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Comparison: 2013 Honda Fit EV vs. 2012 Toyota RAV4 EV

Electric Chargers: Up Goes Range, Down Goes Charging Time

By [Kim Reynolds](#) | From the November 2012 issue of Motor Trend | 9

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Research This Vehicle:

Honda Fit EV

For reasons that are completely tangential to this story, we recently had a pristine 1997 Acura NSX (yes, red) in our garage, and it sparked a conversation among us about Honda's increasingly erratic direction since that car. What modern Honda, we puzzled, has the old NSX's clarity of vision and sheer technical sparkle? After a moment, I said, "The Fit." And following a minute of furrowed brows, we agreed that, indeed, it is the best example.



So it isn't surprising that the Fit's EV version would be another flash of that masterful engineering. Walking into its technical presentation, I was expecting to find a Fit simply disemboweled of its combustion organs and crammed with batteries. Well, it is crammed with batteries. But it's also Honda in rare form, reengineering the car so thoroughly it's clear the automaker is thinking -- at least technologically -- beyond the legal necessities of California's looming zero-emissions mandate (1100 Fit EVs will be leased at an equivalent price of \$36,625 to the usual-suspect



To accommodate the under-floor battery, the Fit has been raised by 1.6 inches with extra body trim to conceal it.

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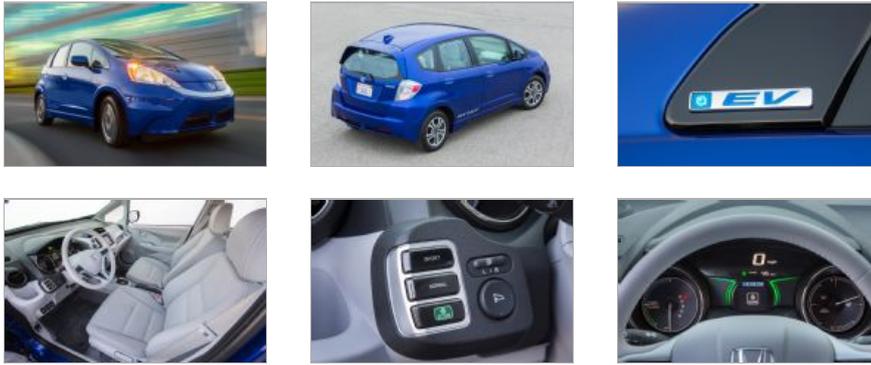
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markets -- Los Angeles, San Francisco, Sacramento, Portland, and later, a few big East Coast cities). Before driving it, though, let's take a tour and consider what Honda's actually done here.



Right at the car's face is a smiling visual riff on Honda's remarkable hydrogen-fueled electric FCX Clarity. Appropriate, because smack behind it is a detuned iteration of the Clarity's very same electric motor, here offering 123 hp and 189 lb-ft of torque. It's an unusual piece, as one of the halfshafts sprouting from the single-speed reduction gerset passes right back through the motor's (hollow) centerline on its way to the far-side wheel. A curiosity in the Clarity; a meaningful space-saver in the much smaller Fit.

Just ahead of the driver's door is the Levels 1 & 2 charging receptacle, backed by a 6.6 kW on-board charger -- that's twice the power the current Nissan Leaf can accept. Recharge time and driving range? Three hours and 82 miles.



Fashioned into a slab beneath the Fit's floor, the battery avoids impinging on interior room because the entire chassis has been elevated by 1.6 inches (reminiscent of the 1997 EV Plus, if you recall). To keep its underwear from showing, there are added rocker panels plus plastic eyebrows above the wheelwells. It looks better than it sounds.

The battery pack extends sternward enough that the twist-beam rear suspension had to be replaced by a more compact multilink affair. And while the Fit's battery size nixes the wonderfully reconfigurable "magic seat," the designers made lemonade out of it by redesigning and repositioning the second row 3.3 inches rearward and reclining it an additional 4 degrees. It's way more comfortable.



The Fit has always had knife-sharp handling. Now, with an even lower cg (battery placement) coupled to an electric drivetrain, and the immediacy of EV "throttle" response, it's an absolute hoot. And here's an interesting detail: What your foot generally feels when it presses the Fit EV's brake pedal is actually a simulation of stopping feel. Yes, a simulation. During anything short of emergency braking (when valves open for old-fashioned friction stopping), the Fit EV attempts to halt itself by pure regenerative resistance from the traction motor. This really is computer-orchestrated brake by wire, eliminating the slight bit of friction drag that current EVs (Leaf) suffer during what we think of as "pure" regen braking.



