

ANNEX 3 - UPSKILLING NEEDS

Project learnings/findings review 2022-2024



ANNEX 3 - DRIVERS AND FLEET MANAGERS UPSKILLING NEEDS

DRIVERS

Learning objectives:

- Drivers are able to identify and use the EV specific features
- Drivers are able to identify how their driving style impacts EV performance
- Drivers can cite the 2 main point of attention for the EV availability

<p>GENERAL OVERVIEW</p>	<ul style="list-style-type: none"> • No Internal Combustion Engine (no engine oil/filters, no requirement for fuel, no production of tailpipe emissions – only road wear emissions) • No multispeed manual/automatic transmission • Vehicle is charged via electricity only and the vehicle’s battery powers DC Motor(s) which rotate the drive wheels • Vehicle kerb weight higher than its ICE equivalent (battery) • Vehicle noise level lower than ICEV (safety attention point)
<p>RANGE and Battery state of charge</p>	<p>The range of the vehicle (distance it can travel between charges) is dependent on a number of factors which can significantly reduce real operating range from the manufacturers indicated maximum range, such as:</p> <p><u>Climate</u></p> <ul style="list-style-type: none"> • Some periodicals and reports suggest a 17% expected range reduction when temperatures exceed 35 (mainly due to AC use), and upward of 30% expected range reduction when temperatures are sub-zero degree (due to battery design and use of in cab heating) <p><u>Driver Behaviour</u></p> <ul style="list-style-type: none"> • Aggressive acceleration • Not keeping a safe/increased following distance – which allows for optimum use of regenerative braking options • Not making use of eco mode setting when driving • Not making use of e-pedal/single pedal control option or using them incorrectly • Setting in cab climate temperatures to extremes <p><u>Battery Charging Practices and Scheduling</u></p> <ul style="list-style-type: none"> • Overtime repeated discharging an EV battery below 20% and chaging to 100% can affect battery performance. Unless heading on a long trip EV battery should be charged within the 20-80 % window • Depending on the battery size and charger it can take from 45 minutes to 9 hours to recharge a battery from 20-80% • Taking the above into consideration and planning charging times accordingly will help maximize battery performance and range

<p>CHARGING = AVAILABILITY</p>	<ul style="list-style-type: none"> • ICEV benefit from a wide network of gas station that allow to refuel pretty much everywhere, in a few minutes. • The EV charging network is not developed yet, and still require the vehicle to be plugged for several hours • Therefore, the attention paid to proper and responsible charging is fundamental to the vehicle's availability to the operations.
<p>Familiarization with EV specific of Control and Charge Procedures</p>	<p>Familiarization of all control specific to operating and charging the EV</p>
<p>Eco Mode</p>	<p>Limits aggressive acceleration and increased regenerative braking capabilities which helps consume less battery power. Can be used at all time without affecting vehicle performance (the only exception noted was when travelling at highway speed without much traffic, turning it off is better as it allows the vehicle to coast if you ease of the accelerator)</p>
<p>Eco driving</p>	<p>Should become business as usual</p>
<p>Regenerative Braking</p>	<p>When activated and letting of the accelerator is allows the motor to become a generator. The magnetism of the generator helps slow the vehicle without the use of the brake pedal and produces electricity, which is fed back to help charge the battery, which in turn increases vehicle range. Depending on the vehicle there may be more than one mode or regenerative braking (less to more aggressive) and control may either be accessible at the steering wheel on the center console. Good for use in higher speed traffic, urban city driving, slowing when approaching a traffic stop or exiting the highway. In addition to improved range it can greatly increase the life of foundation brake components.</p> <p>To make effective use of regenerative brake requires a bit of practice and familiarization but also a change in driving habit for certain drivers. It was noted to not be as effective if a driver has a habit of following too closely to a vehicle in front of them. Maintaining a three second rule between the vehicle in front and monitoring traffic conditions up ahead allowed it to be maximized.</p>
<p>E-pedal / One pedal driving</p>	<p>Depending on the vehicle it may be equipped with an "e-pedal" feature. This is effectively a more aggressive form regenerative braking mode that can bring the vehicle to a complete stop and hold it in position.</p> <p>I found that it was mainly suited to medium to heavy low speed traffic in an urban environment.</p> <p>Like regenerative braking to maximize this function adopting a greater following distance is required. In addition to improved range it can greatly increase the life of foundation brake components.</p>

FLEET MANAGERS

Learning objectives:

- FM are able to identify and use the BEV specific features
- FM are able to sensitize the drivers how their driving style impacts BEV performance
- FM are able to identify 2 challenges of managing BEV in comparison with ICEV

<p>GENERAL OVERVIEW</p>	<ul style="list-style-type: none"> • Causes and consequences of climate change/environmental emergency • Impact of transport in GHG emissions • Emissions reductions strategies • BEV mechanics basics and difference with ICEV • BEV stakes and points of attention (resources scarcity, trade offs...) • Market watch and local regulations watch
<p>CHARGING = AVAILABILITY</p>	<ul style="list-style-type: none"> • Charging takes time • Has an impact on vehicle performance/ lifespan • Is therefore fundamental to operations and availability of the vehicle • Monitoring charging is therefore essential
<p>TRACKING & KPIs</p>	<ul style="list-style-type: none"> • Tracking of kWh consumption is an issue despite the availability of e-chargers • Bridging data to FMS can also be challenging
<p>CHARGERS MANAGEMENT</p>	<ul style="list-style-type: none"> • EVSE, or electric vehicle supply equipment • Extra charger in stock? spare cables ? • Specific shades • Authorised dealer in country ; charging monitoring platform