Transition to Zero Emissions Fleet
Purpose

– Understanding the need to reduce emissions from fleet operations;
– Recognising the inefficiencies associated with continued use of internal combustion engines;
– Acknowledging the devastating environmental and social impact the combustion of fossil fuels is having on the natural world;
– Progressively moving renewable energy into the fleet fuel space
Electric Vehicle Trial

– Successful participation in the Vic EV trial

Report on electric vehicle trial:
Pre-drive & post-drive data
2012

Prepared by the Council Planning and Performance Branch
Electric Vehicle – Fleet Feasibility Study
Purpose

– To understand the pros/cons of moving Council’s light fleet vehicles to EV;
– To promote the wider environmental & social benefits and operational savings opportunities to fleet operators and local government;
– To demonstrate leadership in sustainable transport transition
Feasibility Study - Key Focus Issues

- Carbon emissions;
- Peak oil;
- Local air quality;
- Alignment with renewables & NCOS;
- Lifecycle operational savings;
- Reputation/Leadership
Results: “The benefit cost ratio for the adoption of Nissan LEAFs in the Moreland City Council fleet in place of Hybrid Camry’s at 7% discount rate was 1.48 indicating a sound investment” – Pitt & Sherry 2014
Fleet EV’s
– Successfully operating EV’s in Councils fleet
Charging network

– Developed the largest network of public EV charging stations owned/operated by a Council
ZapnGo!

....including Victorias first EV FAST charge station!
Hydrogen as a heavy Fleet Fuel
Hydrogen Fleet Feasibility

H2U is a specialist developer of infrastructure initiatives for

- Hydrogen Mobility
- Renewable Energy Storage
Purpose

– Understanding the need to reduce emissions from heavy fleet operations;
– Recognising the inefficiencies associated with continued use of internal combustion engines;
– Progressively moving renewable energy into the fleet fuel space;
– Acknowledging the power to weight ratio limitations of current battery technology;
– Reduced noise (70%) from heavy fleet vehicles
How it Works?

SOLAR-HYDROGEN CYCLE

WATER + SUN → H₂ → ENERGY CARRIER → FUEL CELLS → WATER

HYDROGEN POWERED TRUCK

ZERO EMISSIONS
How does a hydrogen fuel cell work

Fuel Cell Stack

Anode
H₂ Fuel

Cathode
O₂ From Air

H₂ Recycling

Gas Diffusion Layer
Catalyst
Proton Exchange Membrane
Catalyst
Gas Diffusion Layer

Key
- Red: Hydrogen
- Green: Proton (+ve)
- Blue: Oxygen
- Yellow: Electron (-ve)

Air and Water Vapour
Hydrogen refuelling infrastructure
- Is hydrogen production and refuelling infrastructure ready?
Hydrogen FCEV heavy vehicles

- Where are the hydrogen fuel cell heavy vehicles?
- Council and project partners working with manufacturers and government to develop purpose built prototype waste vehicles
Next Steps...

– Fleet policy to incorporate an EV purchasing hierarchy;
– Fleet replacement budgets calibrated to incorporate RoI savings from EV operations;
– EV’s integrated into the fleet replacement program where applicable;
– Host hydrogen refuelling infrastructure and assist in the development of a prototype fuel cell waste collection vehicle
Electric Vehicles...
A new idea??

Maybe not........
Failure to impose a cost on fossil fuels to reflect damages arising from their combustion effectively amounts to a subsidy and consequently an inefficient use of energy resources.

The “polluter pays principle” is an irrefutable concept.......

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