Plug In America

EV Battery Technology Impacts
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HOW TO MAXIMIZE YOUR EV BATTERY PACK LIFE

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GENERAL RECOMMENDATIONS

• Keep tires at factory recommended pressures, check regularly (monthly) with gauge
• Gauge your trips, conditions; when relying on instrumentation, pad your estimates
• Use trip planner software (e.g., http://abetterrouteplanner.com/ is good general-purpose freeware suggestion)
• Rechargeable battery State of Charge (SoC): full is 100%, empty is less than 1%
• Use SoC ‘windows’ – brackets within the range
  – Upper / lower limits: 90/10, 80,20, 90-15, 100-<5
• Protection mechanisms notwithstanding, stay away from extremes
• Behaviors to avoid:
  – fill and sit in heat;
  – deep discharge and abandon;
  – long sitting (vampires)
Opportunity charging

• When possible, boost the battery (no need to fill entirely, a little here / there)
• Depending on driving habits - try to plan with contingencies
• Level 1, Level 2, DC Fast Charging
  – US power limit at home (1.4 kW, in public ~7 kW)
  – SAE reference – 2010 version of the standard (purchase)
• Avoid transients - jack rabbit starts stress entire system: tires wear out, fuses stressed
• Hard throttle at low SoC - particularly bad
• Energy consumption proportional to speed
  – Directly affects the “Will I make it?”
  – Not linear relationship: 35 mph vs 70 mph
  – Square law: double speed quadruple energy consumption
WEATHER CONDITIONS

- Headwinds: fighting headwinds adds to your effective ground speed energy consumption
- Wet: rain reduces traction on road increasing energy to go the same distance as dry conditions
- Cold: air is more dense (thicker) when cold, increasing energy to go same distance (nighttime, winter)
• HVAC load is 2nd biggest drain from battery. Lighten where possible to save energy (use set point)
• Even with a heat pump (better than resistive heater) energy usage is considerable
• Keeping battery at moderate temps: air versus liquid-based actively cooling
SUMMER

- keep interior temperature low, limit temperature buildup
- in shade, ventilated area
- plastic outgassing of VOCs forming film on glass, new car smell; hard to clean (elbow grease)
- crack windows, use foldable windshield sun shade (foil backed roll-up, circular light colored)
• capture daytime warmth limit energy expenditures for comfort
• park in sun, out of wind (especially overnight)
• optional heated seats / steering wheel
• bundle up, wear gloves
• moisture control – run A/C