by the White House.

Afterward, at a background briefing, reporters repeatedly asked a senior administration official whether Supercar meant the White House was backing off its stated campaign goal for a 40-mile-per-gallon fuel economy law.

The official, speaking on the condition of anonymity, said the campaign pledge remained under consideration. The official did not reveal that the pledge had effectively been cast aside under the deal that Gore and the CEOs had struck just days earlier.

A few weeks later, a reception was held at the nearby National Air and Space Museum for the low-level government and industry scientists who would actually build Supercar. Many had toiled in obscurity for years. Now they were attending a Washington gala.

They milled about the Apollo 11 command module, watched the movie "The Blue Planet" and listened to a former astronaut recall how Apollo engineers had to reduce a computer the size of a refrigerator to the size of a breadbox. It seemed impossible, but they got the job done.

Many walked out that night inspired.

"I just had one expectation," Gray recalls. "We were going to be successful."

ON THE INTERNET

A special presentation featuring interactive graphics, video, photo galleries and additional features exclusive to the Internet.

- Find out the fuel efficiency of your car with a searchable database.
- Supercar definitions detailed in a glossary of terms.
- Learn about some of the project's personalities and their roles behind Supercar.
- Share your thoughts about the Supercar project in a message board.

Site launches Sunday at **chicagotribune.com/supercar**

The shifting nature of the automobile industry

1950s Cheap oil prices in the post-war auto boom increase Americans' desire for high-performance gas guzzlers. Producing more than 9.2 million vehicles in 1955, the U.S. controls about two-thirds of the world market.

The 1957 Chevrolet Bel Air

Source: Antique Automobile Club of America

1960s Detroit begins losing its industry dominance. Japan's influence remains small, but the country enjoys a 700 percent growth in production since the '50s. Smaller but more powerful cars are top U.S. sellers.

In 1964, Pontiac GTO gave birth to a generation of muscle cars.

1970s Japan accounts for more than half of U.S. imports. Chrysler Corp. barely escapes filing for bankruptcy. As a fuel shortage drives gas prices up, car buyers begin focusing on miles-per-gallon instead of miles-per-hour.

Toyota's lineup of small cars included the 1974 Corona.

1980s Japan emerges as the world's leading auto manufacturer. An increasing number of cars sold in the United States under domestic brand names are made abroad.

Ford introduces the Taurus in 1985 to save declining sales.

1990s Sports utility vehicles and pickup trucks sales soar. In 1995, the four top-selling vehicles in America are SUVs or pickup trucks. Manufacturers struggle to keep up with orders, and factories are refitted to make larger cars.

The 1993 Jeep Cherokee helped popularize SUV market. Chicago Tribune

TRIBUNE SPECIAL REPORT

THE TANKING OF AN AMERICAN DREAM

Second of a three-part series

Tribune photo by Scott Strazzante

EPA engineer Charles Gray test-drives one of his versions of Supercar in the agency's parking lot in Ann Arbor, Mich.

Battered from all sides, Supercar sputters along

Early versions of the fuel-efficient auto demonstrate ingenuity and progress, but the project is threatened by turf wars and unexpected competition

By Sam Roe
Tribune staff reporter

The garage door to the research facility creaked, groaned and lifted slowly, and two scientists in dark blue lab coats pushed a small black car to the center of the room.

They positioned the front wheels atop the two steel cylinders of a dynamometer, locked the back tires in place and clamped a 12-foot hose to the tailpipe.

Standing off to the side was the car's inventor, Charles Gray.

"We're going to make history today," he confidently told his colleagues.

The scientists slipped on their safety glasses and started the car's engine. Over the next 50 minutes its front wheels spun in place, starting, stopping, slowing and accelerating, as if on a treadmill.

When the test was over and the engine shut off, an engineer started crunching the computer data. Twenty-four hours later, he grinned widely as he handed the results to Gray: The car had achieved 60 miles per gallon.

It was a major breakthrough for Gray, who had dreamed of building a highly fuel-efficient car ever since he was a teenager tinkering with engines in the back hills of Arkansas. And it was a clear sign of progress for the nation's historic Supercar project, a multibillion-dollar research effort by the federal government and the U.S. auto industry to produce an 80-mile-per-gallon car.

But there were troubling signs as well. This experimental vehicle, built by Gray and his staff at the U.S. Environmental Protection Agency in Michigan, looked more like a mobile missile launcher than an automobile.

One 6-foot, torpedo-shaped nitrogen gas tank lay lengthwise in the middle of the car, and three smaller ones stood upright in the back seat. Two motors were wedged up front and one was crammed in the back. On both ends were a jumble of hoses and dozens of black, red and green wires.

America's 10-year Supercar project was nearly half over, and the effort was progressing much like this car: It was a marvel, but it also was a mess.

Never before had the U.S. government and the auto industry

PLEASE SEE **SUPERCAR,** PAGE 18

The series

SUNDAY
PART 1:
STARTING UP
The concept for an 80-mile-per-gallon car is born.

▶ MONDAY
PART 2:
SHIFTING INTO GEAR
After a slow start, engineers make impressive headway.

TUESDAY
PART 3:
HITTING THE BRAKES
70 miles per gallon—and then a dead stop.

SUPERCAR: All sides were unable to get on same page

CONTINUED FROM PAGE 1

embarked on such a huge research venture—and it showed.

The Supercar project was supposed to marshal all available resources, but it didn't. It was supposed to be a model of cooperation, but it wasn't.

"The hope had been that it would bring out the best and the brightest everywhere, but the reality was it brought out a lot of turf battles and fundamental differences," says Katherine Gold, an EPA official who worked on Supercar.

Launched with great fanfare by the Clinton administration in 1993, Supercar was supposed to address a variety of problems: rising oil imports, increased global warming concerns and a stagnating auto industry.

The White House and the Big Three automakers were going to set aside their differences and pool their research to build a family-size car with triple the standard fuel economy without sacrificing safety, comfort and price.

Bringing all sides together had been an excruciatingly difficult task, but that was nothing compared to actually having to design and build Supercar. And at least at the outset, no one had an inkling that an automaker in Japan would once again threaten to beat the Americans at their own game.

Igniting a partnership

The American automobile, in many ways, is already a technical triumph. It consists of 10,000 parts from dozens of industries, and the finished product runs on a fuel one-third the cost of Evian bottled water.

Yet the basic power source of this remarkable invention—the internal combustion engine—has varied little since the days of Henry Ford. Cars still run by burning a mixture of fuel and air inside a combustion chamber.

Supercar was setting out to perhaps change all that.

In theory, all ideas would be considered. But in reality, the Supercar scientists came to the project with years of experience about what might work and what might not.

They knew that Supercar probably would not be an electric car. Despite decades of research, batteries still were not powerful enough to run cars without frequent recharging.

They knew the car would have to be aerodynamic, but not too much so. The ideal shape—a jellybean with a fishlike tail—would be difficult to market.

And they knew the car likely would be a hybrid, or a vehicle with two sources of power. But what kinds? And at what cost?

These were the sorts of issues that some of the top scientists from industry and government faced when they first sat down together in the fall of 1993.

And the first thing they did was what leaders have grudgingly done for years when beginning a major undertaking: They formed committees.

Five senior government officials and industry executives would oversee Supercar, and two headquarters were chosen. Government officials would work out of the Commerce Department, in a large room overlooking the White House; industry officials would share an office in Southfield, Mich., in a glass tower 2 miles from Detroit.

