REPRINTED FROM
MOTOR TREND
NOVEMBER 2007 ★ ★ ★ ★ ★ MOTORTREND.COM

thefutureisnow

WELCOME TO THE KITCHEN-TABLE ECONOMICS OF OWNING A HYBRID

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AT THE MOMENT, the number of hybrid-powered cars, trucks, SUVs, and crossovers clamoring for your attention totals not two, or three, or four, but 13. This is no longer a parlor trick. Yet after two years of sometimes three-buck gas and a 600-expert U.N. report that pegs the human fingerprint on climate change at a *90 percent* certainty, let's count, shall we, the number of hybrids that are selling in notable numbers. Ummm, one. The Prius.

What's the reticence here?

It's the kitchen-table economics of the hybrid-premium, pal. Everybody is an eco-altruist until it comes time to write a check. Even little ones. Is $50 per month reasonable? $10 way too much? We'll number-crunch how big or small that check is for Toyota's Camry Hybrid, Nissan's Camry-clone Altima Hybrid, and Saturn's Aura Green Line Hybrid. But first, we ought to get acquainted with these three electro-combustive marvels.

It's no exaggeration to say the hybrid version of the old U.S. of A.'s best-selling car drives like a Camry possessed. Its Hal-on-wheels sibling, the Prius, seems to have absconded with its personality. It clicks and whirs; signals it's ready to go with an electronic tone as if you've reached a desired floor on an elevator. Just like the Prius.

No surprise. Its motive architecture closely hews to Prius principles, though there are some notable differences. Primarily, the engine part of things is a lot more substantial, 2.4 liters to the Prius's 1.5, while it likewise employs an Atkinson-cycle for better efficiency (a slight twist on the Otto cycle where late closing of the intake valves reduces effective compression relative to the expansion ratio). This drops the 2.4's power from its customary 158 to 147; however, total power rises to 187 owing to the electric motor's 40-horse contribution.

Worry warts might be fretting about the complexity of this. Welcome to the modern world, Ike fans. If a car with a five-year/60,000-mile powertrain warranty, an eight-year/100,000-mile hybrid component warranty (15 years and 150,000 miles in the case of our California-resident car), and a 10-year/150,000-mile battery warranty still scares you, maybe you ought to consider public transportation.

The battery—which stores enough spark to supply several households' electrical needs, says Toyota—is packaged just behind the rear seats. Although it's fabulously compact, it still wipes out about a third of the trunk, dropping its volume from 15 to 10.6 cubic feet. This isn't a strong selling point. However, at least it's configured in such a way that a small trunk-to-cabin pass-through remains for those urgent two-by-four moments.

For the most part, the Camry Hybrid closely shadows the conventional version's comfort-first, vanilla vehicle dynamics. But every now and then things can get nautical in the ride department, with a heaving that suggests there's a lot of weight here and not much shock valving offering objection (indeed, it's 165 pounds heavier than the topline V-6). Pass out the life preservers. In a straight line, though, it bicycles away from the Aura; it's almost three seconds quicker to 60 (at 7.7 seconds) and can just about stay in touch with the lighter, swifter Altima (7.1).

