

Electric Vehicles - EVs

BASIC FACTS WORTH KNOWING

Getting the Energy in (Charging)

- Domestic charging usually at either 2KW (via 13A socket) or 7KW specially wired charger.
- Both can use night rate electricity. Octopus currently 8.5p/KWh (25p day rate)
- Commercial chargers cost about 75p/KWh
- 2KW best for using spare solar power but slow
- 7KW more efficient (~85% v. ~75%) and faster
- Cold weather needs battery heating
- Hot weather needs battery cooling

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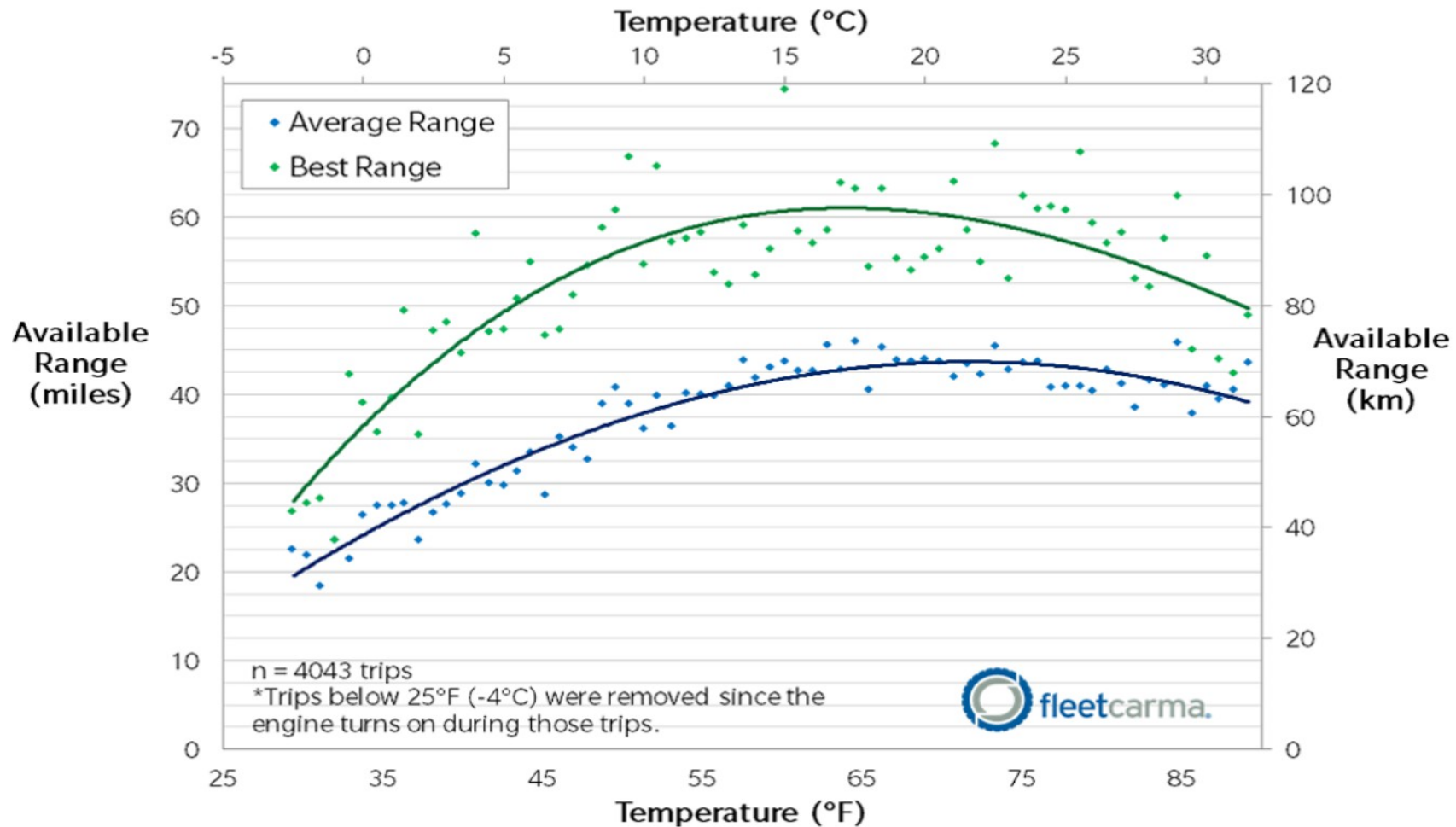
Using the Energy efficiently

- Battery efficiency affected by temperature
- mpKWh related to wind resistance
- mpKWh reduced by ancillary equipment
- mpKWh depends on how you drive
 - acceleration
 - speed (resistance prop to square of speed)
 - braking (think ahead!)