They agreed to the goals and deadlines spelled out by the White House and the Big Three chief executive officers in the Supercar accord. Though not legally binding, the agreement was clear: By 1998, U.S. and industry officials would select the most promising technologies; by 2000, the Big Three would build at least one concept car; and by 2004, the automakers would unveil a production prototype, or a vehicle designed to be mass-produced and sold.

Finally, the effort would have a formal name: the Partnership for a New Generation of Vehicles, or PNGV.

Most people found the name a mouthful. So many just called it "Supercar."

Maverick sets out

Supercar had perhaps no greater champion than Gray, the quirky, passionate scientist at the EPA.

Known for his inventive mind, Arkansas drawl and purple dress shirts, Gray seldom was at a loss for words or short of ideas. He built his own home using recycled telephone poles, and when he visited Alaska, he returned with several buckets of mud because he was experimenting with a way to extract gold dust.

But fuel economy was his lifelong passion, and as director of advanced technology at the EPA's testing and research lab in Ann Arbor, Mich., he was perhaps the U.S. government's top expert on the topic.

He came up with the idea for an 80-mile-per-gallon Supercar in the first place, then spent months helping the White House sell the plan to the automakers.

But shortly after the effort was launched, Gray decided that he wouldn't simply conduct research for the program. He would build his own Supercar—and do it largely in secret.

Gray made that decision for a variety of reasons, some high-minded, some self-serving. He was convinced that some of his fellow Supercar leaders did not think it was possible to build an 80-mile-per-gallon car. Gray wanted to prove them wrong.

He also increasingly feared that the Japanese might steal an idea he had been toying with for an ultra-fuel-efficient automobile. With patents and royalties at stake for himself and his agency, why risk talking?

So Gray set out on his own, turning not to the new technologies of space probes and stealth bombers but to an old technology of farm machinery.

His Supercar idea was based on the science of hydraulics, the study of how energy is created by applying pressure to liquids. Some engineers derisively referred to hydraulics as "tractor technology" because it was used to power farm combines, bulldozers and cranes.

But Gray thought he might be able to apply it to cars with dramatic results.

He theorized that when a driver hit the brakes, the force of the car slowing down could be captured by small pumps near the tires. The pumps could then push fluid into a large steel tank containing nitrogen gas. When the driver hit the gas pedal, the compressed nitrogen could be released, shooting the fluid out with such force that it could be used to help power the car.

A normal engine still would be needed to do most of the work, but Gray figured that by capturing 60 percent of the braking energy, the motor could be small and fuel-efficient.

The auto industry had explored this idea in the 1980s but abandoned it because the system proved too bulky. Gray found that he could shrink the large steel tanks somewhat if he removed the long piston inside and replaced it with a sausage-shaped rubber bladder that did the same job.

But Gray soon realized that energy in the form of heat was escaping from the rubber bladder. If only something could be put inside the bladder to retain the heat without adding any weight.

EPA engineer Jim Bryson found a supply store in nearby Kalamazoo that could cut up small pieces of seat-cushion foam for the scientists. He ordered 85,000 pea-size cubes at 2 cents apiece, or $1,700.

When the large box of foam arrived, EPA staffers told an engineering intern from the nearby University of Michigan to climb up on a metal storage rack. Over the next two weeks, the intern used a funnel and a thin metal rod to poke the pieces of foam down a nozzle hole at the end of the nitrogen tank and into the rubber bladder.

When Gray thought enough foam was inside the bladder, he tested his theory. Sure enough, the foam reduced the energy loss by 50 percent.

Finally, the bulky tanks could be reduced to a more manageable size.

Toyota is rebuffed

Even though Supercar was billed as an equal partnership between government and industry, the automakers were the ones officially in charge of building the vehicle, and they would be calling most of the shots.

Detroit essentially would decide what it would look like and how it would be powered. The government's role would be as researcher and adviser, opening up its weapons and energy labs and sharing any useful scientific work.

Each company assigned five to 20 engineers to Supercar. As the effort progressed, more were added. Several technical teams, consisting of both Big Three and government engineers, started meeting weekly in the Detroit area to address the scientific roadblocks.

One team studied how to make batteries more powerful. Another looked at the long-range potential of hydrogen fuel cells. Another focused on gas turbines—similar to the huge engines on the wings of commercial jets.

At first, the Big Three considered combining resources to build a single Supercar. But a year into the program, the automakers, with the blessing of their government partners, decided that each company would build its own car.

Fiercely competitive with each other, the companies simply did not want to share their most promising technologies and design strategies. "You just don't give those insights away," says Ron York, former Supercar director at GM.

The Supercar team had an impressive roster of players in Washington, Detroit and Ann Arbor, but missing was the group that pioneered fuel-efficient cars: the Japanese automakers.

Shortly after the Supercar project was launched in 1993, Toyota Motor Corp., Japan's biggest automaker, asked the U.S. government if it could join the effort. The United States said no, that Supercar was a project only for GM, Ford and Chrysler. A major goal, the government said, was to improve the competitiveness of the U.S. auto industry. Toyota was one of the companies Supercar was trying to beat.

Some Toyota officials today downplay that rejection, saying Supercar in no way affected company decisions. But others at Toyota say that being excluded clearly motivated the automaker.

"There was a real good chance they could succeed and put us at a competitive disadvantage," recalls Michael Love, a Toyota regulatory affairs manager.

About the same time the Supercar project was announced, Toyota started designing its own ultra-efficient car, company officials say. The goal was not as bold as the 80-mile-per-gallon Supercar, but it still was ambitious: 55 miles per gallon, or twice the mileage of the average car.

Work was conducted under strict secrecy at Toyota's Higashi-Fuji Technical Center, a sprawling research complex at the base of Mt. Fuji in Japan. Twenty-hour days were not uncommon for engineers there.

Early in the Supercar project, the White House's Office of Science and Technology Policy wanted to know the status of Japanese research into high-mileage cars. Associate Director Lionel Johns turned to the one agency he felt could provide a detailed answer: the CIA.

Johns says he did not want CIA agents to spy on the Japanese auto industry, but rather to use their language and technical skills to review publicly available Japanese scientific journals.

The CIA subsequently briefed

PLEASE SEE FOLLOWING PAGE

SPECIAL REPORT: THE TANKING OF AN AMERICAN DREAM

Gray's Supercar: A new take on an old technology

While the Big Three automakers were developing diesel-electric Supercars, Charles Gray and his staff at the U.S. Environmental Protection Agency were focusing on a technology long used in farm machinery: hydraulic power. Working with his own innovations and cast-off parts, Gray set out to build an 80-mile-per-gallon automobile.

Stretching a gallon of gas

Gray aimed to get 80 miles per gallon by using stored energy and, at times, running the car with the engine off. The 22-m.p.g. figure is based on city driving.

Powering with hydraulics

Hydraulic fluid flows between two high-pressure tanks and one low-pressure tank called accumulators. Pump motors convert the pressure from the fluid into energy that the car can use. The engine does not turn on until the tanks run out of energy.

Storing energy

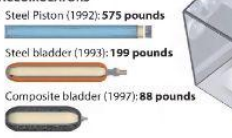
Three accumulators contain hydraulic fluid and a rubber bladder filled with nitrogen gas.

