

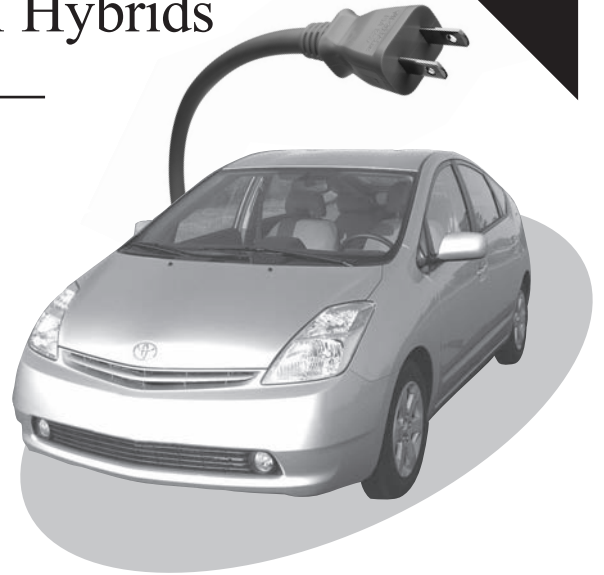
Plug-In Hybrid Municipal Plan

Building a Market for Gas Optional Hybrids

Plug-In Hybrids: The near term solution

- PHEVs use the same technology as the popular hybrids on the road today, but have a larger battery that can be recharged by plugging into a standard 120-volt outlet.
- A hybrid gets about twice the fuel economy of a conventional car. A plug-in hybrid gets about twice the fuel economy of a hybrid.
- An “electric” gallon of gas will cost 70-80 cents at prevailing electric rates versus the \$2.55 national average gasoline price.
- PHEVs outfitted with a battery pack providing a 40-mile electric range could accommodate more than 60% of the total annual miles traveled by the average U.S. driver — using the all-electric mode.
- The electric infrastructure is in place and available. Over 40% of the generating capacity in the U.S. sits idle or operates at reduced load overnight, when most PHEVs would be recharged. Our power system could charge tens of millions of PHEVs without requiring new plants.
- Wind generated electricity is produced most readily overnight, providing a perfect fit between PHEVs and pollution-free generation.
- Prototype PHEV sedans and SUVs exist today. Among others, DaimlerChrysler has developed a prototype PHEV commercial van, with testing planned by the end of 2006.

Plug-In Hybrid
Electric Vehicles
(PHEVs)



Municipal Plan

- **Establish community educational campaign: PHEVs will reduce oil imports, smog in cities, and boost economic development**
- **Raise \$50-\$100 million in incentive funding for PHEVs for government, business and citizens**
- **Establish national “Plan to Purchase” PHEV Web site.**

Plug-In Hybrid Electric Cars

Enjoy **Broad Support**

Pour in



or Plug in



You choose.

You can pour-in for \$2.55 a gallon, or plug-in for as little as 75 cents* a gallon, and drive knowing your car is not part of the problem, but part of the solution!

*Based on Austin Energy electric rates

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“If by 2025, all cars on the road are hybrids and half are plug-in hybrids, U.S. oil imports would drop by 8 million barrels per day (mbd). Today, the United States imports 10 mbd and is projected to import almost 20 mbd by 2025.”

— *Set America Free initiative by coalition of prominent individuals and non-profit organizations concerned about the security and economic implications of America’s growing dependence on foreign oil*

“The attractiveness to the consumer of being able to use electricity from overnight charging for a substantial share of the day’s driving is stunning. The average residential price of electricity in the U.S. is about 8.5 cents/kWh, one-quarter of the cost of \$2/gallon gasoline. So, powering one’s vehicle with electricity purchased at such rates is roughly the equivalent of being able to buy gasoline at 50 cents/gallon.”

— *Former CIA Director James Woolsey and former Secretary of State George Schultz*

“When you consider that 78 percent of Americans live within 20 miles of their jobs, and that most car trips — commuting, shopping and dropping off the kids at soccer games — are less than 20 miles, plug-in hybrids could run solely on electricity for these types of short trips and commutes.”

— *Consumer Reports*

“Our studies show a strong market preference for plug-in hybrid vehicles when performance is equal and the cost difference is reasonable.”

— *Bob Graham, Area Manager, Transportation, EPRI*

“We think the transportation fuel sector should be diversified by utilizing more electricity as a fuel (for) plug-in hybrids that can get 100 miles per gallon and allow you to run on electricity alone for 20 to 30 miles, then shift to the combustion engine.”

— *Gal Luft, Director of the Institute for the Analysis of Global Security, an energy-security think tank in Washington*

“We believe that the 50 largest cities in this country, united in purpose, can build a groundswell of demand sufficient to entice carmakers to mass produce what is the logical near term response towards the critical goal of energy independence. We intend to set the example in Austin, Texas.”