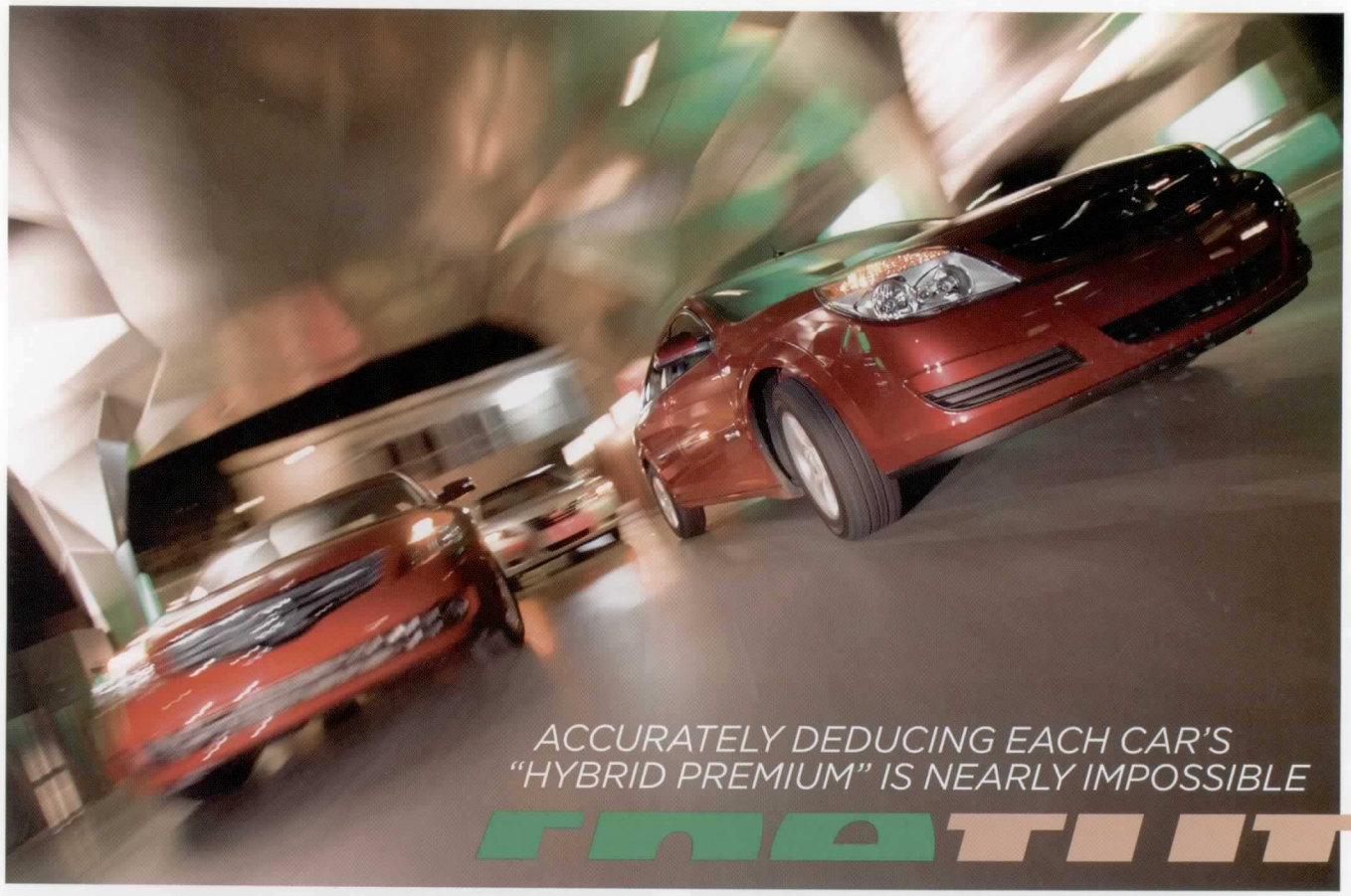
By the end of September, Toyota's success in selling hybrids will have earned it the dubious reward of completely losing its Federal Tax Credit, which for the Camry has already declined from $2600 in September 2006 to $1300 in March 2007. From here on, no more federal free-loading. That's quite a hit, so for the 2008 edition, Toyota's juggled its numbers and lopped $1000 from the Hybrid's bottom line, though the car's been somewhat decontented, too, gaining steel wheels, swapping a single-disc CD player for a multidisc and a urethane steering wheel and shift knob for leather-draped ones. (Maybe related, the prices of all regular Camrys have *increased* $100.)

Most of what's been said about the Camry can be copied and pasted for the Altima Hybrid—but the differences are everything. This is Nissan's accidental hybrid. It's virtually a "Jeopardy" question. Answer: "A sedan that's composed of Toyota and Nissan parts."

When Nissan and Toyota inked a technology-use deal for Hybrid Synergy Drive in 2002, Nissan's aim was to buy time. Eight years, to be specific; by 2010, it expects to have a system of its own beavered-together. In the meantime, the Altima Hybrid provides a helpful Advanced Technology Partial Zero Emissions Vehicle in the eight states that follow California's emission rules (including Connecticut, Maine, Massachusetts, New Jersey, New York, Rhode Island, and Vermont). And that's exclusively where you're able to buy it, too. Nuts to the rest of you, apparently, though you can still get one as a non-resident and have it serviced locally.

