



# Electric Vehicle History

May 2005

Electric Auto Association (EAA)

*"Promoting the use of electric vehicles since 1967"*

## A little background

In the late 1890s electric vehicles (EVs) outsold gasoline cars ten to one<sup>1</sup>. EVs dominated the roads and dealer showrooms. Some automobile companies, like Oldsmobile and Studebaker actually started out as successful EV companies, only later transitioning to gasoline-powered vehicles. In fact, the first car dealerships were exclusively for EVs.

Early production of EVs, like all cars, was accomplished by hand assembly. In 1910, volume production of gasoline powered cars was achieved with the motorized assembly line. This breakthrough manufacturing process killed off all but the most well-financed car builders. Independents, unable to buy components in volume died off. The infrastructure for electricity was almost non-existent outside of city boundaries – limiting EVs to city-only travel. Another contributing factor to the decline of EVs was the addition of an electric motor (called the starter) to gasoline powered cars – finally removing the need for the difficult and dangerous crank to start the engine. Due to these factors, by the end of World War I, production of electric cars stopped and EVs became niche vehicles – serving as taxis, trucks, delivery vans, and freight handlers.

In the late 1960s and early 1970s, there was a rebirth of EVs prompted by concerns about air pollution and the OPEC oil embargo. In the early 1990s, a few major automakers resumed production of EVs – prompted by California's landmark Zero Emission Vehicle (ZEV) Mandate. Those EVs were produced in very low volumes – essentially hand-built like their early predecessors. However, as the ZEV mandate was weakened over the years, the automakers stopped making EVs – Toyota was the last major auto maker to stop EV production in 2003.

## Timeline

- 1834: Thomas Davenport invents the battery electric car – batteries were not rechargeable.
- 1859: Gaston Plante invented rechargeable lead-acid batteries.
- 1889: Thomas Edison built an EV using nickel-alkaline batteries.
- 1895: First auto race in America, won by an EV.
- 1896: First car dealer – EVs.
- 1897: First vehicle with power steering – an EV. Electric self-starters 20 years before appearing in gas-powered cars.
- 1898: NYC blizzard, only EVs were capable of transport on the roads. First woman to buy a car – it was an EV.
- 1900: NYC's huge pollution problem – horses. 2.5 million pounds of manure, 60,000 gallons of urine daily on the streets; 15,000 dead horses removed from the streets each year.
- 1900: All cars produced: 33% steam cars, 33% EV, and 33% gasoline cars.
- 1903: First speeding ticket – it was earned in an EV.
- 1904: America has only 7% of the 2 million miles of roads better than dirt – only 141 miles, or less than one mile in 10,000 was "paved".
- 1908: Henry Ford buys his wife an EV. Many socialites of that time gave this rousing endorsement for EVs, "It never fails me."



1904 Curved Dash Olds (replica)



1915 Detroit Electric Automobile



Walt Disney's 1901 Oldsmobile EV



EV in 1912



Electric Van

<sup>1</sup> Sources for materials presented here: EAA historical archives, "The Electric Vehicle and the Burden of History", David A. Kirsch. "The Lost Cord: The Story Tellers History of the Electric Car", Barbara E. Taylor. "Taken For a Ride", Jack Doyle.

*"EAA EV drivers  
have logged over  
5 million clean  
miles"*



Walter Laski, EAA  
Founder



Bob Beaumont w/CitiCar



GM EV-1



Toyota RAV4-EV



Toyota Prius Hybrid

Commuter Cars  
Tango



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1910: Motorized assembly produces gas-powered cars in volume; reducing cost per vehicle.

1912: 38,842 EVs on the road. Horse drawn "tankers" deliver gasoline to gas stations.

1913: Self starter for gas cars (10 years later for the Model-T).

1921: Federal Highway Act. By 1922, federal match (50%) for highway construction and repair (for mail delivery). Before this, roads were considered only "feeders" to railroads, and left to the local jurisdiction to fund.

1956: National System of Interstate and Defense Highways. Funded 90% by states, and 90% by the federal government.

1957: Sputnik is launched. The US space program initiates advanced battery R&D.

1966: Gallup poll: 36 million really interested in EVs. At the time EVs had a top speed of 40 mph, and typical range less than 50 miles.

1967: Walter Laski founds the Electric Auto Association.

1968-1978: Congress passes more regulatory statues than ever before due to health risks associated with cars: collisions, dirty air.

1972: First Annual EAA EV rally.

1974: CitiCar debut at Electric Vehicle Symposium in Washington, DC. By 1975, Vanguard-Sebring, maker of the CitiCar is the 6<sup>th</sup> largest auto maker in the US.

1990: California establishes the Zero Emission Vehicle (ZEV) Mandate; requires 2% of vehicles to be ZEVs by 1998, 10% ZEVs by 2003.

1990: GM shows their production EV initially named, Impact; later it was re-named the EV-1.

1990: US government spent \$194 million on all energy efficient research. Much less than the \$1 billion for a single day of Desert Storm, or the \$1 billion per week of 2003 Iraq conflict.

1993: GM estimated that it would take 3 months to collect names of 5,000 people interested in the EV-1 – it only took one week!

1995: Renaissance Cars, Inc begins production of the Tropica.

1996: EAA helps to hatch CALSTART incubator (for EV research) in Alameda, CA.

1996: GM begins production of the EV-1 (formerly called the Impact).

1997: Toyota Prius hybrid gas-electric vehicle unveiled at the Tokyo Auto Show.

2002: Toyota RAV4-EV retail sales; their estimated 2-year supply sold out in 8 months.

2003: ZEV Mandate weakened to allow ZEV credits for non-ZEVs. Only requires 250 fuel-cell vehicles by 2009. Toyota stops production of the RAV4-EV; Honda stops lease renewals of the EV-Plus; GM does the same for the EV-1.

2003: AC Propulsion's tZero earns highest grade at the Michelin Challenge Bibendum; tZero specs: 300 miles per charge, 0-60mph in 3.6 seconds, 100 mph top speed.

2005: Commuter Cars' Tango – shipping this fall!

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## About the EAA

The EAA is a non-profit educational organization that promotes the advancement and widespread adoption of electric vehicles; organizes public exhibits and events of electric vehicles to educate the public on the progress and benefits of electric vehicle technology.

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**Electric Auto Association**