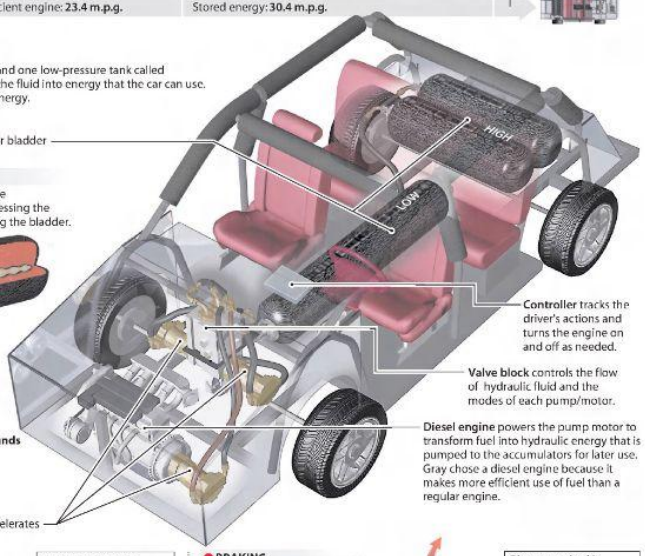
ACCELERATING
Nitrogen gas expands the bladder and fluid is shot out at high pressure to power the car.

BRAKING
Fluid is returned to the accumulators, compressing the nitrogen and shrinking the bladder.

EVOLUTION OF THE ACCUMULATORS

Gray's earlier designs proved impractical because of the immense weight of the accumulators. The latest version uses tanks made of lightweight carbon composite.

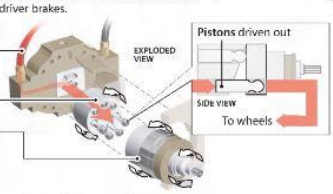




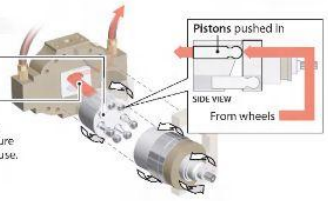
Converting energy

Three pump/motors act as a motor when the driver accelerates and as a pump when the driver brakes.

ACCELERATING
High-pressure fluid flows into the pump.
Pistons are pushed out.
This spins the drive shaft, creating mechanical energy that the car can use to turn the wheels.



BRAKING
Energy from the wheels pushes the pistons in.
This converts the energy into fluid pressure and pumps it back to the high-pressure accumulators for later use.



Comparing the cycles of operation

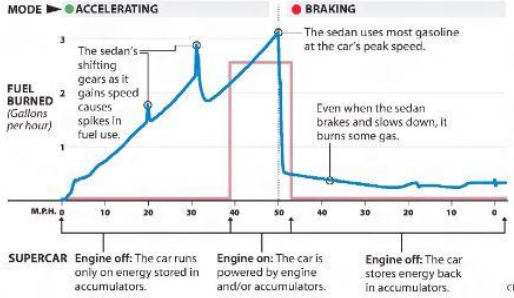
FAMILY SEDAN

Most cars derive all their driving power from gasoline.

1. When the driver accelerates, fuel is sent to the engine, burned and converted into energy that the car uses.
2. The engine turns a transmission, which sends energy to the drive shaft.
3. The drive shaft transfers the power to the axle.
4. The axle connects the drive shaft to the wheels, propelling the car.

FUEL USE

This engine map illustrates the use of fuel for both kinds of cars during a 70-second cycle in which the car accelerates from 0 m.p.g. to 50 m.p.g., then immediately decelerates to a stop.



THE BIG THREE HYBRIDS

DaimlerChrysler, Ford Motor Co., and General Motors took a different approach with their versions of the Supercar. All three used diesel-electric hybrid systems.

1. An electric motor starts the car and powers it during low-speed driving.
2. The engine turns on when extra power is needed for higher speed.
3. The electric motor and battery capture braking energy and reuse it to power accessories and provide a boost during hard acceleration.

Sources: Charles Gray, Jeff Alson, Tony Tesoriero and James Bryson of the U.S. Environmental Protection Agency, Advanced Technology Division; howstuffworks.com

Chicago Tribune / Haeyoun Park and Phil Gelb

Knight Ridder/Tribune photo by Chuck Kennedy

The powerful Rep. John Dingell (D-Mich.) was reluctant to help Supercar officials secure additional funding for the project. "I'm supposed to be a skeptic," he said.

CONTINUED FROM PREVIOUS PAGE

a small group of Supercar officials at least twice, but project leaders came away disappointed.

"We kind of looked at each other like, 'If you read the newspaper you would have learned the same thing,' " recalls Rob Chapman, a former Commerce Department official who attended one briefing.

None of the CIA information, Supercar officials say, suggested that the Japanese were building an ultra-efficient car.

Getting cold shoulder

At first glance, Mary Good was not a likely choice to be the government's Supercar chief. The auto industry was largely a man's world, and Good was a grandmother with gray hair and large glasses.

But she also was a respected chemist and a veteran research executive who was known for being tough and direct.

When she was tapped by the White House in 1993 to be the Commerce Department's technology undersecretary and, consequently, the Supercar chief, one of her first jobs was try to secure more federal money for the effort.

And there she had a problem: Because Supercar was created by the White House and not Congress, the project had no champions on Capitol Hill who could leverage more funding.

Furthermore, the project did not have its own budget. Instead, existing research programs at seven federal agencies were supposed to be shifted to Supercar. Many of those projects were approved by Congress with strict rules attached, and Supercar could not easily claim them as its own. That left Good to try to win more money for programs already in place and important to Supercar.

So she marched up to Capitol Hill, running up against one of the last people she wanted to see: John Dingell, the surly Michigan congressman and the chairman of the House Energy and Commerce Committee, which controlled a significant portion of Supercar's potential funding.

Dingell was skeptical at best of Supercar. He was concerned that the project might be a back-door attempt by the government to get Detroit to prove it could build more efficient cars so regulators could argue for tougher fuel-economy rules—a point he made perfectly clear when Good came to his office.

She argued that Supercar would help, not hurt, the automakers and that the Big Three needed advanced technologies to complete against the Japanese. But she felt Dingell wasn't listening. "His approach to fixing things is to attack you," she recalls.

Dingell saw it differently: "What am I supposed to do when bureaucrats come up to talk to me? Am I supposed to make nice or am I supposed to make them earn their salary? I'm supposed to be a skeptic. I'm not supposed to be running around buying Brooklyn bridges or goldbricks on the behalf of the taxpayers."

Good usually left Capitol Hill discouraged after her meetings with Dingell, but Dingell felt Supercar got enough.

The government ended up investing about $170 million in research projects toward Supercar each year; the Big Three reported investing a similar amount, with their share rising as the actual building of Supercar progressed.

To help her negotiate the funding headaches and Washington bureaucracy, Good hired Chapman, a former colleague at AlliedSignal Inc. who had helped oversee government contracts for the auto parts and aerospace giant.

Chapman began calling officials at NASA and the Defense Department, two agencies that the White House had promised would provide key technologies for Supercar, such as lightweight materials, but which were contributing virtually nothing.

NASA repeatedly told Chapman it could not justify to Congress spending money on a commercial car. The Defense Department, he recalls, said its research was secret—a claim that Chapman, a former Pentagon official himself, scoffed at.

"The secrecy was just a phony excuse for just not collaborating," he says.

Scrounging in junkyard

By 1997, four years into the Supercar project, Gray was convinced that he finally had overcome the technical obstacles to his hydraulics plan. Now he was ready to start building his Supercar.

