

MAGIC CARPET RIDES

BY JOE SAGE

We're looking at three different types of hybrid from Toyota here, each bringing something to the table. One is a plug-in adaptation of the otherwise familiar standard Prius hybrid, one is based on the familiar Prius but upsized, and one is a hybrid adaptation built off a popular gasoline model midsize sedan.

TOYOTA PRIUS PHV PLUG-IN HYBRID

Born to be a hybrid, now reborn with a plug.

You can drive this just like a standard Prius, all you want. And to a point, you can run it as just an electric.

Electric range is not a lot—Toyota says 15 miles, EPA says 11—but if you work within 5 miles of home, you could drive electric every day and even stop for groceries. Then on weekends, you could drive anywhere you want, in hybrid mode.

A standard Prius can run in electric-only (EV) mode for a couple of miles, at low speeds. But the Plug-In Hybrid's 11-15 miles are at normal speeds. It takes three hours to charge at 120v, or an hour and a half at 240v.

Basically, the Prius Plug-In Hybrid (or PHV, for Plug-In Hybrid Vehicle) has a much larger—and more advanced—battery pack than a standard Prius. The 1.3 kWh NiMH of the standard is replaced by a 4.4 kWh lithium-ion pack, which can be fully charged off household current. The standard Prius, of course, uses its batteries to pick up charge in common hybrid fashion, from otherwise-wasted vehicle energy (braking and such).

We received our test Prius Plug-In Hybrid without a charge, and we found ourselves driving it as a hybrid for several days before bothering to plug it in. Since it gets 50 MPG anyway, it's all too easy to skip the plug. And that's fine, except that this car has a base price of \$39k-plus, versus \$24k for the standard Prius. So if you don't intend to get serious about your charging, you would want to think twice about this. We would assume an owner would have a dedicated outlet in the garage and that it would be a basic ritual to keep it charged.

On the road in regular hybrid mode.

The PHV drives well, with plenty of pep on the freeway, and solid handling on surface streets or passing over storm troughs. We could maintain normal speeds in aggressive traffic, by and large, although while keeping up in the turns we could make the tires squeal. All in all, it's quick and comfortable, a vehicle people might expect to be sacrificing performance for, but they won't be.

The front-driver didn't seem twitchy in turns, but demonstrated a front-drive mind of its own on the freeway, sometimes wanting to dart out of its lane, sometimes wanting to stay put when you did want to change lanes.

We had the PHV in August and noted issues with getting A/C to cool well, perhaps from its huge windshield and instrument panel, or perhaps due to how its climate control system works without conventional engine operations. After dark, though, it could get icebox cold.

Electric vehicles are known for their torque, which is applied straight across the power band, giving surprising off-the-line punch. The Prius PHV has 105 lb-ft of torque from its 134-hp gasoline engine, plus 153 lb-ft from its electric motor. Our experience suggests that the complex drivetrain of this plug-in hybrid didn't send all that pure electric torque to the wheels. But it helps.

Decoding the modes.

Some power mode controls seem to be either redundant or to conflict with one another. There is an HV/EV option (hybrid or electric vehicle) accompanied by two buttons: one says Eco mode and one says Power mode. But up by the battery charge indicator, it already says Eco, regardless, and it also already says EV, yet we know we can't go in EV at the moment, as the car has not been charged. If we hit the button called Eco mode, a green "Eco mode" lights up above the speedo. If we choose Power mode, a green "Power mode" lights up. If we hit Power mode again, that goes off and we don't have either. Ditto if we hit Eco mode and hit it again. However, that doesn't affect the other indicators above the charging scale—they say EV or Eco with a mind of their own.

You never forget your first time.

After a few days of hybrid driving, we still needed to test electric mode, so it was time to plug it in and charge it up. After it had charged for a while, we came out to check on it, decided to read the manual some more, and hopped in. It was so hot, we figured we'd start the car

and try for a little of that A/C. The attempt brought us a notification saying you can't start it while it's being charged, so we of course tried to stop it, but were unable to power it off. (It was like *Robocop*: you now have five seconds to drop the weapon.) The interface said, "charge result: charge stopped due to charge connector operation." We stepped out, closed the door, came back in and had that same message. We tried again to turn it off, and this time it let us. The time-distance-consumption readout said zero-zero-zero. So we turned it on to check our charge info. "Welcome to Prius: hybrid system indicator: no charge." The battery indicator was reading about one tick out of eight. We tried to put it in EV mode, but the readout said "EV mode not available, low battery." This was becoming irritating.

