

Sparks Fly over Electric Car Funding

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Credit: Pam & Frank

As the Senate struggles with energy legislation this week, one of the few fixes with bipartisan support is a bill that would invest billions in putting electric-powered cars and trucks on the road. But it's not clear whether it would be environmentally beneficial to do so. That debate has played out in an open conflict between electric vehicle proponents whose proposals would be implemented in the bill and auto industry executives pushing for funding of alternative technologies.

The measure, as approved by the Committee on Energy and Natural Resources, would provide an additional \$3.6 billion for electric vehicles if passed by the full Senate and put into effect several proposals in the Electrification Coalition's roadmap, including \$1.5 billion to lower battery costs and help link the vehicles to the [electric grid](#). Also in the

bill is \$2 billion in funds to put 400,000 [electric cars](#) on the road in the next three years and funds to develop specific communities that will rely on electric cars in a few regions throughout the country. It also creates a \$10 million prize for the first commercially-viable battery with at least a 500 mile range.

"Republicans and Democrats agree that electrifying our cars and trucks is the single best way to reduce our dependence on oil," said Sen. Lamar Alexander (R-TN) in a recent statement. "Our goal should be to electrify half our cars and trucks within 20 years, which would reduce our dependence on [petroleum products](#) by about a third."

While nearly every major auto manufacturer in the world plans to debut an electric vehicle in the next two years, scientists are divided on their estimates of the electric car's impact on the environment. Industry scientists have argued that an electric car is only as clean as the power plant it's plugged into, while proponents of electrics -- including Electrification Coalition member and FedEx CEO Fred Smith -- argue they produce less greenhouse gas emissions than a conventional hybrid even when the source is a dirty coal-fired plant.

Conflicting Studies

"Until we significantly alter how we produce electricity in our nation," Kathryn Clay, director of research at the industry group Auto Alliance said in Senate hearings on the bill, "including upstream emissions in the vehicle greenhouse gas standards will mean that electric vehicles will rate only marginally better than conventional internal combustion engines and comparatively worse than the conventional hybrids we have on the road today."

A study by the Sloan Automotive Laboratory at the Massachusetts Institute of Technology in Cambridge, funded by Ford, found that

electric vehicles plugged into nuclear or renewable sources would result in drastic reductions in emissions; however, vehicles powered by electricity from coal plants would have larger carbon footprints than conventional automobiles. In June hearings on vehicle electrification legislation, the Auto Alliance stated it did not support the bill because it believed the government was unfairly favoring one technology over others. The Alliance represents most major car companies in the world with the exception of Nissan, Honda and Hyundai. Of the group's member companies, only GM received relatively substantial electric vehicle funds from the Recovery Act.

Auto Alliance members are also worried that emission standards on electric cars will leave auto makers uniquely responsible for upstream emissions from power plants -- a source which they have no control over.

"Including upstream emissions creates a huge disincentive for producing electric vehicles versus less costly and less game changing technology," said Clay.

Many non-industry researchers claim that there is a net drop in greenhouse gas emissions no matter what the power source is. Studies done the National Resources Defense Council and the Electric Power Research Institute found that plug-in hybrid electric vehicles -- even those plugged into a dirty coal-fired plant -- would offer dramatic reductions in greenhouse gas emissions. And a Tesla Motors analysis found that even when considering the average sources of electricity in the United States, its fully electric Roadster is significantly more efficient than the Toyota Prius or other hybrids.

"Our studies would indicate that plug-in electric vehicles, even if powered by coal power plants that have not been modified to clean up the emissions ... produce significantly less CO2 emissions than

conventionally powered vehicles," said Smith.

As an additional benefit, the Electrification Coalition says it would be easier to regulate emissions from a few power plants than the hundreds of millions of cars on the road. And the cars will only become more efficient with time as the grid shifts towards renewable sources of electricity.

EPRI's report, which the Electric Coalition relies on in its claims, says that previous studies have relied on limited information from the electricity and transportation industries. "We stand by our study with the NRDC, ... that was the bellwether study," said the group's media relations manager Clay Perry. "We examined all the power sources throughout the country and those went into the study. We had access to a lot of data."

The administration and many politicians on both sides of the aisle also see the electrification of vehicles as a step toward reducing [greenhouse gas emissions](#) and as a path to recovery for a nation addicted to foreign oil. The United States currently spends \$380 billion a year on imported oil - 70-percent of which is used for transportation -- and President Obama hopes to reduce that number by increasing the number of electric cars from essentially none, to one million in the next few years. The Recovery Act has already invested more than \$5 billion in electric vehicles, with half of that going in loans to Nissan, Tesla and Fisker motor companies.

"This is an enormous national security problem," said Smith, "we have two shooting wars going on and there's no question at least in part they were precipitated by our dependence on imported foreign petroleum."

China, Denmark and Israel are among the countries that have also chosen to focus on [electric cars](#), and that has many concerned China will

gain an edge on the U.S. in the market.

A study released in May showed that 60-percent of Chinese citizens would be willing to buy an electric car, five-times the amount of Americans who said they were ready to convert in the same study, and the Chinese have already made significant investments in electric vehicle technology and infrastructure. The country produces 20 million electric scooters a year and plans to shift that infrastructure to cars in coming years in part due to the success of its own trial electric car communities program, which has already nearly doubled in size, growing from 13 to 22 cities.

The Alternative: Fuel Cells

While the United States has shifted its focus from fuel cell vehicles to electrics under the leadership of the current administration, other countries like Japan, Germany and South Korea have ramped up their efforts to produce fuel cell technology.

Fuel cells - which use hydrogen to produce electricity and then release water and heat as by-products - are not widely considered ready for prime-time and a production model car would cost around \$1 million. Fuel cell vehicles would also require a non-existent hydrogen fuel infrastructure; whereas the electric infrastructure is already present and needs only work out certain accessibility problems. The Senate believes it has addressed those problems in the current bill and legislators have been quick to point out that most people will charge their vehicles at night during off-peak hours, making it much cheaper.

However, many engineers and policy makers in the United States still argue that fuel cell vehicles provide a better solution to reducing greenhouse gases without being limited by the short range of battery power and say the U.S. will be left behind in the long-term by focusing

on electrics. The administration went as far as to cut funding for the technology in its last two annual budgets. These funds were eventually restored in the Senate last year, but the Auto Alliance would like to see the proposed electric vehicles bill include funding for fuel cell research.

"Trying to prejudge the market brings tremendous risks, and the problem is compounded if we make just a few large bets," said Clay.

For the time being, the Senate is showing some agreement with the Obama administration by focusing on battery-electric vehicles in the short term, though it continues to fund fuel cell research as well. Sen. Byron Dorgan (D - N.D.), who co-sponsored the bill, believes fuel cells will be important in the future, but thinks electrification is the solution in the near term.

"Last year the admin cut out \$190-million of hydrogen fuel cell research that's going on, I put it all back in," said Dorgan. "Hydrogen and fuel cells are important, but that is not the rapid deployment, the near term deployment is electric vehicles."

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