He wanted it to resemble the popular Ford Taurus, but he didn't want Ford to know what he was up to. So he had his staff scrounge around for the necessary parts.

Technician Joe Hurley began calling and visiting local junkyards, looking for Taurus seats and a dashboard. He tracked down four blue seats ($600) and a blue dashboard ($250) at Fox Auto Parts, 15 miles out of town. For brakes, he went to a local Ford dealership and for shocks, Murray's Discount Auto Store.

Tribune photo by Scott Strazzante

Confrontations with Rep. Dingell often left Supercar chief Mary Good dejected. "His approach to fixing things is to attack you."

Occasionally, Gray's supervisors called from Washington. They had been hearing promising news about other auto technologies but nothing about Gray's hydraulic concept.

"Are we going to be embarrassed?" they asked. "Are you sure you're going in the right direction?"

Gray told them he was sure. And when he placed his finished car on the dynamometer and it registered 60 miles per gallon, he felt he had compelling proof that he was heading in the right direction.

It finally was time to show off his work. He eagerly called a select group of Supercar industry and government officials and invited them to the EPA. More than a dozen took him up on the offer.

Before he showed them his work, he requested that they not reveal what they saw to outsiders. The guests slowly walked around the car, leaning in here and there. They were impressed by the gas mileage but troubled by the car's bulk, particularly the nitrogen gas tanks in the back seat.

"This is just a test platform," Gray told them.

They also said the diesel engine took up the entire trunk space.

"We can package the engine in the front," Gray responded.

And they thought the car was noisy and that it visibly shook when turned on and off.

"We can fix that," Gray said.

Refusing to share

In its first few years, Supercar was touted repeatedly as a model of cooperation that was making solid progress.

Chrysler CEO Robert Eaton called it a "sterling example" of government and industry collaboration. Vice President Al Gore, in a ceremony in which he gave medals to a handful of Supercar engineers, indicated the program was ahead of schedule.

But in truth, the project was neither ahead of schedule nor a standard of cooperation.

Turf wars were breaking out, with Gray building his own car and the Big Three pursuing theirs. Energy Department officials thought they could run the program better than the Commerce Department, and Commerce officials thought Energy officials weren't fully sharing information.

Moreover, project leaders repeatedly were ignoring recommendations by a panel of independent experts from the National Research Council, an arm of the National Academy of Sciences. The panel reviewed Supercar's progress and made recommendations in annual reports.

For example, Supercar officials took more than two years to conduct a study that the review panel thought should have been done immediately. Called a "systems analysis," the study was to help scientists determine what kinds of changes would be needed to make a family sedan achieve 80 miles per gallon.

But the Big Three argued against the study, saying each company already had such analyses, according to government Supercar officials. Yet the automakers refused to share the results with their government partners, saying they were company secrets.

"We kept saying, 'It doesn't matter whether you think that is proprietary or not; it's got to be done,' " recalls Craig Marks, a member of the review panel.

Eventually, an outside company was hired to do the work. But by then, more than two years had passed.

And soon, at the end of 1997, it was decision time: Project leaders had to pick the most promising technologies for Supercar. It was the first formal deadline in the program and perhaps the biggest decision of the effort.

Despite all the talk about hydrogen fuel cells, ultracapacitors and other space-age technologies, project leaders concluded that the most promising technology for an 80-mile-per-gallon car was a diesel engine.

Though diesels were about 30 percent more fuel-efficient than gasoline engines, they also were notoriously loud, smelly and a major contributor to smog.

But given the time constraints, a diesel hybrid—a half-diesel, half-electric car—was the best shot to achieve the mileage goal, Supercar officials decided.

The diesel decision was largely the automakers' call. They were the ones officially building Supercar, and they told their government partners that diesels were their choice. Though some government officials worried about the emissions, they acquiesced.

Commerce's Good had to convince Gore that diesels were a proper choice and that scientists would make them cleaner. "This is not your grandfather's diesel," she recalls telling him.

But Supercar officials were low-key about the diesel decision. They decided not to hold a big news conference or celebration as they had with previous Supercar milestones.

Instead, they sent out press releases to a handful of media outlets. They did not use the word "diesel" in their announcement, but rather broader terminology, such as "hybrid-electric vehicle drive."

The low-key strategy worked. The diesel decision received virtually no media coverage.

Competition from Tokyo

While Supercar officials in Washington worried about their public-relations predicament, an even more serious problem was unfolding on the other side of the globe.

At the 1997 Tokyo Motor Show, the world's carmakers rolled out their latest models, with U.S. manufacturers showing off sport-utility vehicles and sports cars.

But Japanese carmaker Toyota stole the spotlight by unveiling the car it had been working on since the American Supercar effort began: the Prius, a highly fuel-efficient gas-electric hybrid. At low speeds, it ran on batteries; as it accelerated, a gasoline engine took over while simultaneously recharging the batteries. It did not need to be plugged in at the end of the day like electric cars.

Many engineers in the Supercar project were stunned.

The Prius was not just another dreamy concept car. It was a four-door sedan, about the size of a Corolla, that was ready for production. That made Toyota the first automaker to bring a hybrid car to the mass market.

The company said it would start selling the Prius in two months—the same time world leaders would be gathering in nearby Kyoto to discuss how to solve global warming.

Supercar officials began to wonder if the Japanese automakers would clobber their American counterparts with their fuel-efficient cars like they did during the oil shocks in the 1970s.

"It was like, 'Oh, no! Here they go again,' " recalls Chapman, the former Commerce Department official.

The U.S. automakers were impressed by the Prius' technology, but they downplayed the vehicle's significance. They said Supercar would be larger and achieve far better mileage—80 miles per gallon compared with the Prius' 52.

Plus, they felt the Japanese car did not have the power Americans demanded. GM's Ron York test-drove one on the Michigan highways and walked away unimpressed. "I had an uncomfortable feeling I was going to become a hood ornament on a Mack truck," he recalls.

Still, it was clear: The Japanese had accomplished, to a large degree, what the Americans still were trying to do.

A new sense of urgency

At Argonne National Laboratory, near the Chicago suburb of Lemont, Supercar engineers began dissecting the Prius to see what they could learn. At one point, they pulled back the carpet on the front passenger side and found a curious metal panel.

Engineer Michael Duoba immediately called supervisor Bob Larsen. "You've got to come down here and look at this," he said.

Under the panel was a laptop-size computer connected to six smaller computers throughout the car. The engineers had never seen anything like it—a central brain regulating both the electric and gasoline motors. It was a design, they thought, that could be valuable to Supercar.

News of the Prius seemed to rouse the government and industry Supercar engineers. They started to become more cooperative, focused and receptive to advice from the project's outside review panel.

In fact, more progress was made in the following year than in any previous year, the reviewers concluded in their annual report. The Big Three stepped up work on their concept Supercars, and advances were made in cleaning up diesels.

At the EPA lab in Michigan, Charles Gray was also making headway.

He improved his car by removing excess wires and hoses and further shrinking the nitrogen gas tanks, now neatly tucked in the trunk instead of standing upright in the backseat area. His car's main power source was a diesel engine, as Gray, like the Big Three, thought that was the best bet to reach 80 miles per gallon.

Gray started pitching his invention to each of the Big Three automakers in hopes that one might sign a contract with the EPA to possibly commercialize his work. Industry officials remained skeptical of his car and wanted a test drive.