So we doublechecked the manual for any specific sequence between plugging the cable into the wall and into the vehicle. It didn't seem to say, but seemed to imply that you would be already plugged into the wall. Okay. Confirm that the charging indicator is illuminated, check on the energy monitor by turning the power switch to "On" mode, and the charging indicator will turn off when charging is completed. We have more adventures reconciling the lingo with the hardware realities, but ultimately do get it charged up, in four and a half hours off 120v.

On the road in electric mode.

Pushing midnight, we headed out to try for our 11-15 miles in EV mode. Despite nighttime temps in the 90s, we had the window down so we could hear that little whirring noise up front that EV cars are now required to make. It's really not that much quieter than during normal running, the car is so quiet. You have minimal tire noise, sounds of the outdoors, and the whirring.

Driving in electric mode is very quiet and smooth. You hear and feel the transmission and driveline just enough to sort of feel as though you're hearing an engine.

We tried a couple of quick experiments, going back and forth between EV and Power (using Power mode rather than Eco, to try to ensure we have the engine running). It was hard to hear or feel the difference, which didn't do much for our enlightenment, but bodes well for the actual ownership and driving experience, which seems it would be very smooth. On the other hand, enlightenment and feeling the difference are likely to be big parts of what the typical hypermiling owner might actually seek.

Controls and indicators again left us confused during

that experiment, seemingly requiring duplicated effort to change modes. These are among reasons our experiment feels less than a hundred percent pure or controlled.

As we returned from a standard errand of about 10 miles, presumably still in EV mode (though with those quick Power experiments thrown in), the gauge said we had 4.5 miles and 8 minutes of power to go, and indicated 54 MPG, though it wasn't clear whether that was eMPG equivalent or familiar gasoline-hybrid mileage.

Either way, while some can't imagine achieving the new federal mandate of 54.5 MPG by 2025, the Toyota Prius Plug-In Hybrid is basically delivering it today.

We wanted to drive out the full 11-15-mile charge, so we headed back out on that same 10-mile run. At the turnaround point—having now driven 15 miles in EV (other than those brief experiments)—we still had electric capacity to spare. A gauge on the upper instrument panel includes a flexing bar graph with a battery at the side ("hybrid system indicator"), and that showed that we'd been charging the hybrid system. The green EV light had been on all the time, but a white EV indicator above that bar graph had now also popped on. While we pondered that, we drove five more miles back to where we had started. En route, the green EV light went off, and the white indicator changed from EV to Eco, so we were back to running as a hybrid. We read through another few pages of the manual on these indicators, but will spare you. If you buy the car, you can study that in depth.

Overall take on the Prius Plug-In.

