

## **“Conscious Racing”**

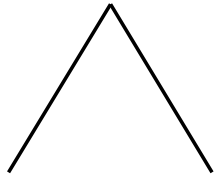
What’s Happening with Electric Vehicles in Auto Racing?

Presentation by DEVA

12 August 2020 – Jim W.

- Formula E
- Pikes Peak
- Refuel - Laguna Seca
- Local in Davis

FIA  
Fédération Internationale  
de l'Automobile

















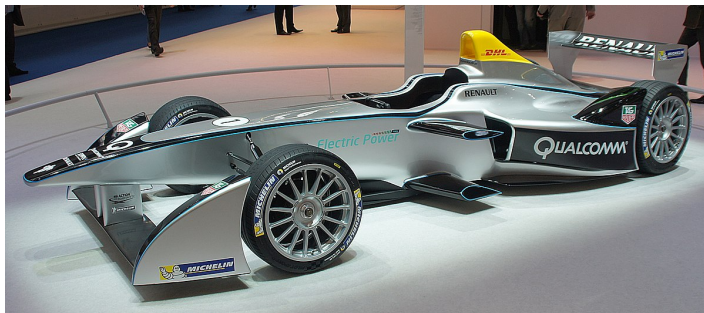
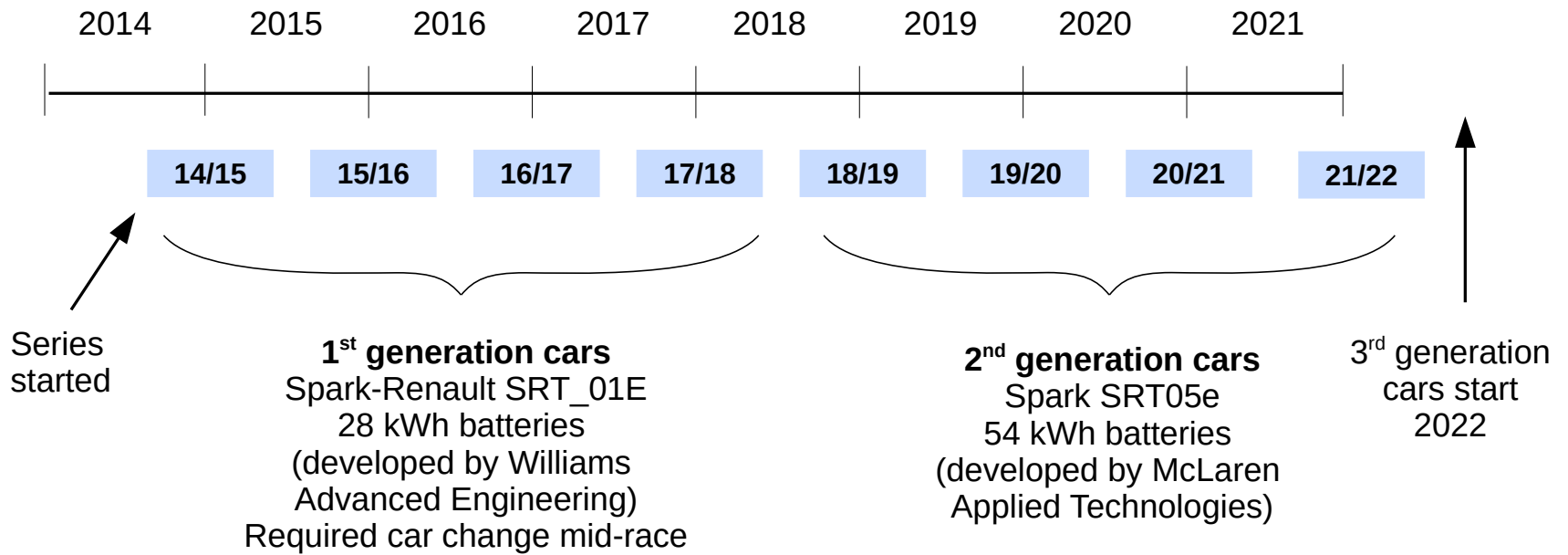
Formula 1    Formula E