Toyota RAV4 EV

A month after Honda unveiled its Fit EV, Toyota raised the curtain on its battery-powered RAV4, and the two cars make for nice comparison. As with the Fit, the RAV's battery is a monolithic slab beneath the floorpan, but, because of the Toyota's ueber-ample inherent ground clearance, its chassis doesn't need any messy elevating (enough of a gap remains to even keep its "truck"



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classification). Also Fit EV-like are the RAV EV's extravagant aero enhancements, the biggest being its extended aero-fairing encasement of the rear window to keep the air attached a tad longer. (Toyota quotes a considerable drag coefficient reduction from 0.35 to a car-like 0.30.) Speaking of aero, an amusing item is its slipperier-than-standard side mirrors sourced from the Korean-market Camry.

The Fit and RAV4 EV's great-minds-think-alike comparability continues with their repurposed motors; in the RAV4's case, it's the Tesla Model S' mighty unit, "detuned" to a mere 154 hp (down from 362). Er, did you say Tesla? Yes.



Toyota obviously has world-class chops when it comes to electrically assisted drivetrains that employ nickel-metal-hydride batteries. (Prius, anyone?) But with 2500 Roadsters running around (many continuously monitored), Tesla's boots-on-the-ground expertise with cheap lithium batteries is extensive, too. And, more important, Akio Toyoda knows a good PR opportunity to expose his sometimes stodgy company's culture.

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After some awkwardness in deciding who was actually going to lead this unlikely dance, the result reflects both Toyota's expertise in creating deeply competent vehicles and a delectable sampling of Tesla's signature EV technologies. (When problems arose that required a show-and-tell moment of sensitive information, they debated in a room without any means of note-taking.)

Tesla's biggest fingerprints on the car are its range and recharging rate. And let me offer a bit of perspective here. The Leaf's typical range and recharge time is 73 miles and 7 hours via its 3.3-kW charger. For the Ford Focus EV, the numbers are 76 miles and about 3.5 hours with its faster 6.6-kW charger. As mentioned, the Fit EV goes 82 miles on a 3-hour charge (same charging rate as the Ford), but the RAV4 can easily pass 100 miles, its 10-kW charger requiring 6 hours. That charge time reflects the RAV's relatively giant battery size, which, at 41.8 kW-hrs of usable capacity, is actually larger than that of the base Model S. EPA-certified numbers aren't available yet, but with the battery driven to its normal depth of discharge (35 kW-hrs), range should be 92 miles. Get greedy, and its extended range mode will take you to 113 miles, but judging from my drive, even a lot more than that looks easily possible if you're careful. And, wow, are those extra miles profound, psychologically.



Although the RAV4 EV's "engine cover" says Toyota, the motor is actually a detuned Tesla Model S unit.

The battery's size is not lost on the RAV4 EV's price: \$50,610 for a fully loaded version such as this one. Cross out \$7500 for the federal tax credit (and, in the case of California, an additional \$2500), and you're looking at \$40,610. Good thing, then, that Toyota is aiming at selling just 2600 of these things. But, I'd also add that what you're seeing is the very evolution of the electric car right before our eyes.



Which is our pick? Although the Fit -- unsurprisingly -- is the bigger hoot to drive, of the electric vehicle's three critical pinch points, the RAV4 betters the Fit in range and recharge time. And at a price

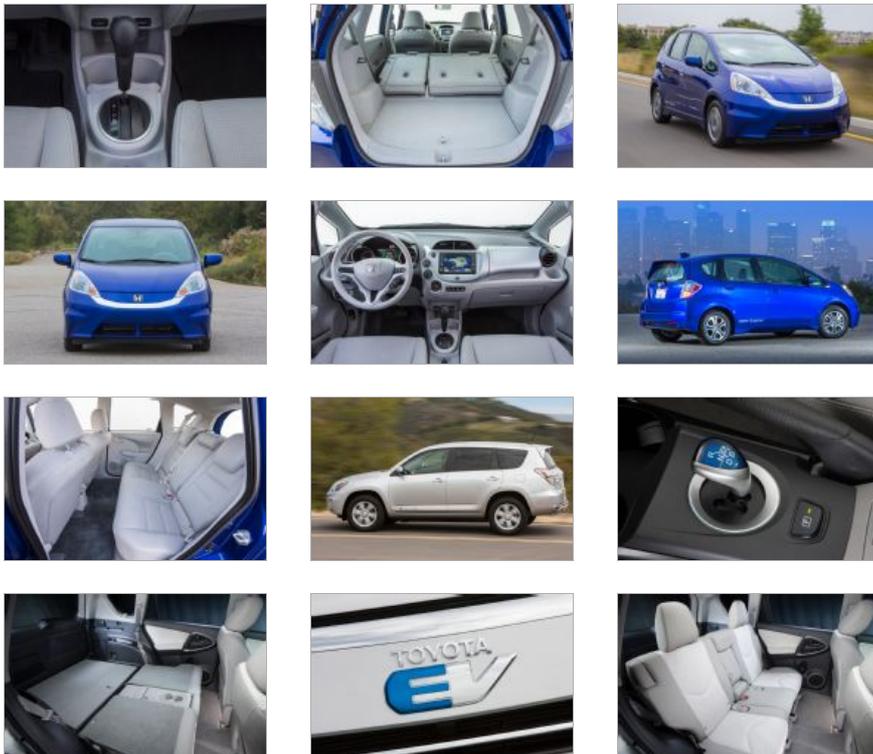


premium (the third point) that could be viewed as a bargain, it's the cheapest way you can get what's essentially the base Model S' drivetrain.