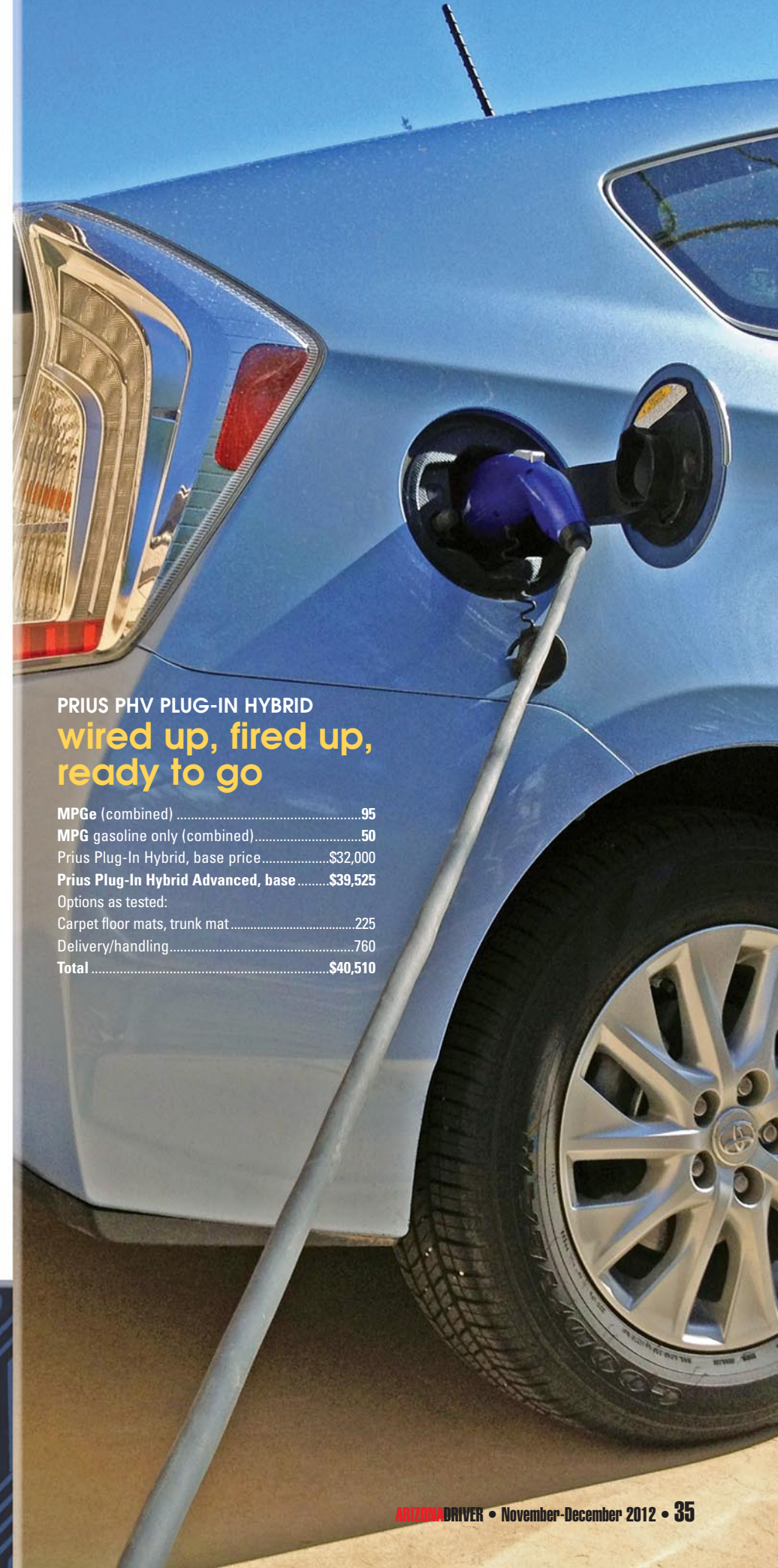
Driving in any mode, the Prius Plug-In is sweet. It's easy to see the attraction of having this car and driving it in electric mode all the time. Any easy ritual of plugging it in and unplugging it—of course using 240v, which of course you would get—would become quicker and easier than our first and only time. And when you want to take a long trip, as you could in any "real" car, or if you were to run out of gas, then you really get the last laugh.

We found ourselves wishing it had a cooler character, so it didn't just look like another Prius, but that comes with the deal. It's smooth, it handles well, and even in aggressive traffic, it holds its own.

The Prius Plug-In could be ideal for you if you regularly drive just the EV distance and have the time and discipline to plug it in. As a fallback it's also a conventional hybrid Prius. But if your usage is more of a mix, or if your emphasis tends more toward normal, less like electric range, there's much less reason to spend this much.

A plug-in hybrid could seem a little complex, and it could seem a little pricey, compared with a straight hybrid, in particular—or with a straight electric, in theory. But it ultimately seems to offer a handy and adaptable solution, if it suits your budget.

It's great that Toyota has given us the option.



PRIUS PHV PLUG-IN HYBRID wired up, fired up, ready to go

MPGe (combined)	95
MPG gasoline only (combined)	50
Prius Plug-In Hybrid, base price	\$32,000
Prius Plug-In Hybrid Advanced, base	\$39,525
Options as tested:	
Carpet floor mats, trunk mat	225
Delivery/handling	760
Total	\$40,510



KEEP RIGHT >>

CAMRY HYBRID XLE

beyond second nature

MPG (city/highway)	40/38
Camry L, base price	\$22,055
Camry Hybrid LE, base price	\$25,990
Camry Hybrid XLE, base price	\$27,500
Options as tested:	
Blind spot monitor	500
Convenience package	695
Safety connect package	450
Leather package	1,160
Premium HDD nav and entertainment	2,600
Power moonroof	915
Wheel locks	67
Delivery/handling	760
Total	\$34,647



TOYOTA CAMRY HYBRID XLE SEDAN

Born to run on gasoline, adapted to be a hybrid.

There is still little that's handier than a midsize sedan. The Camry Hybrid feels spacious as we get in. Entry and start are keyless, and a "Power" button is appropriate to its hybrid nature. Gauges come to life, then in a second or two the A/C comes on, most welcome of all, as the outside temp reads 113. And the airflow is already cool.