## Formula E



# TEAMS AND DRIVERS

<p><b>Audi Sport</b>  <b>ABT SCHAFFLER</b>            FORMULA-E TEAM</p>			
<p>BMW Group            BMW</p>			
<p>DS AUTOMOBILES            TECHEETAH</p>		<p><b>NISSAN</b>            e.dams</p>	
<p><b>Envision</b>            Virgin RACING</p>		<p><b>Panasonic</b>  <b>JAGUAR</b>  <b>RACING</b>            FORMULA-E TEAM</p>	
<p><b>GEOX</b>            DRAGON</p>		<p><b>PORSCHE</b></p>	
<p><b>Mahindra</b>            RACING</p>		<p><b>VENTURI</b>            FORMULA-E TEAM</p>	



# CALENDAR

ABB FIA FORMULA E CHAMPIONSHIP 2019/20

R1	AD DIRIYAH   SAUDI ARABIA**	22 NOV 2019
R2	AD DIRIYAH   SAUDI ARABIA	23 NOV 2019
R3	TBC   TBC	14 DEC 2019
R4	SANTIAGO   CHILE*	18 JAN 2020
R5	MEXICO CITY   MEXICO*	15 FEB 2020
R6	HONG KONG   CHINA*	1 MAR 2020
R7	TBC   CHINA	21 MAR 2020
R8	ROME   ITALY	4 APR 2020
R9	PARIS   FRANCE	18 APR 2020
R10	SEOUL   SOUTH KOREA*	3 MAY 2020
R11	BERLIN   GERMANY	30 MAY 2020
R12	NEW YORK   USA	20 JUN 2020
R13	LONDON   UK*	25 JUL 2020
R14	LONDON   UK*	26 JUL 2020

\*SUBJECT TO CIRCUIT HOMOLOGATION

\*\*DOUBLE-HEADER SUBJECT TO GOVERNMENT AGREEMENT

Original 2019 - 2020  
Schedule

Round	ePrix	Country	Date
1	Diriyah ePrix	 Saudi Arabia	22 November 2019
2			23 November 2019
3	Santiago ePrix	 Chile	18 January 2020
4	Mexico City ePrix	 Mexico	15 February 2020
5	Marrakesh ePrix	 Morocco	29 February 2020
6	Berlin ePrix	 Germany	5 August 2020
7			6 August 2020
8	Berlin ePrix		8 August 2020
9			9 August 2020
10	Berlin ePrix		12 August 2020
11			13 August 2020

← Championship decided

Later 2019 - 2020  
Schedule

## Formula E links

- FIA site:  
<https://www.fiaformulae.com/>
- Highlights from the ABB Formula E Berlin E-Prix (Round 9):  
<https://www.youtube.com/watch?v=rpTNYc9F3DE>
- DS Techeeta  
<https://www.dstecheetah.com/>

## Pikes Peak Hill Climb

EVs often dominate this event. Held on the last Sunday of August (August 30 this year). Unfortunately no spectators in 2020 due to COVID-19.







## 2014 - eO PP02

Based on a Tesla Roadster chassis. Completed the course in 12 minutes and 57.536 seconds to rank fifth in the Electric Modified division.



