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Electric cars 101: What does MPGe mean, exactly?

Electric and dual-fuel cars need a new calculation: MPGe.

But the EPA's new measurement doesn't tell the whole story.

By Chris Gaylord, Staff writer

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Next month, Mitsubishi will introduce a subcompact car with some hefty bragging rights. The 2012 Mitsubishi i stands as America's most fuel-efficient car, at 126 miles per gallon in city driving, according to the Environmental Protection Agency (EPA).

Such impressive fuel economy seemed impossible a few years ago. (The 2012 Toyota Prius gets "only" 52 m.p.g.) And, in fact, 126 m.p.g. will still be impossible when the car goes on sale in January.

You see, the Mitsubishi i is an all-electric vehicle, so there aren't really any gallons for it to gulp. A closer look at the EPA window sticker reveals that it's actually 126 miles per gallon equivalent (MPGe). The EPA rolled out this new term to help translate electric-car efficiency into a figure that most Americans understand.

It's a metric that's embraced by the auto industry, but it has some science geeks wrinkling their noses.

"We had a lot of our technical people that were excited about using kilowatts per hour or per mile, but when you go and talk to the general public, they are very familiar with m.p.g. and they love m.p.g.," says Margo Oge, director of the EPA's Office of Transportation and Air Quality. "So we came up with MPGe."

MPGe works well as a shorthand, but it doesn't tell the whole story. Let's look at how the EPA calculates MPGe.

The agency needed some way to compare two very different power sources. Gasoline and electricity use completely different units (gallons versus kilowatt-hours) so you can't just shove them into the same formula. Then someone came up with a very clever solution: If you burned a gallon of gasoline, it would generate 115,000 British thermal units of heat. So, how much electricity would it take to generate the same amount of heat? Answer: 34 kilowatt-hours (kWh). We now have our connection. One gallon of gasoline produces the same amount of energy as 34 kWh.

With this new comparison point, the EPA can now figure out how far an electric car will travel on only 34 kWh. In the case of the Mitsubishi i, that much electricity will carry it for 126 miles. So, it's 126 miles per the equivalent of a gallon of gas. *Voila!* You have MPGe.

But when car shopping, holding up MPGe to m.p.g. isn't really a fair fight. It compares energy consumption, not fuel costs. Just because one gallon of gas equals 34 kWh in terms of energy does not mean that they cost the same amount of money. Wallet-conscious car shoppers should instead focus on a different figure: kilowatt-hours per 100 miles. When 2013 vehicles arrive this spring, they'll be required to list this additional statistic, but in much smaller print. Seek it out. It makes actual pocketbook calculations much easier.

For example, take the 2012 Chevrolet Volt, which offers all-electric driving with a gasoline tank as backup. Its EPA label touts both 37 m.p.g. and 93 MPGe. Those are strong numbers for either mode, but how much cheaper is one mode than the other? Check the fine print. It says that the Volt takes 36 kWh of electricity to drive 100 miles. Or, when you switch to gasoline, it's 2.7 gallons per 100 miles. Now it's just a simple calculation.

Multiply 36 kWh by however much you pay per kWh on your home electricity bill. Let's say it's 12 cents per kWh, the national average. So, 36 kWh times 12 cents gets you your cost: \$4.32 to drive 100 miles using only electricity.

Then, multiply the EPA's gallon figure by the price at your local gas pump: 2.7 gallons multiplied by the national average of \$3.275 per gallon, which equals \$8.84 to drive 100 miles on gasoline.

Now you're comparing apples to apples. You can pay \$4.32 by sticking to the battery, or more than twice that to drive that same distance using the less efficient gasoline mode.

Tribes strive to save native tongues

In the Pacific Northwest, some 40 indigenous languages are at risk of disappearing within a decade.

**By Aaron Clark | Contributor to *The Christian Science Monitor*
from the May 23, 2008 edition**

Warm Springs, Ore. - Grass-root efforts to preserve and teach youngsters native languages are intensifying around the Pacific Northwest and British Columbia as about 40 indigenous tongues are in danger of disappearing within the next decade.

Native leaders are compiling dictionaries, drafting lesson plans, and scrambling to save what scraps of language they can before the last of the fluent elders dies. In the case of Kiksht, a language spoken for centuries along Oregon's Columbia River, there are two remaining speakers and neither can remember the words for "yawn" or "brown."

"It's funny, but it's stuff we still need to know," says Radine "Deanie" Johnson, a former forklift operator spearheading efforts to preserve her grandmother's language on this hardscrabble reservation in central Oregon. "I think if we didn't have our languages, our customs, traditions, that we wouldn't be considered native Americans."

Many of these languages such as Skagit, Ichishkiin, or northern Haida still have dozens of fluent native speakers, but nearly all of them are middle-aged or older.

Attempts to record these languages vary, but most are underfunded. A few have the services of a dedicated linguist; others are more ad hoc. So-called "revitalization" programs may be successful at passing on a few traditional phrases, stories, or dances. But most attempts to bring a language back into common usage after the majority of speakers have reached middle age have failed.

Hebrew, taught by Zionist settlers in Palestine and which later became the official language of Israel, is the most notable exception. Today there are about 7 million speakers. New Zealand has spent millions of dollars promoting Maori, teaching it in schools, and in 1987 recognizing it as the third official language. But the number of fluent Maori speakers there has dropped by 10,000 – about 17 percent – over the past 10 years and some 80 percent of them are more than 35 years old.

"A language dies when you don't have children picking it up in the home," says Scott DeLancey, a University of Oregon linguist.

Here in America's Northwest, there are signs policymakers are beginning to take some notice. Last May, the Oregon State Legislature passed a resolution honoring Ms. Johnson's grandmother, Gladys Thompson, for her efforts to teach Kiksht and "her dedication to the preservation of Indian ways."

In 2006, the National Science Foundation awarded \$5 million to support efforts to digitally record more than 60 endangered languages around the world. Included was \$263,000 to document stories and conversations in Tlingit, Haida, and Tsimshian, spoken along the Alexander Archipelago in Alaska and islands off British Columbia.

"At least it's a validation of the implications of what is to be lost," says Patricia Shaw, director of the First Nations Languages Program in Vancouver, British Columbia.

Tribe members here in Warm Springs say preserving what they can of Kiksht, also known as Wasco, is critical to maintaining their distinctiveness as a people.

"Lose the language, lose distinct identity," says George Aguilar, the tribe's unofficial historian, who is half-Filipino but was raised by his Kiksht grandmother. "The Kiksht are in a time warp right now because we lost contact with the old way of life. We have lost our customs. The canoe songs are no longer known. The farewell songs are no longer known."

Dossier
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Rendezvous
Bourgeois
Maniacal

Bayou
Equivocal
Pseudonym
Satiated

Voila
Ratio
Penury
Financiers

Cacophony
Unique
Nuclear