Gauges are sensitive: we give it a little gas and see it quickly go to the wrong end of the Eco range, so we back off, drive along in silence other than the A/C blowing, and think this is all just as natural as can be. A mainstream car with an alternative bent, it feels like second nature. And then some. The Camry Hybrid delivers smooth operation without consuming much fuel. It's comfortable, it's modern, and off you go. Ours looks handsome, too, in its Cosmic Grey Mica paint job.

The Camry Hybrid has good pep, a more than reasonable amount of performance. On the freeway, we are perfectly able to make the moves we need, when we need, if we give it a little punch, holding its own in the notoriously aggressive traffic of the northeast Valley.

The A/C is noisy after awhile, but worth it. The front-wheel-drive steering is, not surprisingly, a little twitchy and feels slightly disconnected. Suspension over bumps and troughs is solid and very smooth, other than also a little twitchiness from front-drive torque.

One oddity: when parked and idling for a minute or two, something in the system would suddenly kick in, and we felt as though we were just rear-ended. We'd like to say you'll get used to it, but we never really did.

Ratings of 40/38 MPG (city/highway) are not standouts, with so many vehicles topping 40 now, even conventionally gasoline-driven. But the power combination of 156 gas horses plus 150 kWh—along with gasoline torque of 156 lb-ft plus another 199 lb-ft electric—feels like a lot. Acceleration is strong for a midsize sedan.

Our test car's sticker of \$35k also makes a tough comparison, though its starting price around \$26k is a much more attractive starting point for a simple, reliable vehicle with a great fuel economy trick up its sleeve.

The Camry Hybrid feels mainstream. Anyone who is interested in a hybrid, without feeling as though they have to join a cult or learn a lot of new science, is going to be delighted with this car. Its hybrid operation is quite transparent. About the only time you remember it's a hybrid is when you feel that extra torque from its quasi-electric drivetrain, or when you look down and see that the gas needle has hardly moved.

TOYOTA PRIUS V MODEL FIVE

Born as a hybrid, then expanded in size.

The Prius v is mechanically the same as the standard Prius, but a little larger—3.0 inches in the wheelbase, 6.0 inches in length and 1.1 inches in width. The roofline is flatter, extended, and raised 3.3 inches for more of a wagon look. Three more cubic feet inside bring easier access to a more spacious interior, especially in the rear seat. The cargo area is 34.3 cubic feet with seats up (59 percent larger than the standard Prius) and 67.3 cubic feet with rear seats folded—about the same as the huge Toyota Sequoia with its third row folded.

The style is minivan-like, with a deep instrument panel and strongly sloped windshield. A different Prius that's readily distinguishable seems like a good thing.

We gave power and handling mixed grades. We came to this vehicle from a week in a 2-liter turbo of moderately high performance, so at first the Prius v felt weak. But even then, other than acceleration, we noted that it moves along well in normal traffic. You will want to drive it and decide for yourself how well it suits your wants and needs. Most likely, it will fulfill them just fine.

The Prius v has a turning circle of 36.1 feet with 16-inch wheels, but the 17-inch wheels of our tester bring that to 38.1 feet. These exactly bracket the Jeep Grand Cherokee's 37.1, though the 16-inch-wheeled version of the Prius v approaches the MINI's 35.1-foot circle.

The Prius v is one of three Toyotas on *Parents* magazine and Edmunds.com's list of the Best Family Cars of 2012. For more on the Prius v, see our Sept/Oct 2011 issue.

FOR PERSPECTIVE, here are fundamentals for the standard Prius and the new smaller Prius c, as well:

Toyota Prius (the familiar standard hybrid)

MPG (city/highway)	51/48
Base price	\$24,000

Toyota Prius c (the smaller city hybrid)

MPG (city/highway)	53/46
Base price	\$18,950

As far as which one of these Toyota hybrids to buy, if the potential to totally avoid the gas pump rates high and budget allows, the PHV may be for you. If purchase price and operating economy are your top priorities, and you can live with smaller size and less power, the price and mileage on the Prius c are tops (see our March/April 2012 issue). If you just don't want a Prius, the Camry Hybrid has the lowest fuel mileage of the bunch, but can still save you money every day while giving you a more conventional look and feel. Time to go shop. ■

PRIUS V MODEL FIVE v for versatility, vagon, volume

MPG (city/highway)	44/40
Prius v Model Two, base price	\$26,550
Prius v Model Five, base price	\$29,990
Options as tested:	
Advanced tech package	5,580
Carpet floor mats, trunk mat	225
Wheel locks	67
Delivery/handling	760
Total	\$36,622