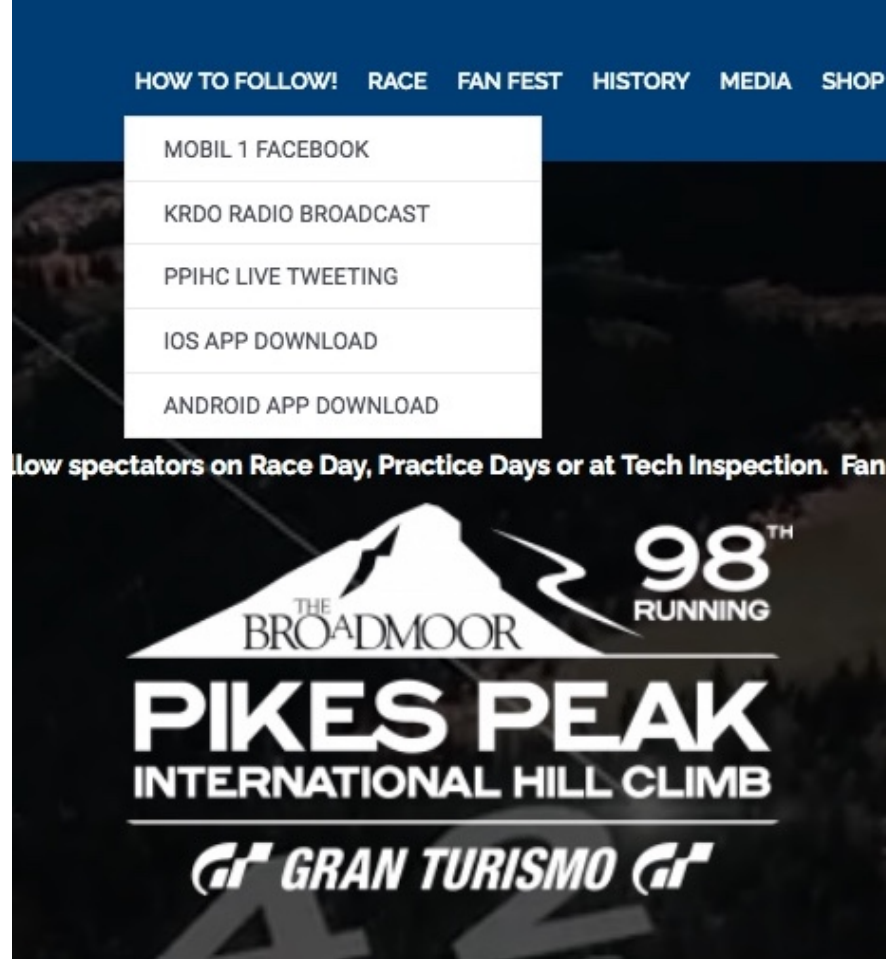
## 2016 - eO PP100

Driven by Rhys Millen. Peak power 1,190 kilowatts (1,600 hp) with a weight of 1200 kg. Set a record of 8:57.118.



## 2018 - Volkswagen I.D. R

Débuted on June 24, 2018, driven by Romain Dumas. Two electric motors for 671 bhp, weighs less than 1,100 kilograms. Won the race and became the first car to complete the climb in under eight minutes (7:57.148).



EVs entered in 2020

- Joshua Allan from Grass Valley, CA in a 2018 Tesla Model 3 Performance
- Blake Fuller from Sarasota, FL in a 2018 Tesla Model 3

## **Pikes Peak Hill Climb links**

Event:

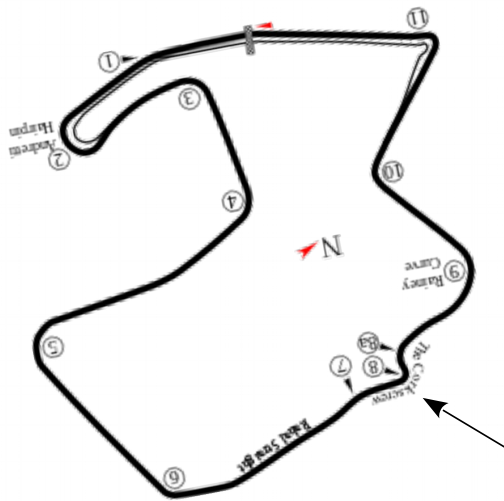
<http://ppihc.org/fans/>

VW ID-R:

<https://www.carandbike.com/news/volkswagen-reveals-specifications-of-i-d-r-pikes-peak-electric-car-1868037>

## Refuel Races

Held once a year at Laguna Seca raceway in Monterey.  
Open to any type of full electric car or motorcycle.  
Unfortunately cancelled this year.