	2013 Honda Fit EV	2012 Toyota RAV4 EV
BASE PRICE	\$36,625 (monthly lease equivalent)*	\$50,610 (\$43,110 after federal tax credit)
VEHICLE LAYOUT	Front-engine, FWD, 5-pass, 4-door hatchback	Front-engine, FWD, 5-pass, 4-door SUV
MOTOR	123-hp/189-lb-ft, permanent magnet	154-hp/218 (normal),272 (sport)-lb-ft, induction
TRANSMISSION	1-speed auto	1-speed auto
CURB WEIGHT	3250 lb (mfr)	4050 lb (mfr)
WHEELBASE	98.4 in	104.7 in
LENGTH x WIDTH x HEIGHT	162.0 x 67.7 x 62.2 in	180.1 x 71.5 x 66.3 in
0-60 MPH	10.5 sec (normal), 8.5 sec (sport); MT est	8.6 sec (normal), 7.0 sec (sport); mfr est
EPA CITY/HWY FUEL ECON	132/105 mpg-e	76 (combined) mpg-e
ENERGY CONS, city/hwy	26/32 kW-hrs/100 mi	37 (combined) kW-hrs/100 mi
RANGE/L2 RECHARGE TIME	82 mi/3 hrs	100 mi (est)/5 hrs (standard), 6 hrs (extended)
ON SALE IN U.S.	Currently	Currently

*Includes \$7500 federal tax credit



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**bigelowbert**

Mar 9, 2013

I leased a Fit EV in January, and I can vouch for the comment in the article that it is a 'hoot' to drive...Quick, quiet and sharp handling. I drive in Sport Mode all the time...and B which gives maximum regen braking by just lifting on the accelerator. I regularly get 5+ miles per kWh which translates to 100+ mile range. But high speed freeway blasts pull it down to under 4, especially if I use the A/C. So it depends a lot on how you drive.

The first time I drove this car, I thought...when a good battery arrives, gas-powered cars are history.

[Like](#) [Reply](#)**teebrad**

Sep 22, 2012

36,000 and 43,000 dollar cars that belong in the bargain bin. its either some financing technique is established, or fall on your face. at least the volt is nice. these, not worth their price tag by a mile. ditch the fit and rav4 EVs. go new name plate

[Like](#) [Reply](#)**grumfan**

Dec 18, 2012

@teebrad those are the prices right now, which is why they are leasing them rather than selling them. Same thing the General Motors did with its first electric vehicles. As the battery technology improves over the next two or three years, we should see the prices drop substantially. There is a new type of chemical formulation for lithium-ion batteries, called lithium phosphate. This technology was substantially created by a company called A 1 2 3 systems. The name comes from a famous formula used to calculate information about molecular relationships in chemistry.

A 1 2 3 systems just went bankrupt. They have sold off their factories and the technology of the company and the main core of the company looks like it will be purchased by one of the companies who is purchasing at least one of the factories. The difficulties in ramping up to manufacture these batteries are what caused the company to fail, and are also affecting the manufacturing and availability of a lot of the electronic and hybrid vehicles currently on the market. Toyota gave up trying to gain these types of batteries for its electric vehicles until recently. Now that it looks like the supply will be able to support a model line, they will begin using lithium phosphate entries in some of their models.

But I diverge, the main point being the price of these vehicles will drop.

[Like](#) [Reply](#)**btc909**

Sep 20, 2012

The future has failed!

[Like](#) [Reply](#)**Jc**

Sep 18, 2012

I don't really understand why they sell the EV models on the outgoing designs... I mean, those look great, but the new models would look awesome!

[Like](#) [Reply](#)**Black Dynamite**

Sep 18, 2012

I don't know why they are "comparing" these two incomparable vehicles, who are only comparable in powertrain.....BD

[Like](#) [Reply](#)**Land Rovers**

Sep 17, 2012

Well, I don't know about drive range, and all that, but the Fit's look has improved way over the Rav-4's look.

[Like](#) [Reply](#)**_E60_**

Sep 17, 2012

Ughh... here are two grim hints at what the future holds in store for us...Sure, you get twice the MPGs. Too bad you have to pay three times the price of what a Fit or RAV4 would normally cost. Doesn't matter how many years you own the car, those extra costs will never be recouped through the fuel savings.

[Like](#) [Reply](#)**skyguy**

Sep 17, 2012

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