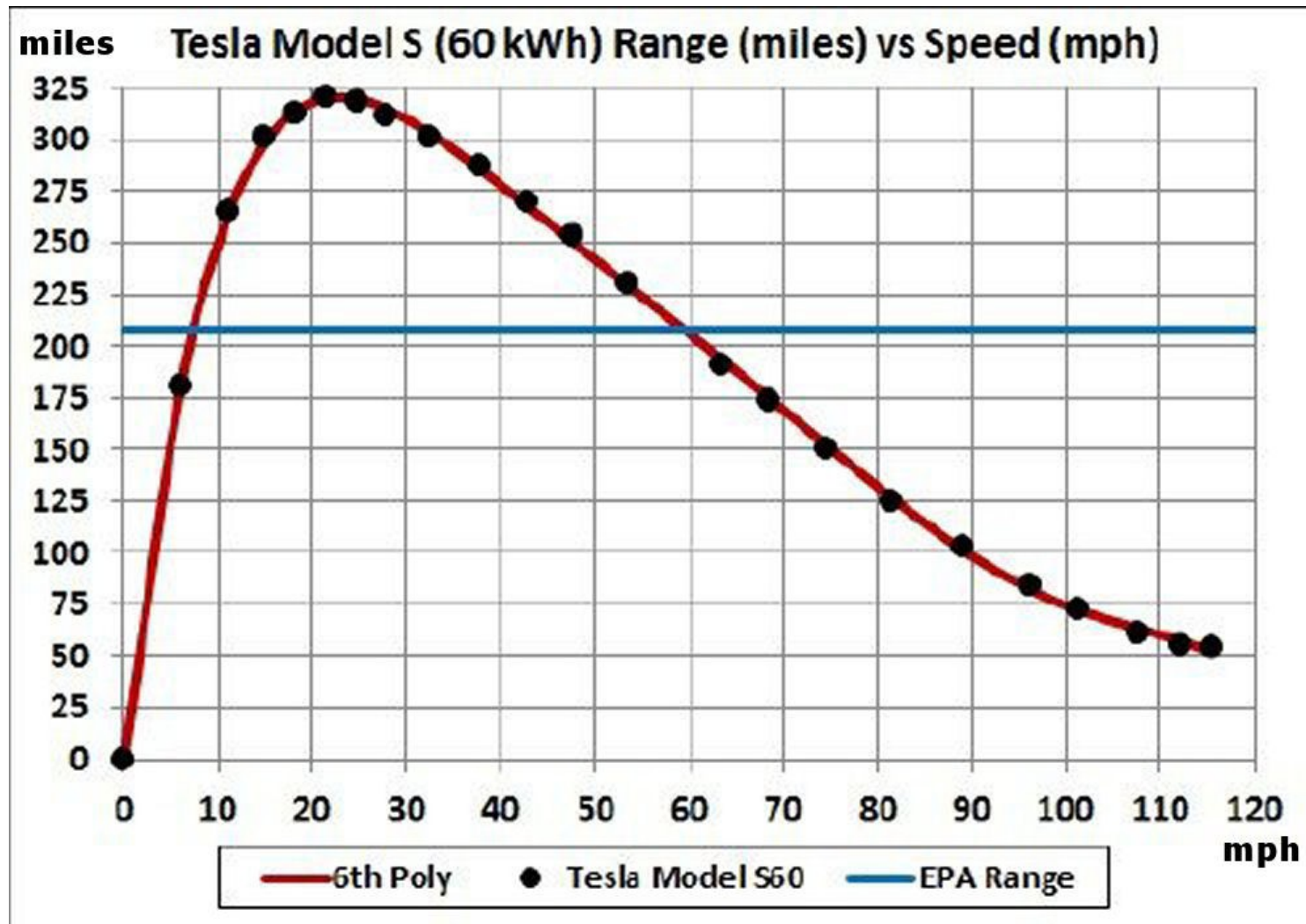
Range v. Temperature

Chevrolet Volt: Electric Range vs. Temperature

