

# Formula E: A new breed of racing

Formula E street races—which sport electric vehicles over gas-powered—are quickly becoming a global phenomenon, highlighting critical themes of clean energy and sustainability. The world's first Formula E competition took place in Beijing in 2014 and today the races are popping up in major cities around the world. Here, Visa, the official payment partner of FIA Formula E competitions, takes a look at how electric motor racing differs from gas-powered open-wheel racing.

## Electric racing

## Gas-powered racing



### CARBON FOOTPRINT



**0 emissions**  
per race



**Roughly 1.4 kilograms**  
**per kilometer**

(4.97 pounds per mile) driven

Formula E car batteries are charged with renewable fuel generators powered by glycerine, a byproduct of bio-diesel production.<sup>1</sup>



### FUEL CONSUMPTION



**No more than**  
**28 kWh**  
**(kilowatt-hours)**  
**per race**



**Around 75 liters**  
**(20 gallons)**  
**per 100 kilometers**  
**(62 miles)<sup>2</sup>**

Super-efficient Formula E cars run an entire race on less energy than contained in one gallon of gas. A single gallon of U.S. automotive gasoline contains almost 37 kilowatt hours of energy.



### TOP SPEEDS

**225kph (140 mph)<sup>3</sup>**

**More than 370kph (231 mph)<sup>4</sup>**

When it comes to speed and acceleration, gas-powered open-wheel cars have an edge, but Formula E cars are catching up and seeing gains in both departments every year.



### VEHICLE WEIGHT (WITH DRIVER)

**1,763 pounds**  
**(minimum)<sup>5</sup>**

**1,604 pounds**  
**(minimum)<sup>6</sup>**

Formula E car batteries run on the heavier side, which accounts for the weight difference here



### HOW LONG CAN THEY GO?



**About 50 minutes<sup>7</sup>**



**Up to two hours<sup>8</sup>**

Formula E races are shorter than traditional ones since battery life is still an emerging technology, but the races remain intense and offer viewing options like 360 degree cockpit views on social media.



### DISTANCES + TRACKS



**60km (37 miles)<sup>9</sup>**  
**on temporary tracks**



**More than 305km**  
**(189 miles)<sup>10</sup>**  
**on**  
**dedicated racing tracks**

Formula E races occur mostly in city centers to encourage the use of active and sustainable transportation, from buses and trains to car sharing, biking or walking. Parking spaces, ironically, aren't available to keep fuel cars—and their undesirable emissions—at bay.<sup>11</sup>



### PIT STOPS



**Drivers make one pit stop**

to swap cars, ensuring they have a fully charged battery for the last leg of the race.<sup>12</sup>

**About two per race.**

20 team members change the vehicle's tires and repair minor damage.<sup>13</sup>

Sources:

<sup>1</sup> <http://info.fiaformulae.com/sustainability/>

<sup>2</sup> <http://www.fia.com/sites/default/files/regulation/file/1-2014%20SPORTING%20REGULATIONS%202014-02-28.pdf>

<sup>3</sup> <https://www.forbes.com/sites/csylt/2015/08/25/is-formula-one-the-worlds-most-sustainable-sport/#7996d6072952>

<sup>4</sup> <https://www.forbes.com/sites/csylt/2015/08/25/is-formula-one-the-worlds-most-sustainable-sport/#7996d6072952>

<sup>5</sup> <http://www.fia.com/file/37419/download/12730?token=RqrCWl3Y>

<sup>6</sup> <http://www.fia.com/sites/default/files/regulation/file/1-2014%20SPORTING%20REGULATIONS%202014-02-28.pdf>

<sup>7</sup> <https://www.theverge.com/2016/10/8/13199532/formula-e-electric-racing-guide-streaming-how-to-watch>

<sup>8</sup> <http://en.espn.co.uk/f1/motorsport/page/3710.html>

<sup>9</sup> <http://www.fia.com/file/37419/download/12730?token=RqrCWl3Y>

<sup>10</sup> <http://www.fia.com/sites/default/files/regulation/file/1-2014%20SPORTING%20REGULATIONS%202014-02-28.pdf>

<sup>11</sup> <http://info.fiaformulae.com/sustainability/>

<sup>12</sup> <http://www.fiaformulae.com/en/championship/regulations/>

<sup>13</sup> <http://www.fia.com/sites/default/files/regulation/file/1-2014%20SPORTING%20REGULATIONS%202014-02-28.pdf>

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