



*The California Cars Initiative (CalCars.org) is a Palo Alto-based non-profit startup of engineers, entrepreneurs, environmentalists, drivers and consumers promoting transportation electrification through advocacy and technology demonstrations. We were the first to convert a Prius to a plug-in. Now we're shifting gears to organize a coalition promoting conversion of internal combustion engine (ICE) vehicles. We're working with companies like Rapid Electric Vehicles and Hybrid Electric Vehicle Technologies, whose prototype Ford Escape EV sport-utility vehicle and F-150 PHEV pickup truck are above.*

**THE PROBLEM:** New plug-in vehicles won't arrive quickly enough to achieve the vital goal of near-term (next 10-15 years) reduction in petroleum use to gain energy security and greenhouse gas benefits.

- If new plug-ins arrive 10x faster than hybrids, they will still be under 20% of all cars in 15 years.
- Today's old, inefficient vehicles remain on the road for up to several decades.
- Today's vehicles include valuable embedded materials -- and the energy used to build them is over 10% of the total used in their lifetimes.

**THE CHALLENGE & THE OPPORTUNITY:** To "fix" a large fraction of the 250 million U.S. vehicles and 900 million globally to run partly or fully on electricity, thereby gaining millions of cleaner, more efficient vehicles that are cheaper to drive, while creating many jobs and providing new revenue streams to automakers from vehicles they've already sold.

- Identifying the low-hanging fruit -- vehicle types and units with the most favorable drive cycles and charging opportunities -- we start with inefficient heavy vehicles that drive short distances: pickup trucks, SUVs and vans (PSVs), plus large trucks and buses, all with plenty of room for batteries. As technologies improve, we add passenger vehicles.
- Retrofits must be as drivable and safe as the pre-conversion used vehicles.
- To scale this solution effectively and quickly may require cooperation from automakers and dealers -- we need a concerted effort to upgrade hundreds of millions of the nearly one billion vehicles globally.
- As we saw in 2004-2007, prototypes, cost-benefit analyses and advocacy can address skepticism, and new incentives and financing mechanisms can help the business case for conversions.

**SOLUTIONS:** Today's technologies can retrofit gas-guzzlers to run partly or entirely on electricity, reducing petroleum use by 25-60% in plug-in hybrids (PHEVs), 100% in all-electrics (EVs).

- A few prototypes exist from startups that are developing scalable solutions (see CalCars.org).
- Green jobs in the tens, then hundreds, of thousands, can be located in communities everywhere, and in idle auto plants.
- Simpler retrofits such as real-time fuel use displays, filters to reduce diesel black carbon, and remote diagnostics can sell owners and stakeholders on the concept of upgrading existing vehicles.
- Accelerating electrification by over a decade can expand demand for components, speeding the arrival of improved technologies, high capacity and cost reductions throughout the supply chain, benefiting both new and conversion plug-ins.
- More rapid market penetration can speed up the development of charging infrastructures and broad transportation electrification, accelerating the benefits of an integrated smart grid.

**THE NEXT STEPS NEEDED NOW:** We need campaign partners to promote promising designs, highlight successes by new companies, and spread the word about early validation from the first (small) U.S. tax credits for conversions, Japan converting 25% of its postal fleet; and California Energy Commission funding for hybrid retrofits.

- Encourage public national, municipal, military, and private fleet owners to start now to buy costly, initial one-off conversions for evaluation, followed by "soft orders" at mass-production prices.
- Advocate for expanded incentives and streamlined regulations to facilitate new entrants into this emerging industry.
- Help analyze prototypes and other modeling efforts to project the global environmental and economic benefits of ICE conversions.
- Boost entrepreneurs developing business cases for retrofits based on emerging technologies and products, third-party financing models, future carbon credits, and through public tax and other incentives that decrease as component costs decline.

**YOU CAN HELP by endorsing & supporting the Big Fix Campaign to Upgrade Gas-Guzzlers:**

Please provide a **PRELIMINARY ENDORSEMENT OF THE APPROACH** and **your comments and leads**. We won't ask for an original signed version or circulate your name publicly until we've come back to you with a document that reflects the suggestions we've received. But we will use this draft to solicit broad support in the coming weeks. **Here's the endorsement statement:**

***We agree that in large volume, converting internal combustion vehicles to safe, affordable, validated and warranted plug-ins can provide benefits in energy security, greenhouse gas reduction, employment, and the broad economy. We support research and demonstration projects aimed at proving the technical feasibility and business case for this solution. We support the creation of local, national, and international coalitions, campaigns and other efforts to incentivize and achieve these goals.***

You can use my name ( \_\_\_\_\_NAME/TITLE)  
to advise and support a broad, new coalition to promote the growth of this new industry.

**AND/OR**

My organization ( \_\_\_\_\_)  
expects to endorse and assist in forming a broad new coalition to promote the growth of this new industry.

**Thank you for your interest — let's talk/meet  
Felix Kramer, [fkramer@calcars.org](mailto:fkramer@calcars.org) 650.520.5555**