The EPA did not have a test track, so officials from each of the Big Three drove the dune buggy-like car around the EPA's parking lot. Up and down they motored, slamming on the brakes, flooring the accelerator, wheeling around corners. After one industry group left, EPA engineers installed a brake pedal on the passenger side so they could slow down aggressive drivers.

Another time, a GM official hit the brakes and gas in such quick succession that the drive shaft—the metal rod connecting the front wheels to the gearbox—snapped in half, and the car had to be pushed back inside.

But that was a good sign. That meant Gray's car had some power.

White House advisers also were impressed. After they drove the car in the summer of 1999, they informed President Bill Clinton of the progress in a weekly briefing. Clinton underlined portions of the briefing and wrote "Great!" in the margin.

With 2000 approaching, it appeared that the Supercar project might actually have a chance to succeed.

Tribune photo by Scott Strazzante

Japan's Toyota was the first automaker to bring a hybrid car, the Prius, to the mass market.

ON THE INTERNET

A special presentation featuring interactive graphics, video, photo galleries and additional features exclusive to the Internet.

- Find out the fuel efficiency of your car with a searchable database.
- How the Supercar engine compares to a typical sedan.
- Learn about some of the project's personalities and their roles behind Supercar.
- Share your thoughts about the Supercar project in a message board.

chicagotribune.com/supercar

TRIBUNE SPECIAL REPORT

THE TANKING OF AN AMERICAN DREAM

Third of a three-part series

New York Times photo file photo

In 2000, Vice President Al Gore touts a Supercar milestone: concept cars from the Big Three automakers. But this would prove to be the final hurrah for the project.

Political obstacle course proves fatal for Supercar

As the automakers touted their concept cars, they privately maneuvered to kill the project.

By Sam Roe
Tribune staff reporter

Sleek and shiny, lightweight and aerodynamic, the three cars – one gold, one silver and one blue – made a distinct impression, at once vaguely familiar but also jarringly new.

One employed tiny video cameras in place of rearview mirrors. Another had vents on the front grill that popped up only when the engine needed air. The third used the braking energy to help power the radio and headlights.

Most important, all got great gas mileage: more than 70 miles per gallon.

A crowd of 300 dignitaries — congressmen and Cabinet members, scientists and lobbyists — gathered this March morning at a Washington conference center to celebrate the cars' unveiling. When Vice President Al Gore arrived, Bachman-Turner Overdrive's "Takin' Care of Business" blared on the sound system.

With cameras flashing, Gore peered into the windows of the first car, admired the styling of the second and kicked the tires of the third.

Then he turned to the audience. The concept cars before them, he said, represented a major milestone in America's historic Supercar project, the multibillion-dollar effort by the U.S. government and the auto industry to build an 80-mile-per-gallon family-size car. The cars not only were great technical achievements, he said, but they also marked a giant step forward in the nation's long battle to cut air pollution and to ease its reliance on foreign oil.

"This," he told the crowd, "is truly

PLEASE SEE **SUPERCAR,** PAGE 22

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SPECIAL REPORT: THE TANKING OF AN AMERICAN DREAM

Tribune photos by Scott Strazzante

EPA engineer Charles Gray, shown working in his Michigan home, pleaded with the government not to allow the Big Three automakers to back out of the Supercar agreement.

SUPERCAR: Execs feared high costs of production

CONTINUED FROM PAGE 1

a mountaintop moment for America."

In the spring of 2000, by all outward appearances, Supercar was perfectly on track. The Big Three automakers — Ford, General Motors and DaimlerChrysler — were touting their concept cars, politicians were jockeying for credit and the engineers in the trenches were congratulating one another on a job well done.

But behind the scenes, a far different story was unfolding.

The Big Three automakers were privately telling their government partners that they wanted to kill Supercar, even though four years remained in the 10-year project and the companies had not put a single highly fuel-efficient car in the showroom.

Government officials were willing to consider industry's concerns, but not during this critical election year, when Gore, the most visible champion of Supercar, was running for president.

Even Charles Gray, the federal scientist who had tirelessly fought for the project at the outset, was increasingly angering his fellow Supercar colleagues. He was building his own vehicle — a fourth Supercar — and now was refusing to tell many officials what he was up to. More and more they wondered where his loyalties lay.

So as the curtain rose on the final act of the Supercar saga, and as officials publicly celebrated and privately schemed, Supercar was facing the most difficult and perilous part of its journey.

Cost becomes issue

More than a dozen engineers at each of the Big Three companies had worked feverishly to put the finishing touches on their concept Supercars.

Ford engineers conducted last-minute tests of their Supercar at their proving grounds in Dearborn, Mich., while engineers from DaimlerChrysler — the successor to Chrysler — frantically called suppliers for needed parts. "There were a lot of guys missing sleep," recalls Gerald Cilibraise, engineer for DaimlerChrysler.

Speed was of the essence, particularly because the Japanese had already unveiled and started selling their own ultra-fuel-efficient car: the 52-mile-per-gallon Toyota Prius.

But while the engineers in the back shop were putting in long hours on the concept cars, executives at the companies were working on an entirely different goal.

The automakers told their government partners that they were willing to finish the concept cars, but they did not want to work toward the final milestone: produce by 2004 an 80-m.p.g. production prototype, or a car that could be mass-produced in a few more years, approximately 2007.

The problem, they said, wasn't meeting Supercar's 80-m.p.g. goal. GM's concept car achieved 80 while Ford's and DaimlerChrysler's got 72. All were diesel-electric hybrids — an electric motor and a diesel-fueled engine working in tandem.

The problem was cost. According to government and industry officials, the automakers increasingly felt that they could not mass-produce Supercar at a price consumers would be willing to pay.

GM and Ford would not reveal how much their Supercar might cost if put in showrooms, but Chrysler publicly stated that its car would be $7,500 more than a conventional auto.

Some government officials thought that was not too high, especially with four years remaining in the project to whittle down costs.

"They were within striking range," recalls Gary Bachula, a former top Supercar official in the Commerce Department.

But the automakers argued that to go forward would require each company to make a huge investment.

The concept Supercars had been relatively inexpensive — about $5 million to $30 million apiece — as the goal was simply to prove that it was technically possible to achieve 80 miles per gallon.

But production prototypes were a significantly different undertaking. Those cars needed to show that they could be mass-produced, requiring the companies to spend hundreds of millions of dollars to retool assembly lines.

The automakers did not want to make that investment for a product they weren't sure was going to sell — particularly now that sport-utility vehicles and pickup trucks were the most popular passenger vehicles in the nation, with sales in the hundreds of thousands per year.

"It wasn't going to be the best use of resources," recalls Mike Schwarz, a Ford research director.

Knowing that the agreement to build Supercar was not a binding contract, government officials responded by saying that they would consider addressing the industry's concerns.

"Our constant message to industry was: We hear you. We understand what you're saying," recalls John Sargent, the government's Supercar director during this period. "We don't want you to waste a lot of money. There will be an opportunity to renegotiate the whole thing — after the election. Hold your fire."

Gore was running for president, and administration officials thought killing Supercar might provide his opponent, Texas Gov. George W. Bush, with ammunition. For seven years, Supercar had been a centerpiece of the Clinton-Gore administration's energy and environmental policies.

And Gore had been personally involved. He negotiated the Supercar agreement between the White House and the Big Three in 1993, and over the next several years hosted receptions for Supercar scientists at his vice presidential mansion and publicly hailed the project as a success.