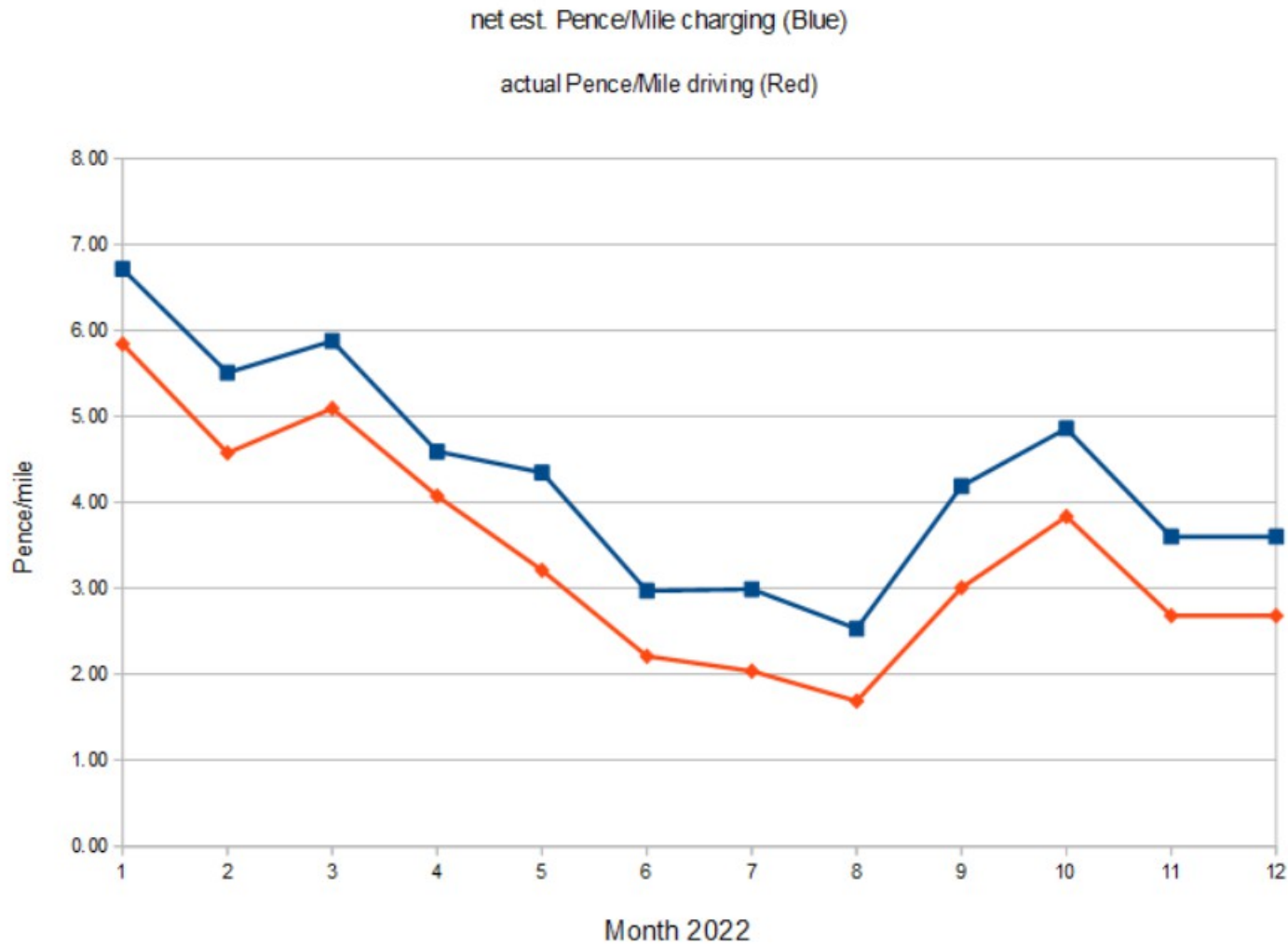
Spanning All Model Years in the FleetCarma Database