The Altima's hybrid tech isn't a Xerox of Toyota's blueprint, though. Its signature improvisation is its engine, Nissan's trusty 2.5-liter four, shrunk from 175 to 158 horsepower by the efficiency elves; but when coupled to its 40-horsepower primary electric motor, the total climbs to 198. That's 11 more than the Camry, with 50 fewer pounds to move. Other than its engine's harsher starting, it operates just as the numbers suggest: a Camry times 1.07. In handling crispness, make that a 50-percent advantage; the Altima is simply a lighter, tauter platform, though its ride is hardly uncomfortable. It is, however, less practical: Its trunk is even more drastically impacted by its batteries (dropping from 17.9 cubic feet to 9.1, without offering any long-object pass-through at all), and rear-seat entry and headroom are noggin-bangers. What's not small is its $2350 Federal Tax Credit. That's a nice big number.

Our third car is Saturn's low price-point, mild hybrid Aura Green Line. Like the Altima, the Aura hybrid is also a stop-gap measure,


ACCURATELY DEDUCING EACH CAR'S
"HYBRID PREMIUM" IS NEARLY IMPOSSIBLE

a place-holder until its next-generation model receives a version of GM's highly anticipated two-mode hybrid. Think of it as a lure to tantalize bargain-hunters. And as with all bargains, the question is whether it's false.

To tempt you, Saturn has put together a 2.4-liter, 164-horsepower variant of the Ecotec four, belted to a five-horse motor/generator, which together provide auto-stop/start when halted and fairly seamless restarts when the brakes are released. Wincingly primitive stuff compared with the Nissan and Toyota. It also modestly boosts acceleration and regens a trifle of the brakes' waste heat, though the drivetrain's contribution to retardation is only loosely coordinated with the friction brakes. And you might say that ample trunk room is the *positive* side of having a skimpy nickel-metal hydride battery pack. How odd then that, of all three hybrids, it's the Aura that has an air compressor and sealant bottle where you'd expect to see a spare tire.

At a base price of $22,695 less its potential $1300 Federal Tax Credit (you take that straight off your tax bill, not taxable income by the way), the Aura Green Line is a low-profile hybrid that drives almost identically to its conventional-propulsion self. In other words, it's supple riding and crisp steering, drastically vacuumed of chassis feel, hindered by an antiquated four-speed automatic, and subjectively built to an intentionally lower price-point than the other two cars.

Before tabulating the Aura, Altima, and Camry economics, let's talk about the mileage numbers we're working with. In a first for a mileage-oriented comparison, we haven't driven several hundred nose-to-tail miles, with gas pump clicks punctuating the start and finish of the trek. Instead, we typed fueleconomy.gov into the browser and looked the numbers up. No, it's not the end of the world as we know it.

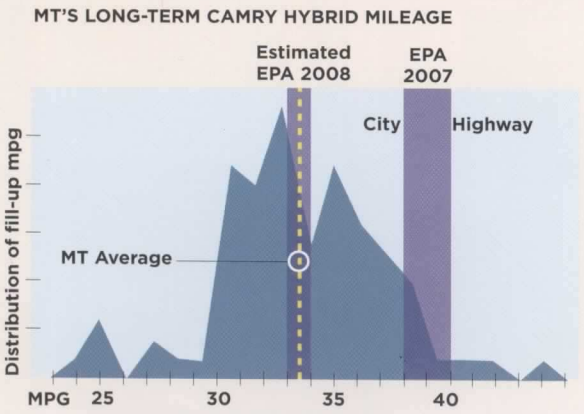
The EPA's mileage claims are no longer sour punchlines; the average mpg discrepancy we're seeing from 12 of our hard-driven long-term vehicles is a scant 0.25 mpg below their revised EPA values. Need more convincing? See the accompanying graphic of our long-term Camry's distribution of fill-up mpg versus its overall average mileage and 2008 EPA ratings.

Accurately deducing each cars up-front "hybrid premium" is nearly impossible, but it would be reasonable to guesstimate the Camry's at about $4100, the Altima's at $2300, and the Aura's at essentially zero (remember, the last two are helped by those juicy $2350 and $1300 tax credits). At $2.77 per gallon for regular gasoline (the national average at the moment), that equates to 8.0, 6.1, and zero years, respectively, to pay these off with fuel savings alone. Depressing, eh?