During the 2000 campaign, he cited the project as an example of what he was doing to reduce oil imports and make businesses more competitive. He even vowed to "intensify" the effort.

When Gray, a top official at the U.S. Environmental Protection Agency, heard through his industry and government contacts that Detroit wanted to renege on the Supercar deal, he was deeply troubled.

In his 30 years as an EPA researcher and administrator, he had heard these arguments from the automakers before: They frequently said they couldn't achieve certain goals, only to prove under the threat of penalty that they could.

He pleaded with his government colleagues to not let the automakers off the hook.

"The country has invested all this time and money," he told them. "We should follow through."

But in some people's eyes, Gray himself was becoming part of the problem.

Secrecy irks many

Gray once had been the driving force behind Supercar, having conducted the studies that produced the 80-m.p.g. idea.

But after the project was launched, Gray felt that some of his fellow Supercar leaders in government and industry were not fully committed to the goal.

So he struck out on his own. For the last few years he and his staff of 13 engineers at the EPA in Ann Arbor, Mich., had been building their own Supercar. Increasingly, he was doing so in secret, which angered many project leaders in the government and industry. They knew he was building a hydraulic car but little beyond that.

"We got in shouting matches over this," recalls Rob Chapman, a Supercar official in the Commerce Department. "I said: 'Just describe it in general. In general, what the hell are you doing?' And he wouldn't say."

It wasn't that Gray was naturally combative. Those who knew the Arkansas native described him as unfailingly polite and gentlemanly. An elder in the Evangelical Presbyterian Church, he knew the EPA's night cleaning staff by name and rarely went to work on weekends, reserving that time for meditation and his wife, Judy.

But when it came to his scientific ideas, Gray had a bravado that rankled many.

Supercar officials likened him to a bratty kid, gleefully boasting that he knew the answer to the Supercar challenge but that he couldn't say what it was.

At one point, an independent panel of experts reviewing Supercar's progress called Gray before the committee to get to the bottom of the issue.

For an hour and a half, they grilled him. And for an hour and a half, Gray dodged their questions.

"We didn't know any more than when we did when we started," recalls Craig Marks, a member of the National Research Council panel, which annually reviewed Supercar. Panel members, he said, were upset. "They felt they had been given a snow job."

Initially, Gray's motivation for secretly inventing his own car was to prove that his idea of an 80-m.p.g. vehicle was possible, in case anyone in the Supercar effort claimed that it was not.

But by 2000, Gray was being secretive for another reason. He had signed a confidentiality agreement with Ford to develop his hydraulic invention. Under the contract, Ford and the EPA would split some costs on future lab work.

Such contracts were common between industry and federal labs but rare in the Supercar project, which was supposed to encourage agencies to help all of the Big Three automakers, not just one.

Because Gray was still technically part of the Supercar effort, spending millions of Supercar dollars given to the EPA, some felt he shouldn't aid one company and not another.

"I think most everyone found that sort of distasteful," recalls Bernard Robertson, a senior vice president at DaimlerChrysler.

Moreover, Gray was collecting several patents on the work — patents that could lead to thousands of dollars in royalties for him personally and his EPA facility.

Robertson says industry officials wanted to complain but decided to let it go. Gray was an influential EPA administrator, and the EPA was a powerful regulator. "You certainly don't want to go out of your way to make enemies," Robertson says.

Gray felt he had done nothing wrong. He had shown his work to all of the automakers, giving each a chance to capitalize on his invention. If one firm was interested in using his work to save fuel for the nation, what was wrong with that?

His hydraulic car had come a long way since the days when four bulky torpedo-shaped nitrogen tanks made it look like a mobile missile launcher. Now it looked much more like a car, with the nitrogen tanks shrunk to the size of duffel bags and made of a lightweight carbon-composite material instead of steel.

But he still felt his invention wasn't fast enough, so he decided to add yet another small motor to the back of the car. The extra motor took up valuable luggage space and would drop the car's fuel economy from 70 miles per gallon to 68, but Gray would worry about that later.

He tested his more powerful Supercar in the EPA parking lot, where, on a 70-yard straightway, he floored the gas and raced straight at a chain-link fence, slamming on the brakes at the last second and careering to the left.

The car accomplished 0 to 60 in 8 seconds — faster than some sedans.

His car, he thought, would be the biggest breakthrough in automobiles since the days of Henry Ford.

Hanging in the balance

That fall, Gray sat in his living room with his wife and watched the presidential election returns on television.

He knew what was at stake: If Al Gore won, Supercar would likely remain a high-profile project and perhaps even grow. If George Bush won, the effort might be curtailed, as he generally favored big business.

When the networks predicted Gore the winner in Florida, Gray went to bed, thinking that the vice president had won. It wasn't until five weeks later that Gray and the rest of the nation learned that Bush would actually become the 43rd president.

Gray didn't wait for Bush and Vice President Dick Cheney, both former oilmen, to start eliminating energy efficiency programs. He and his staff, he recalls, started changing the names of certain EPA programs to mask work being done under Supercar. He also speeded up work on his invention.

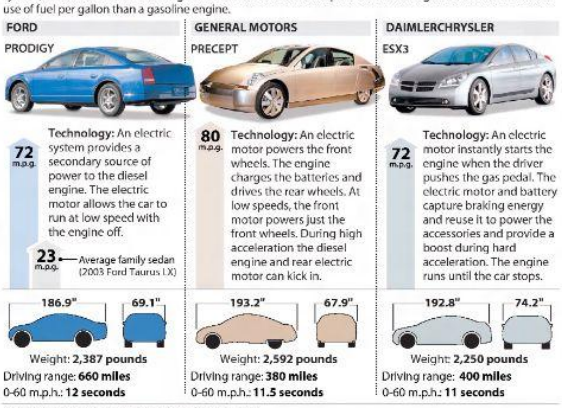
When Bush took office, one of the first items on his agenda was energy. California was experiencing its worst electricity shortage since World War II. Fears grew as residents experienced blackouts, and power was interrupted to schools, businesses and hospitals.

The new president tapped Cheney to head an energy task force and to quickly devise a long-term national energy policy. Over the next three months, in early 2001, numerous closed-door meetings were held in Washington among administration officials and industry executives, including auto representatives.

One Energy Department document shows that GM sent a po-

Big Three concept cars run on diesel-electric systems

In 2000, the Big Three automakers each unveiled a five-seat family sedan that uses a diesel-electric hybrid system, which relies on a diesel engine and an electric motor for power. A diesel engine makes more efficient use of fuel per gallon than a gasoline engine.