Range v. Speed



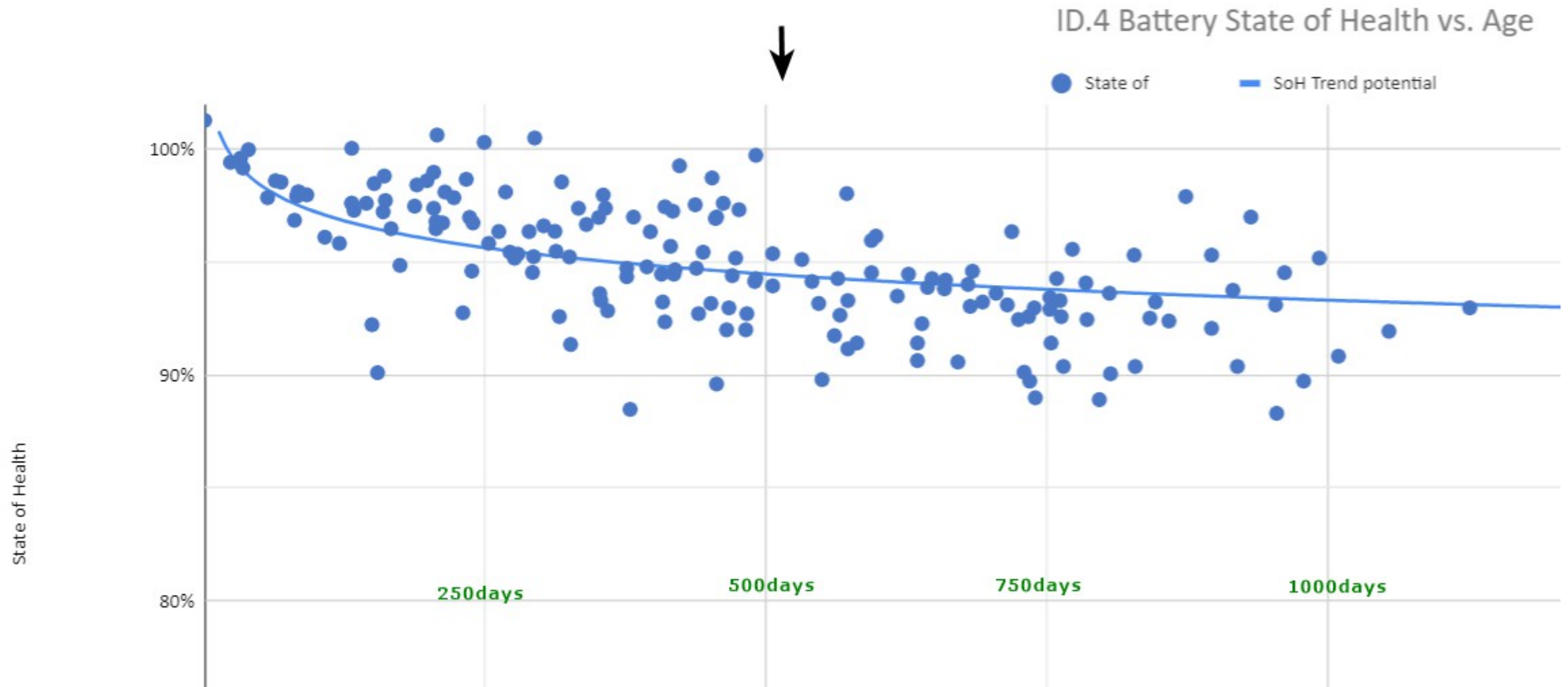
Electricity Cost per Mile



Buying Evs – Battery is everything

- Beware battery size claims – there are two battery sizes!
 - actual KWh
 - useable KWh
- eg. Peugeot e2008 Allure 54KWh claimed on Autotrader
 - actually 46KWh useable, actual 50 KWh
- Check the battery guarantee
- Typical battery guarantee of 8 years sounds good
 - but it's only against > 30% fall-off in capacity!
 - If the battery capacity drops to 71% you have no comeback
- For used cars get a fully certified battery SOH check – not easy!
- For new cars – good luck!

SOH v. Battery Age eg. VW ID4



Battery SOH is a minefield

- How do you really measure battery capacity?
- Basically all about the battery chemistry
- Main dealers have standard tests
- Can measure **Range** for full charge but it's very temperature dependant
- EU legislation in work for mandatory SOH

SOH Certificate

Battery capacity in % * 95
Below the wear limit -

Stored energy**		Idle time fully charged***	
Total stored energy:	2278.71 kWh	Total idle time:	509 days
Stored DC energy:	472.47 kWh	Idle time fully charged:	6 days
Share of stored DC energy:	20.73 %	Share of idle time fully charged:	1.33 %

* Information on the measurement

The battery capacity was determined in a defined measurement cycle.
The measurement uncertainty is +/- 1 percentage point.
The battery capacity is measured in the vehicle as a charge quantity in ampere hours (Ah).
The usable energy content of the battery in kilowatt hours (kWh) is primarily determined by this battery capacity, and to a lesser extent by driving style, ambient and battery temperature, and the exact battery charge level of the fully charged battery.
The measurement result is valid for 30 days, starting from the date of issue of this document (date).

Note on Volkswagen AG's new vehicle warranty

This battery health status does not in any way establish, limit or extend any existing guarantee claims against Volkswagen AG.

13/5/24



Place, Date

Authorized Volkswagen dealer
Signature



Recommendations

- CARWOW very good for both new and used
 - scans all dealers for best current buy offer
 - filters offers on your used car – but once only!
- **CarScanner** app + OBD plug to extract car system data
- **Speak EV** forum to learn more

How Cautious Should You Be?

Most people just buy an EV and enjoy it!

- Great to drive
- Can be very cheap to run (a fifth of petrol cost)
- Environmentally the right thing to do