FACTSHEET ON ELECTRIC VEHICLES (EVs)

Introduction

- EVs are increasingly being seen as a sustainable mode of transport by countries worldwide as they are more efficient than internal combustion engines (ICEs) (65% for EVs compared to 18-23% for ICEs) and can help reduce carbon emissions.

Current Capabilities of Electric Vehicles

- Most EVs are powered entirely by lithium-ion batteries. A standard charge at 3-6 kW (230 volt (V), 15 ampere (A)) will take about 8 hours, although 'quick charging' technologies exist which can markedly reduce charging time by providing high levels of power to EVs.

- The commuting range of EVs depends on the capacity of the batteries, the type of routes traveled (such as city or highway driving), whether air-conditioning is turned on (air-conditioning is energy-intensive and will drain the battery faster) and also on driver habits. With current battery technology, a full charge would allow for a range of between 90 km to 160 km. With further breakthroughs in battery technology in the next few years, it is expected that the range can be increased by 50%.

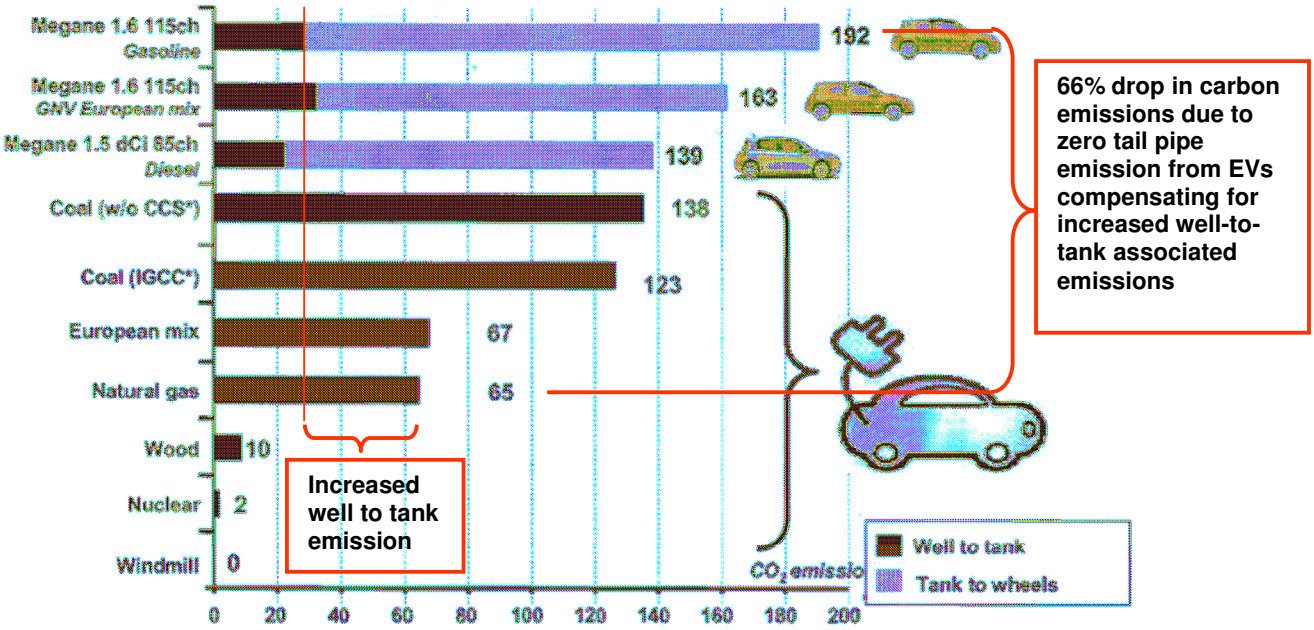
Advantages of Electric Vehicles

- Pure battery electric vehicles offer significant advantages in the areas of energy efficiency and pollution-reduction as compared to conventional petrol and diesel vehicles.

- EVs charged using electricity from renewable energy sources like solar and wind have virtually zero carbon emissions. EVs charged using electricity generated from natural gas power generation (as is the case in Singapore) will also achieve some reduction in carbon emissions compared to power generation plants fired by fossil fuels, or from conventional petrol engine vehicles.

- The EV motor system (including its drive train electronics) is more than twice as efficient as the ICE. It is also able to recover part of the energy expanded during braking in a process called regenerative braking.

- Current well-to-wheel emissions estimates from Original Equipment manufacturers (OEMs) show about 66% reduction in carbon emissions when switching from a gasoline car to an equivalent-size EV. The table below shows the well-to-wheel CO_2 emissions for various types of vehicles:



Source: Renault-Nissan

Electric Vehicle Taskforce

- Singapore is receptive to the prospect of EVs. A multi-agency taskforce chaired by the Energy Market Authority (EMA) and Land Transport Authority (LTA), and comprising members across different government agencies, including the Agency for Science, Technology and Research (A*STAR), Economic Development Board (EDB), Ministry of Environment and Water Resources (MEWR), Ministry of Trade and Industry (MTI), National Environment Agency (NEA), Housing & Development Board (HDB) and SPRING Singapore has been set up. The EV Taskforce was set up to assess the benefits and applicability of adopting EVs in Singapore.

EV Test-Bed

- The EV test-bedding programme will involve key industry players to examine infrastructure requirements and new business models arising from EVs, as well as to identify industry and R&D opportunities. The test-bed is open to all auto manufacturers and technology companies interested in shaping the future of electric transport.

- The test-bed will run for three years, from 2010 to 2012. The first batch of up to 50 EVs will arrive in 2010.

- The results of the test-bed will be instrumental in providing relevant policy recommendations pertaining to the commercial roll out of electric vehicles beyond the test-bedding phase ending in 2012.

Industry Partners

- The EV Taskforce is working with Renault-Nissan who will look into supplying EVs to the Singapore market and share its knowledge of EVs to develop common standards.

- Besides Renault-Nissan, auto-manufacturer Mitsubishi, is currently also in talks with the EV taskforce to provide EVs to the Singapore market from September 2010. Other auto-manufacturers are also welcome to participate in the EV trial as it is intended to be an open test-bed for all interested parties.

Transport Technology Innovation And Development Scheme (TIDES)

- TIDES is jointly administered by the Economic Development Board (EDB) and the Land Transport Authority (LTA). The purpose of this scheme is to support EDB's effort in attracting automobile companies in knowledge-based manufacturing and conducting Research and Development (R&D) activities and testing of vehicles in Singapore.

- In TIDES, programs with new technology vehicles undergoing R&D and test-bedding in Singapore are granted Certificate of Entitlement (COE), Additional Registration Fee (ARF) and Road Tax exemptions upon approval. Duty exemption permits can also be applied from the Customs & Excise Department.

- Private sector companies participating in the EV test-bedding programme can apply for TIDES when they purchase the EVs.