Watch out, Tesla—Ford gets serious with Mustang Mach-E electric crossover

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- Ford wanted its first long-range EV to be unambiguously a Ford, so it decided to make it a Mustang.
- The original plan was for a front-wheel drive compliance car. That got shelved in 2017, and this sketch shows some of the changes that were made. The green line is the original BEV, the black outline shows the actual Mach-E.
- In person, the Mach-E is actually quite attractive, at least from most angles.
- The blanked-off nose can be a bit challenging in some colors.
- The Mach-E GT will get a polycarbonate insert here, along with more optimized aerodynamics on the front bumper.
- The Mach-E looks best in profile. The black section of roof really works to minimize the car’s visual bulk when seen side-on.
- The taillights could only be a Mustang.
- The interior owes more to Elon Musk’s Tesla than Lee Iacocca’s pony car.
- Yes, you read it here first—Ford has developed a darn

good infotainment UI.

- The display is a touchscreen, and almost no function should require more than two button presses to get to. CarPlay and Android Auto will be present, and both will work wirelessly.
- The dash is a really cool mix of materials. A soundbar-like speaker runs its width.
- Rear leg room is very good.
- The front trunk has been rubberized, and there's a drain plug so you can make a mess and then wash it out.
- DC fast charging is at up to 150kW.
- The front doors have these odd little pulls on them.
- As you might expect, there's an app to plan journeys with chargers and so on.

LOS ANGELES—The electric car market is about to get extremely interesting. After what feels like an interminable wait, the battery EV may soon finally cross over from curio to the big time as a slew of new models arrive in 2020. Each targets the all-important crossover buyer, and all in roughly the same $40,000 to $60,000 price range. After slurping up most everyone's sporty sedan sales, Tesla will start shipping the Model Y. Volkswagen will reveal its ID.4 on Tuesday at the LA Auto Show, and the MEB-based BEV is destined for US production in Chattanooga, Tennessee. Volvo's excellent XC40 crossover is getting a big-old battery pack and shares its tech with the exciting Polestar 2. And then there's the Ford Mustang Mach-E, which made its formal debut at a live-streamed event on Sunday evening.

Compliance car to Mustang

It was a contentious move, using the Mustang brand. It wasn't the plan, either—not at first. Originally Ford was working on what it openly described as "a compliance car," one built simply to meet incoming emissions rules in the US and Europe. But in 2017 it threw out those plans, putting together an

internal skunk works called Team Edison with a brief to reimagine the project. Its goal was to design a BEV that could only be a Ford, and there's little that's more iconically Ford than the galloping pony.

In just over a year, and with heavy reliance on VR instead of clay models, Team Edison pulled at the shape to get away from a more generic take on the crossover. The main electric motor moved from the front of the car to the rear. The wheelbase grew by 8.5 inches (216mm), and the dash-to-axle ratio was lengthened. The A-pillar was pulled back toward the rear of the car, lengthening the hood line, and there's a clever visual trick with the roof rails that really works to place the Mach-E within the Mustang family when you see the car in profile or from the rear three-quarter angle.

It's a more challenging design seen head-on. The headlights shout 'Stang, as do the creases that run the length of the hood. But it can also look a bit tall and narrow, particularly when painted in darker colors. The best-looking variant is the Mach-E GT, set to show up in spring 2021. This has unique front styling, with optimized aerodynamics and a polycarbonate insert that ticks the box in your brain that expects to find a grille at the front of a car. None of the engineers would get specific beyond telling us that the Mach-E's drag coefficient was "below 0.3."

Tesla's influence is clear

The timing of Team Edison's tearing up of the compliance car does not seem accidental. (Nor does the choice of the Los Angeles Jet Center as the site of the reveal; it is *literally* next door to SpaceX in Hawthorne, California.) 2017 was when the first Tesla Model 3s reached the public, and that car's influence on the Mach-E is clear the moment you open a door and step inside. A door you open by pushing a button; door handles are too *passé* here.

Like the Model 3, it’s basically a button-free zone. The center stack is dominated by a 15.5-inch touchscreen, portrait-style and proud on the dash. It runs Ford’s latest QNX-based Sync 4, with an elegant and intuitive tile-based UI that shares design principles with both Tesla’s and Volvo’s latest infotainment systems. At the bottom of the screen is a physical jogwheel overlaid atop the screen, similar to the ones you find in Jaguar Land Rover’s Touch Duo setups. Right now this is just set up to be a dedicated volume control, although it’s easy to see how Ford could add more functionality to it as an input device through a later OTA update.