But here's an alternate way to think about this. Most of us actually live our lives month to month, right? Yes, everybody's hand is raised. All right, then, if you make some typical assumptions about car loans (five years), interest rates (7.95 percent), sales tax (6.8 percent), license fees (1.25 percent), and down payments ($2500), plus whatever specific tax credit the cars are entitled to (and you're entitled to—watch out for that alternative minimum tax thing) the rosiest month-to-month scenario looks like this: Each month, your Camry's Hybridness will have cost you about $48, your Altima's $32, and the Aura's will have actually deliver about 13 bucks *into* your pocket relative to its theoretical gas equivalent.

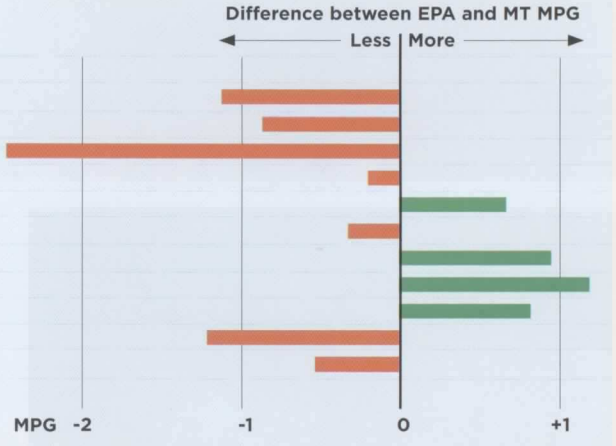
In the Altima's instance, that means spending *$1.05* a day to thumb your nose at the gas sheiks and cut your greenhouse emissions by a quarter. Sounds a lot more palatable than suffering through seven

YOUR MILEAGE MAY STILL VARY, BUT WHAT IT VARIES AROUND IS NOW MEANINGFUL



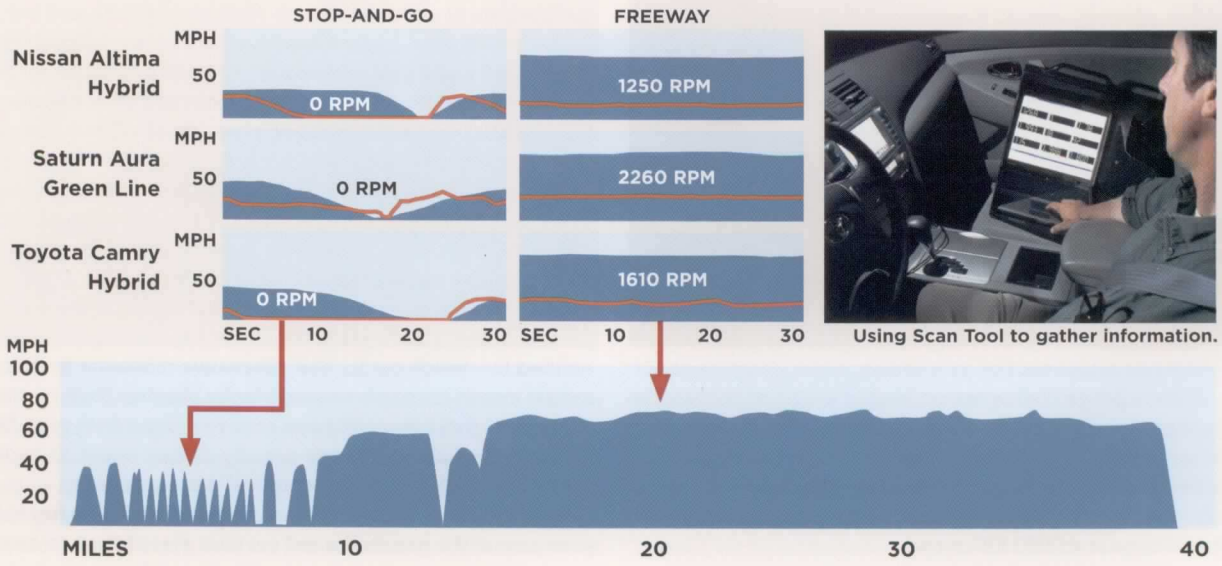
At long last, the EPA appears to have finally figured out how to predict fuel mileage. Although its tests are still conducted on a dynamometer, the speeds, acceleration, and deceleration rates employed are now far more realistic, including the use of air-conditioning. The chart at left shows that real-world mileage of our long-term Camry Hybrid can vary considerably depending on who's behind the wheel and what it's doing. But consider its average: It's exactly between its estimated 2008 city and highway numbers. Below is a review of the mileage difference among each member of our active long-term fleet and its 2008 (or calculated 2008) combined EPA figures. The most egregious inconsistency is the Jag XKR, though even this still falls within the EPA's 15 to 23-mpg city/highway range.