— *Will Wynn, Mayor of Austin, Texas*



Building a Market for the **PHEV**

The 50 largest cities in America will build awareness of the benefits of PHEVs through a coordinated effort:

Establish community educational campaign.

1. Solicit support/participation of governmental, environmental and civic organizations in this national initiative
2. Launch informational Web site, which can link to well developed sites such as EPRI.com and CalCars.org
3. Print materials and utilize ads from templates designed for shared use, such as this brochure
4. Establish a speakers bureau utilizing talking points from templates designed for shared use
5. Hold press events to educate the public and to build awareness

Develop \$50-\$100 million in incentives from utilities for PHEV procurement and fleet purchase commitments by government, private businesses and consumers.

1. Incentives provided by electric utilities. PHEVs will utilize excess generation capacity available during night-time hours
2. Secure fleet purchase commitments from local, state and federal governments
3. Enlist Chamber of Commerce lead to solicit purchase commitments from private fleets
4. Enlist community and environmental leaders to promote individual citizen purchase commitments
5. Solicit local government and state support of PHEV initiative through approval of favorable policies
6. Promote nationwide “Plan to Purchase” Website where citizens and businesses can sign petitions expressing interest in purchasing commercially available PHEVs from major auto makers.



Frequently asked Questions about Plug-In Hybrid Electric Vehicles (PHEV)

Are PHEVs available today?

There are currently no commercially produced PHEVs. However, many prototypes have proven their practicality. The Electric Power Research Institute (EPRI) and DaimlerChrysler have built a Dodge Sprinter PHEV delivery van and plan to test 10 of the vehicles in cities across America by the end of 2006. EDrive Systems has introduced a commercial retrofit that converts a Prius into a plug-in hybrid.

Does the plug-in technology work?

Yes. This has been clearly demonstrated by several sedan and SUV conversions at the Hybrid Center at the University of California at Davis. Recent modifications of Toyota's popular Prius have attracted considerable attention to what have been called 100+ MPG hybrids, and, when the gasoline is replaced by bio-fuels, 500 MPG hybrids. A California non-profit, California Cars, modified a Prius by adding a 2.4 kWh lead-acid pack to prove that it could be done. Then, an R&D company, EnergyCS, replaced the standard 1.3 kWh battery pack with a 9 kWh battery pack. The lithium-ion batteries came from Valence Technology, an Austin-based company. The larger battery pack was sufficient to provide half of the power needed to drive the first 60 miles each day. The cost of the charge was about 72 cents. It's like having a second small fuel tank, only you fill this one with electricity at an equivalent cost of under \$1 per gallon, depending on your car and your electric rate. You refill at home, from an ordinary 120-volt socket, with energy that's much cleaner, cheaper and not imported.

What is the problem then?

The cost of the batteries needed to power a PHEV a sufficient distance is considered to be the stumbling block. Generally every 10 miles of charge capacity of a battery will add about \$1,000 in cost. That additional cost, however, is offset by lower operating costs since

an "electric" gallon of gas will cost about one-third the cost of gasoline, allowing a PHEV to achieve four times the gas mileage of a conventional vehicle. Even at current prices, EPRI has shown that the total lifetime cost to buy, operate and maintain a PHEV is lower than that of a gasoline car or a conventional hybrid.

What distance must a commercially produced PHEV be able to achieve on the battery alone?

A battery pack capable of powering a PHEV 40 miles could meet the daily driving needs of the majority of drivers without requiring the use of the gasoline mode of the PHEV at all. Some 78% of Americans live within 20 miles of their jobs. In many cases, drivers of PHEVs would only need to fill up with gasoline a few times a year, versus the current 24-36 times a year on average.

Won't power plants create a great deal of additional pollution powering PHEVs?

Pollution is easier to manage at a central point such as the stacks of power plants rather than from millions of vehicle tail pipes. Many power plants today are being modified to lower emissions and a number of older plants are being retired. Wind-generated power, solar and other forms of renewable energy are pollution free and are becoming more available. The overnight charging of PHEVs matches well with wind-generated electricity (the most abundant green power), the majority of which is produced overnight due to wind patterns.

What about performance? Will PHEVs be slow?

No. A Toyota Prius, modified with a larger plug-in battery, can accelerate from 0 to 60 miles per hour in less than 9 seconds and can sustain a top speed in the range of 97 miles per hour.

How much more will a PHEV cost versus a comparably sized conventional vehicle?

It is projected that in mass production, a PHEV could be produced at a cost very close to that of a comparably sized and outfitted conventional vehicle. EPRI studies project that after considering the lower costs of fuel and maintenance, a mass-produced PHEV should provide better overall economics than either a HEV or a conventional vehicle.

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