The Mach-E addresses a key complaint of ours when it comes to the Model 3 by providing a second dedicated instrument panel directly in front of the driver. Ford has been remarkably restrained with its use of this 10.2-inch digital display—it will show you your speed, range, and some other critical information, but not much else.

We weren’t allowed to drive the Mach-E, but I did get a brief ride in one. The back seat is roomy—far more spacious than a Jaguar I-Pace—and bright and airy because of a full-length glass roof. Thoughtful design details abound; the arm rest between the driver and passenger folds up to provide the perfect place to stash your purse or man-bag, and the 4.8-cubic-foot (135L) frunk will have a drain hole, so if you want to fill it with ice at a tailgate, you can. (Open up the actual tailgate and the rear has 29 cubic feet/821L of cargo volume with the rear seats in use.)

Five models to rule them all?

Between late 2020 and spring 2021, Ford will bring out a mix of rear- and all-wheel drive Mach-Es with either standard- or extended-range battery packs. The cheapest of these is the Select; $43,895 buys you a rear-driving one of these with the

smaller pack, but you'll have to wait until early 2021 to get one of those. That also applies to the $52,400 California Route 1, a RWD version with lower-drag 18-inch wheels and the long-range battery pack. All prices are before the IRS tax credit is taken into account; this will be $7,500 until Ford joins Tesla and General Motors in having sold 200,000 plug-ins, at which point it will begin to sunset. Ford expects this to happen at some point in 2021.

If you want a Mach-E in 2020, it will have to be either a Premium—starting at $50,600 in standard-range, RWD spec—or the $59,900 First Edition, which combines AWD and the big battery. The big battery is also found in the Mach-E GT. This arrives last and trades range for performance—Ford is targeting a sub-4 second 0-60mph time for the $60,500 Mach-E GT, and there will be a Performance pack that drops this time into the mid 3-second range. Based on a brief ride in a development car—one that was "60-70% of the way to sign-off," according to the engineer—even the all-wheel drive Premium models should be accelerative enough to thrill most drivers trading internal combustion for electric propulsion.

Speaking of, the motors are an in-house Ford design, evolved from the company's experience with its hybrid line up. Both front and rear motors use permanent magnets, and like Porsche, Ford has gone for a rectangular hairpin design for the coils that packs more copper and less air inside. The amount of power and torque depends on configuration; at the low end, a Mach-E Select should be about 190kW (255hp), and 419Nm (306lb-ft) for a RWD model. Ford's target for the AWD First Edition is 248kW (332hp) and 565Nm (417lb-ft), and 342kW (459hp) and 830Nm (612lb-ft) from the GT.

300 miles should end range anxiety

For the battery pack, Ford is using pouch cells from LG Chem, built into modules that are then combined in series and

parallel. The smaller pack uses 288 cells in 10 modules to offer 75.7kWh, which should provide 210-230 miles (338-370km) of range depending on whether it’s a single- or dual-motor Mach-E.

The larger pack is 98.9kWh, made from 12 modules of 376 cells. That’s a lot of energy to play with, and Ford thinks that will be sufficient for 300 miles (482km) when fitted to a rear-wheel drive Mach E, which should go a long way to countering range anxiety. DC fast-charging one of those at 150kW should take the battery state of charge from 10 to 80% in 38 minutes.

Home charging is obviously a lot slower; about 22 miles per hour (35km/h) when connected to the standard 240V, 32A charger, or 32 miles each hour if you spring for the optional 48A wallbox. Like Audi and Porsche, Ford is partnering with Amazon to make the home installation process as painless as possible, and it’s working with Electrify America and Greenlots to create a Ford Pass charging network of 12,500 public chargers, which should support plug-and-charge, where the car authenticates your account details with the charger as part of the handshake procedure.

Tesla’s influence on Team Edison is also on display when it comes to buying a Mach-E. You can do that through a Ford dealer—2,100 in the US are certified to sell and service EVs, and each will have cars on hand to provide test drives. But Ford also wants you to be able to buy a Mach-E online, easily, without the normal song-and-dance routine that is the American car-buying experience. Exactly how that will work is still being determined since long-standing protectionist laws exist in most states that mandate that a dealer gets a cut when someone wants to buy a new car.

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