	MPG		
LONG-TERM VEHICLE	MT 2008	EPA	Difference
AUDI Q7	14.0	14.0	0.0
CHEVROLET SILVERADO	13.9	15.0	-1.1
INFINITI G35 S	19.3	20.0	-0.7
JAGUAR XKR	15.6	18.0	-2.4
JEEP WRANGLER RUBICON	15.8	16.0	-0.2
KIA SEDONA	18.6	18.0	+0.6
LEXUS LS 460	19.6	20.0	-0.4
MAZDA MX-5	24.9	24.0	+0.9
MERCEDES-BENZ GL450	16.2	15.0	+1.2
MINI COOPER S	26.8	26.0	+0.8
NISSAN SENTRA SE-R	24.8	26.0	-1.2
TOYOTA CAMRY HYBRID	33.5	34.0	-0.5
Average Difference			-0.25

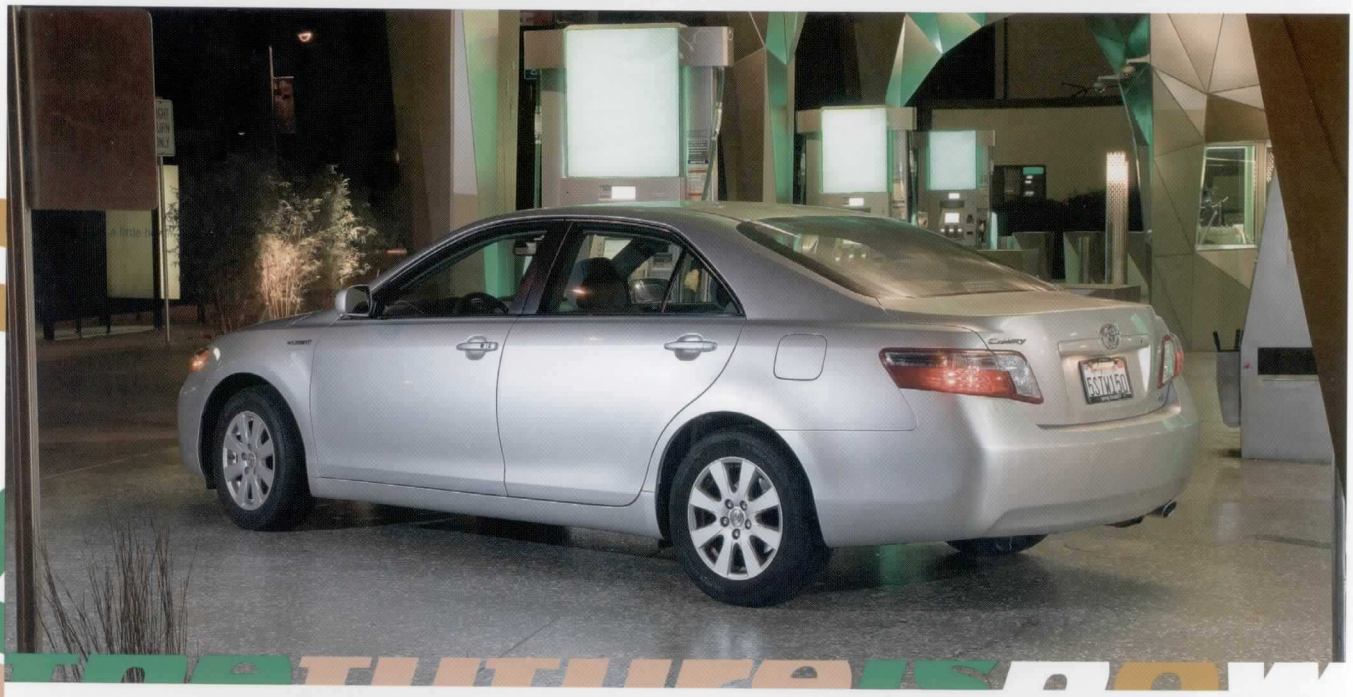


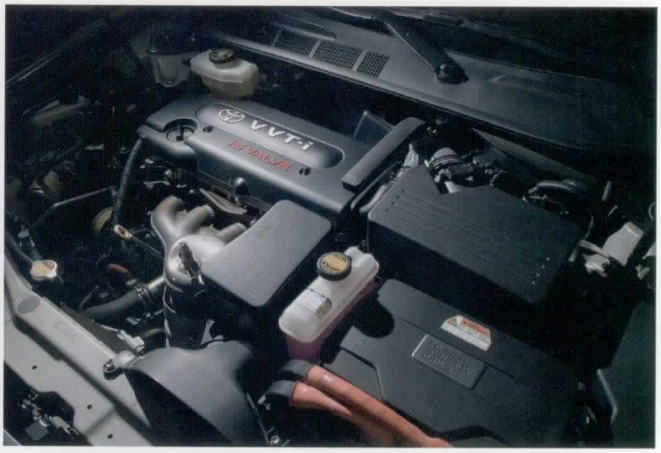
WHAT'S GOING ON UNDER THE HOOD? OBD-II KNOWS

At the bottom is a speed trace of most of the author's typical daily drive home starting from the eco-oriented gas station featured in our photos. Using a nifty OBD-II interface called Scan Tool from AutoEnginuity, we logged speed and engine rpm to learn what's happening under these hybrids' hoods. And we found plenty: Note how the Toyota and Nissan could kill their engines long before a stop and how low their rpm can be while cruising (1250 rpm!). Accelerating gently from rest (unlike below), the Altima and Camry could reach nearly 30 mph before starting their engines. Also interesting are the two CVT-transmission cars' max revs: The Camry touched 6020 rpm, the Altima, 5275 rpm.



Using Scan Tool to gather information.





years of uneconomic drought, doesn't it? Yes, the Milton Friedmans out there might prefer the Aura's economic spreadsheet (and we've certainly gained some unexpected respect for its basics-approach to hybrid technology). But the Aura's slow and just too close to not being a hybrid at all.

While Camry Hybrid fans might hoot that the Altima Hybrid was booted over this comparison's goal line by the sheer luck of still having its tax credit, it's also the best *affordable* driver's hybrid out there. It's a case where the roulette marble has landed on both Toyota and Nissan's lucky slots—a brilliant powertrain and a fun-loving chassis—simultaneously. Admittedly, this might be the most asterisk-laden comparison winner *Motor Trend*'s ever seen—there's the Altima's unusual federal subsidy and limited availability, to name two. Fortunately, our job is to pick winners, not simple storylines. ■

1ST PLACE: NISSAN ALTIMA HYBRID

Like Sonny and Cher and Desi and Lucy, the Altima Hybrid is happy collaboration of chilly partners.

2ND PLACE: TOYOTA CAMRY HYBRID

Did you ever think you'd read a hybrid comparison that a Toyota lost? This could be a collector's issue.

3RD PLACE: SATURN AURA HYBRID

Its economics are beyond reproach; unfortunately, its speed and hybrid credentials are not.