## **Refuel (Laguna Seca) links**

<http://www.refuelraces.com/>

May run next year – usually June.



## Bluemax Kart Track in Davis

24998 County Road 102, Davis, CA



Now open (re-opened May 30). You can go watch on any weekend.

If interested, it is possible to make or buy electric karts.



## Interested in racing electric karts?

### What would be needed:

- Electric kart. Options:
  1. Build
  2. Buy
- Trailer
- A way to charge at track. Options:
  1. Using electric service at track (negotiate with owner to see if they will provide power).
  2. Using EV battery (similar to V to G)



Typical home built kart

## Specs, home built kart (p. 1)

(Note: 2016 technology – for reference only)

<b>Owner</b>	Robin Almasi
<b>Owners Other EVs</b>	Almasi / Schwinn Stealth 15 000 Watt 2006 Specialized Crystalyte A123
<b>Location</b>	Longueuil- Quebec Canada <sup>map</sup>
<b>Email</b>	
<b>Vehicle</b>	2005 BRM 125cc Racing Kart Originally a BRM with Rotax 125cc engine- I sold the ICE engine and started the swap slowly over a year
<b>Motor</b>	D&D Motor Systems- Inc. ES15A Series Wound DC 72 Volt motor rated 10 HP
<b>Drivetrain</b>	#40 Chain and sprocket (40 on the axle and 30 or 40 on the motor )
<b>Controller</b>	Kelly KDH09500A 96 Volt (120MAX) 500 Amp 10 second- 400 Amp 5 minutes- will most probably be exchanged for a KDH12800 (800 Amp 120 Volt)
<b>Batteries</b>	280 A123 Systems M1- 3.30 Volt- LiFe PO4 cell 30 C continious- 60 C for 30 second.  The pack is divided in 3 pack of 80 cell 10S8P for a total of 30S8P- this will probably be upgraded to 40S8P this summer!
<b>System Voltage</b>	99 Volts

10-15 HP  
motor

Lithium-type  
batteries

## Specs, home built kart (p. 2 of 2)

<b>Charger</b>	ICharger 1010B+ (3 of them) with MeanWell Power su 10 Amp charging current - 300mA balancing- it take 2 Hours from empty to full balanced charge.
<b>Heater</b>	you dont need one when you get soo much adrenaline rush!
<b>DC/DC Converter</b>	AC/DC LCD switching powersupply I took out the AC front end- and left only the DC to DC parts- good from 60 Volt up to 300 Volt DC!
<b>Instrumentation</b>	Cycle Analyst large screen version in custom enclosure. (very nice unit- I recommend it to everyone)
<b>Top Speed</b>	100 MPH ( <i>160 KPH</i> ) With the 40 tooth sprocket on the motor- I expect 120 MPH with more A123 cell (80 more) to get to 132 volt nominal.
<b>Acceleration</b>	Very quick...but will be quicker with a Kelly KDH12800...I will upgrade very soon!
<b>Range</b>	10 Miles ( <i>16 Kilometers</i> ) about 20 minutes racing!
<b>Seating Capacity</b>	1 adult
<b>Curb Weight</b>	220 Pounds ( <i>99 Kilograms</i> )
<b>Tires</b>	Bridgestone racing tires
<b>Conversion Time</b>	200 Hours +
<b>Conversion Cost</b>	8000\$ Canadian
I love this Kart- noise free- except the tires!	

100 MPH  
top speed

20 minutes  
racing time

## **Davis / Sacramento links**

Karting

<https://www.bluemaxkartclub.com/>

Building Karts:

<https://ddmotorsystems.com/ElectricGoKarts.php>

Sacramento Raceway (drag racing, closed)

## Why do this?

You drop a pebble



Who knows what will change