AVERAGE FAMILY SEDAN (2003 Ford Taurus LX)
Width: 73" Length: 197.6" Weight: 3,336 pounds Driving range: 250 miles 0-60 m.p.h.: 8.2 seconds

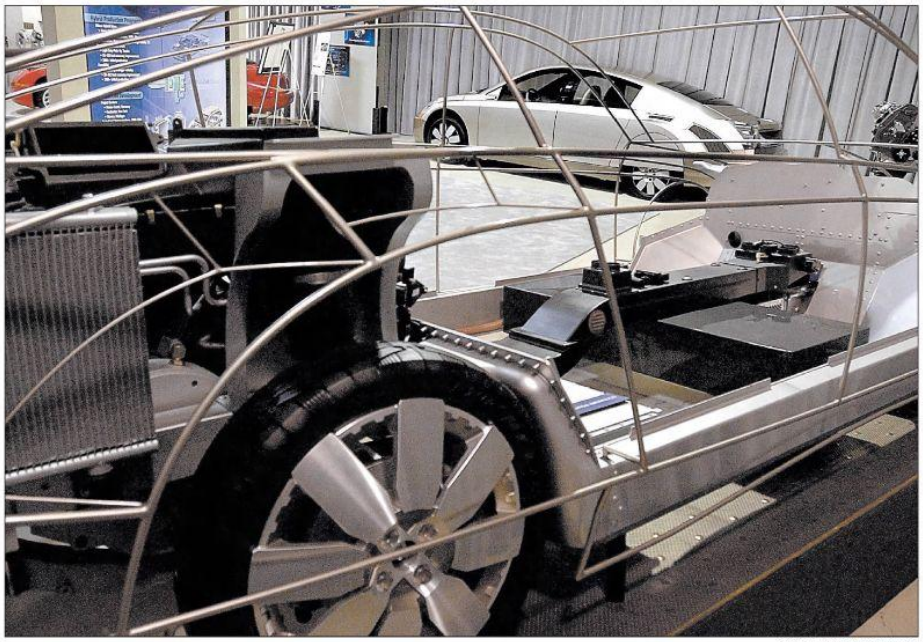
Note: Driving range is the distance a car can travel on a tank of gasoline.
Sources: Ford Motor Company, General Motors, DaimlerChrysler, uscar.org

Chicago Tribune/Hacyoun Park and Phil Gelb

A Ford engineer conducts tests in a Dearborn, Mich., facility. Ford promises to produce a gas-electric hybrid SUV by late 2003.

PLEASE SEE FOLLOWING PAGE

SPECIAL REPORT: THE TANKING OF AN AMERICAN DREAM



Tribune photos by Scott Strazzante

The frame of GM's concept Supercar is on display at a company research facility in Troy, Mich. The finished product, the Precept, achieved 80 miles per gallon.

CONTINUED FROM PREVIOUS PAGE

sition paper on April 2, 2001, to a senior Energy policy adviser, attacking car fuel economy rules and stating that a better approach would be for the government to conduct long-term research. GM's paper didn't mention Supercar, but it did state: "Rather than focusing on the failed policies of the past, a better approach takes a longer-term vision of moving to a hydrogen economy with fuel cells."

A week later, Energy Secretary Spencer Abraham announced to reporters that the agency wanted to cut its budget, including much of Supercar's funding.

He said that after consulting with auto officials, the government decided that a "refocusing" of the Supercar project was needed because it was "inconsistent with where the market is headed."

He told reporters that Supercar had been geared toward building a family-size sedan, but consumers were increasingly interested in buying SUVs.

At the time, it wasn't precisely clear what Abraham meant by "refocusing" Supercar. But it soon became apparent that the defining features of the project — the 80-m.p.g. goal, the 2004 deadline and the participation by many government agencies — were being discarded.

While this meant Supercar was essentially dead, there was little public protest.

By now, an odd coalition of liberals and conservatives, including Ralph Nader and New Hampshire Congressman John Sununu, opposed Supercar. They saw it as corporate welfare — tax dollars subsidizing efforts that the industry should be doing on its own.

And some leading environmental groups thought Supercar's engine of choice, the diesel, would produce too much smog. They also thought the automakers and politicians were using Supercar as an excuse for not tightening fuel economy rules.

Throughout the summer and fall of 2001, industry executives flew from Detroit to Washington about once a month to meet with Energy Department officials to discuss what should replace Supercar.

According to Big Three and government officials, some in the Bush administration wanted to eliminate any kind of fuel economy partnership. Industry officials objected, arguing that government-funded research should continue.

But industry did not want to run up against the same problem it had with Supercar: It did not want to be forced to build a production-ready car.

In the end, industry prevailed on both points.

This past Jan. 9, at an auto show in Detroit, Energy Secretary Abraham stood with Big Three executives and announced that a new program would be replacing Supercar. It would be called FreedomCAR, and it would focus on trying to build cars powered by hydrogen fuel cells.

Supercar, Secretary Abraham said, was too wedded to oil as a energy source. "We can do better than that," he said. "We can look beyond current technology and current fuels to a truly new generation of vehicles."

The idea was to use high-pressured hydrogen gas and oxygen from the air to create electricity to make the car go. The only emissions would be water vapor so clean that, in theory, one could drink it from the tailpipe.

But even ardent fuel cell backers and the Energy Department acknowledged it would likely be 20 to 35 years before hydrogen cars were on the road in significant numbers. Not only were there huge technical barriers, but the nation's infrastructure would have to change dramatically. Thousands of the country's gas stations, for example, would have to be converted to hydrogen fueling stations.

Plus, FreedomCAR would have less money than the Supercar project, fewer government participants, less oversight and no deadlines to produce any vehicles.

But Energy Secretary Abraham promised those gathered at the Detroit auto show that with the new FreedomCAR program, "the gas-guzzler will be a thing of the past."

He sounded a familiar refrain: The effort would reduce oil imports, improve the environment and make the auto industry more competitive.

Supercar's swan song

This past June in Washington, on a muggy Wednesday night that gave way to thunderstorms, a wake was held for Supercar.

It took place near the Capitol at the Dubliner, a popular Irish pub with a long wooden bar. A handful of government staffers organized the event, including John Sargent, the Commerce official who had directed Supercar.

When the mourners arrived at the bar, they pushed together some wooden tables, ordered Guinness on tap and said good-bye to the project that many of them had worked on for nine years.

They passed out Supercar T-shirts, pins and hats; played Supercar trivia; and arranged for a violinist to come in and play "Danny Boy" so they could sing along with substitute lyrics to mourn their lost cause.

By 9 o'clock, two dozen people had showed up, and after a couple of rounds, one could barely hear above the din.

But Sargent was noticeably down.

He was wearing the same shirt he wore the day the concept cars were unveiled: a white buttoned-down dress shirt with the Supercar logo stitched above the pocket. And at one point, he got up on a small stage and read his version of Psalm 23, including the lines:

George Bush is my Shepherd; I shall not want - fuel efficiency.

He maketh me to lie down in oil laden pastures; He leadeth me beside the still waters of the Persian Gulf.

During Supercar's better days, Sargent occasionally talked to his boss about how maybe they should create a permanent monument to the Supercar effort — perhaps a historic marker at the Commerce Department or a time capsule.

"It would show, here's what we were doing, here's why we did it, here's who the players were, here's what we were thinking at the time."

On the night of the wake, Sargent left the Dubliner fairly early and caught a cab home. In his hands he held a framed Supercar poster, signed by his old friends and colleagues.

More pledges from Big 3

Today, the Big Three automakers keep their concept Supercars either in storage or a small company museum.

Under the Supercar project, $1.5 billion of taxpayer money went to research to help the automakers produce these high-mileage vehicles. The companies report investing roughly an equal amount.

The companies not only stopped short of introducing these cars into the marketplace, they did not fulfill another promise of the 1993 Supercar agreement: They had vowed to use emerging technologies to improve the fuel economy of their existing fleets.

But mileage for Big Three passenger vehicles has remained flat since 1993, while the horsepower has shot up 27 percent.

The automakers are, in effect, holding the line — giving American drivers the increased power they crave while keeping fuel economy stable. "I think you got to look at what the customer wants," says Bob Culver, head of USCAR, a Big Three umbrella group that helped coordinate Supercar research.