	2007 NISSAN ALTIMA HYBRID	2007 SATURN AURA GREEN LINE	2007 TOYOTA CAMRY HYBRID
POWERTRAIN/CHASSIS			
DRIVETRAIN LAYOUT	Front engine, FWD	Front engine, FWD	Front engine, FWD
ENGINE TYPE	I-4, alum block/head plus AC elec motor	I-4, alum block/alum head plus AC elec motor	Atkinson-cycle I-4, alum block/head plus AC elec motor
VALVETRAIN	DOHC, 4 valves/cyl	DOHC, 4 valves/cyl	DOHC, 4 valves/cyl
DISPLACEMENT	151.9 cu in/2488 cc	145.5 cu in/2384 cc	144.1 cu in/2362 cc
COMPRESSION RATIO	9.6:1	10.4:1	12.5:1
POWER (SAE NET)	158 hp (gas)/40 hp (elec)/198 hp (comb)	164 hp (gas)/5 hp (elec)/164 (comb)	147 hp (gas)/40 hp (elec)/187 hp (comb)
TORQUE (SAE NET)	162 lb-ft (gas)/199 lb-ft (elec)	159 lb-ft (gas)/111 lb-ft (elec)	138 lb-ft (gas)/199 lb-ft (elec)
TRANSMISSION	Continuously variable auto	4-speed automatic	Continuously variable auto
SUSPENSION, FRONT: REAR	Struts, coil springs, anti-roll; multilink, coil springs, anti-roll bar	Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar	Struts, coil springs, anti-roll bar, struts, coil springs, anti-roll bar
STEERING RATIO	16.1:1	16.2:1	15.6:1
TURNS LOCK-TO-LOCK	2.8	2.8	3.1
BRAKES, F:R	11.7-in vented disc & regen; 11.5-in disc, ABS	11.7-in vented disc & regen; 10.6-in disc, ABS	11.7-in vented disc & regen; 11.1-in disc, ABS
WHEELS	7.0 x 16 in, cast aluminum	6.5 x 16 in, cast alum	6.5 x 16 in, cast aluminum
TIRES	P215/60R16 94T M+S Continental ContiProContact	P215/60R16 94S M+S Uniroyal Tiger Paw Touring SR	P215/60R16 94V M+S Michelin Energy MXV4 S8
DIMENSIONS			
WHEELBASE	109.3 in	112.3 in	109.3 in
TRACK, F/R	60.7/60.4 in	59.9/60.3 in	62.0/61.6 in
LENGTH x WIDTH x HEIGHT	189.8 x 69.6 x 58.1 in	190.0 x 70.3 x 57.6 in	189.2 x 71.7 x 57.5 in
TURNING CIRCLE	37.4 ft	40.4 ft	36.1 ft
CURB WEIGHT	3540 lb	3480 lb	3589 lb
WEIGHT DIST, F/R	58/42%	60/40%	58/42%
SEATING CAPACITY	5	5	5
HEADROOM, F/R	40.6/36.8 in	39.4/37.4 in	38.8/37.8 in
LEGROOM, F/R	44.1/35.8 in	42.2/37.6 in	41.6/38.3 in
SHOULDER ROOM, F/R	55.7/55.5 in	55.9/54.0 in	57.8/56.7 in
CARGO VOLUME	9.1 cu ft	13.1 cu ft	10.6 cu ft
TEST DATA			
ACCELERATION TO MPH			
0-30	2.7 sec	3.8 sec	2.8 sec
0-40	3.9	5.5	4.2
0-50	5.4	7.5	5.7
0-60	7.1	10.5	7.7
0-70	9.1	13.5	10.0
0-80	11.6	17.3	12.9
0-90	14.5	na	16.3
PASSING 45-65 MPH	3.4 sec	5.5 sec	3.9 sec
QUARTER MILE	15.4 sec @ 92.3 mph	17.7 sec @ 81.4 mph	15.9 sec @ 89.1 mph
BRAKING, 60-0 MPH	132 ft	140 ft	134 ft
LATERAL ACCELERATION	0.77 g (avg)	0.75 g (avg)	0.76 g (avg)
MT FIGURE EIGHT	28.6 sec @ 0.57 g (avg)	30.1 sec @ 0.50 g (avg)	29.1 sec @ 0.56 g (avg)
CONSUMER INFO			
BASE PRICE	$25,615	$22,695	$26,860
PRICE AS TESTED	$31,145	$23,070	$28,289
STABILITY/TRACTION CONTROL	Yes/yes	Yes/yes	Yes/yes
AIRBAGS	Dual front, front side, f/r curtain	Dual front, front side, f/r curtain	Dual front, front side, f/r curtain
BASIC WARRANTY	3 yrs/36,000 miles	3 yrs/36,000 miles	3 yrs/36,000 miles
POWERTRAIN WARRANTY	5 yrs/60,000 miles	5 yrs/100,000 miles	5 yrs/60,000 miles
BATTERY WARRANTY	10 yrs/150,000 miles	8 yrs/100,000 miles	10 yrs/150,000 miles
FUEL CAPACITY	20.0 gal	16.3 gal	17.2 gal
EPA CITY/HWY ECON	35/33 mpg (est)	24/32 mpg	33/34 mpg
CO_2 EMISSIONS	0.57 lb/mile (est)	0.72 lb/mile	0.58 lb/mile
MT OBSERVED FUEL ECON	37.1 mpg	33.7 mpg	38.5 mpg
RECOMMENDED FUEL	Regular unleaded	Regular unleaded	Regular unleaded