Many say that was not the point of the Supercar program.

"That was a bitter disappointment — that they would take these advancements and unabashedly reinvest them in increased power," says John Gibbons, Clinton's science adviser and a leader in the Supercar effort.

The Big Three have repeatedly promised to improve. In the last few years, the companies have announced plans to produce gasoline-electric hybrids, or vehicles that use both a gasoline engine and an electric motor for power.

But some of the plans either have been quietly scrapped or the goals set so low that the fuel savings will be negligible.

DaimlerChrysler, for example, announced in 1999 that it would produce a hybrid Dodge Durango. But those plans "have been postponed and postponed indefinitely," company spokesman Max Gates says. The carmaker decided that the plan simply wouldn't prove profitable.

GM says it will put in showrooms by mid-2004 hybrid versions of the Chevrolet Silverado and GMC Sierra, full-size pickup trucks that get 16 miles per gallon in city traffic and 21 on the highway. But these hybrids will show little improvement over the conventional models: GM predicts the new trucks will get just 2 miles more per gallon in the city and no more on the highway.

Ford promises to produce late next year a hybrid version of its Escape, the company's smallest SUV. The company estimates the mileage will be in the high 30s for city driving and about 25 on the highway. (Hybrids often get higher mileage in city traffic because that is when the electric motor is doing most of the work.)

While U.S. automakers are planning to produce hybrids in the coming years, Japanese carmakers Toyota and Honda are selling theirs right now.

The most celebrated is the four-door Toyota Prius, which gets 52 m.p.g. in the city and 45 on the highway. The company reports selling 15,500 in the United States last year and expects that number to rise to 20,000 this year.

The Prius has even become a cause celebre in Hollywood, with Leonardo DiCaprio and Cameron Diaz among the owners.

Though Toyota initially lost money on the car, the company reports the Prius is now breaking even. Its $19,995 price tag is about $3,500 more than the comparably sized Toyota Corolla.

In an ironic twist, the U.S. government is helping sell the Japanese hybrids. Consumers buying a hybrid receive a one-time $2,000 tax deduction from the IRS.

Some see a replay of the 1970s, when Japan's fuel-efficient cars clobbered the American auto industry, throwing tens of thousands out of work and helping plunge the U.S. economy into a tailspin from which it took years to recover.

"It's a huge concern," says Craig Marks, a retired GM executive engineer who also served on the review panel for Supercar, "but what are you going to do?"

Americans, he says, like big, fast vehicles.

Still seeking progress

Charles Gray's hydraulic Supercar remains at the EPA facility in Michigan, sitting in a concrete-floor laboratory with the well-ordered look of a modern car repair shop.

The tires still have dirt on them from the last time the staff took the car for a spin in the parking lot. Without the outer shell of a body, it still looks like a low-riding dune buggy, with plexiglass covering the engines in front and back.

Wearing dark blue pants and his favorite purple dress shirt, the 56-year-old Gray leans against the roll bar of his car and says he remains bitterly disappointed that the Supercar project was killed. No other effort could have made such an impact on so many of America's problems — "except this," he says, jabbing a finger at his car.

Since Supercar was launched in 1993, oil imports are up 26 percent. Imports from the Mideast also are rising and a cause for concern, given the region's volatility and U.S. plans for a possible war on Iraq.

The EPA calculates that if the fuel economy of U.S. passenger vehicles improved by 10 m.p.g., America would save a billion barrels of oil a year — enough to stop importing any from the Persian Gulf.

Scientists, meanwhile, increasingly blame greenhouse gas-emitting cars for global warming trends. Floods, fires and droughts — calamities once solely attributed to acts of God and nature — are now being debated in the context of cars, trucks and SUVs. About 20 percent of U.S. greenhouse gas emissions come from passenger vehicles.

Gray says the death of Supercar means he will have less money to combat these problems. The EPA budget for fuel economy and global warming issues has been cut by a third, or $10 million, meaning less money for his hydraulic Supercar. Over the past nine years, he estimates he spent $20 million of taxpayer money on this work.

This past summer, an unlikely figure tried to help restore some funding: John Dingell, Gray's old adversary from Congress.

It had been nine years since the summer of 1993, when Gray was trying to sell the Supercar idea to the automakers while Dingell was warning them to be careful.

But Dingell was facing his tightest congressional race in years and running in a redrawn district that included Gray's lab. The veteran lawmaker requested a tour.

Leaning on a cane, the 76-year-old Dingell inspected Gray's Supercar, sat in the driver's seat, and posed for photographs.

In July, Dingell wrote to an influential congressman asking that money be restored for Gray's work. So far, there has been no change.

The cutbacks came just as Gray felt he was finally reaching his dream of building an 80-m.p.g. car. Recent tests showed his car achieving 75 to 85 m.p.g. — but that was when he removed a motor in back, making the car likely too slow for consumer tastes.

While he hasn't abandoned the Supercar dream, he is now focused on his contract with Ford, which is hoping to use hydraulics in delivery trucks — vehicles large enough to accommodate the bulk of the pump motors and nitrogen tanks.

In the last few years, he has acquired 6 patents for his hydraulics work, collecting $50,000 in royalties for himself and $100,000 for his EPA facility.

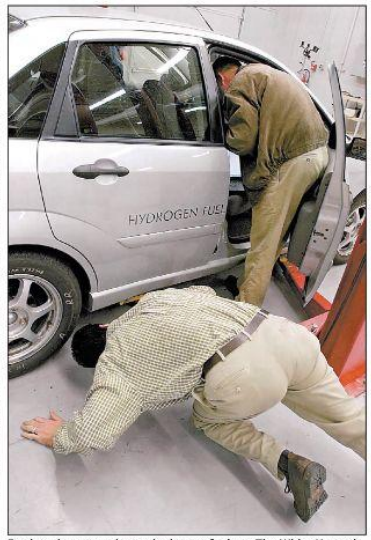
Gray, whose annual salary is $124,900, says the royalties "are motivation. I won't kid you about that. But I don't do this for the money. I'm doing this for the future of the country."

He plans to keep his Supercar around for interested parties to see. After a year, he'll probably put it in storage. He shakes his head at the dichotomy: On one hand he knows he was part of a historic venture; on the other, he could tear apart Supercar today and few Americans would care.

But Gray still cares, and for him the idea of Supercar isn't dead — even if 80 m.p.g. no longer is his goal.

"I expect it to be over 100," he says. "I would never settle for 80."

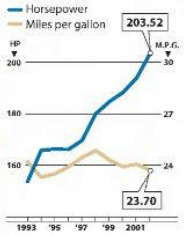
Staff reporter Geoff Dougherty contributed to this report.



Ford engineers work on a hydrogen fuel car. The White House is touting this technology after killing the Supercar project.

Faster but less fuel-efficient

While fuel efficiency has stalled, cars driven in the United States have become 32 percent more powerful over the past decade.



Source: U.S. Environmental Protection Agency Chicago Tribune

ON THE INTERNET

A special presentation featuring interactive graphics, video, photo galleries and additional features exclusive to the Internet.

- Find out the fuel efficiency of your car with a searchable database.
- How the Supercar engine compares to a typical sedan.
- Learn about some of the project's personalities and their roles behind Supercar.
- Share your thoughts about the Supercar project in a message board.

chicagotribune.com/supercar