

Sustainable Transportation in Hawaii



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Site Leader – Hawaii



GM Advanced Technology Demonstration Programs

Wide Range of Technology Drivers



Technology Innovation



Customer Requirements



Regulatory Demands



Energy Security



Climate Change

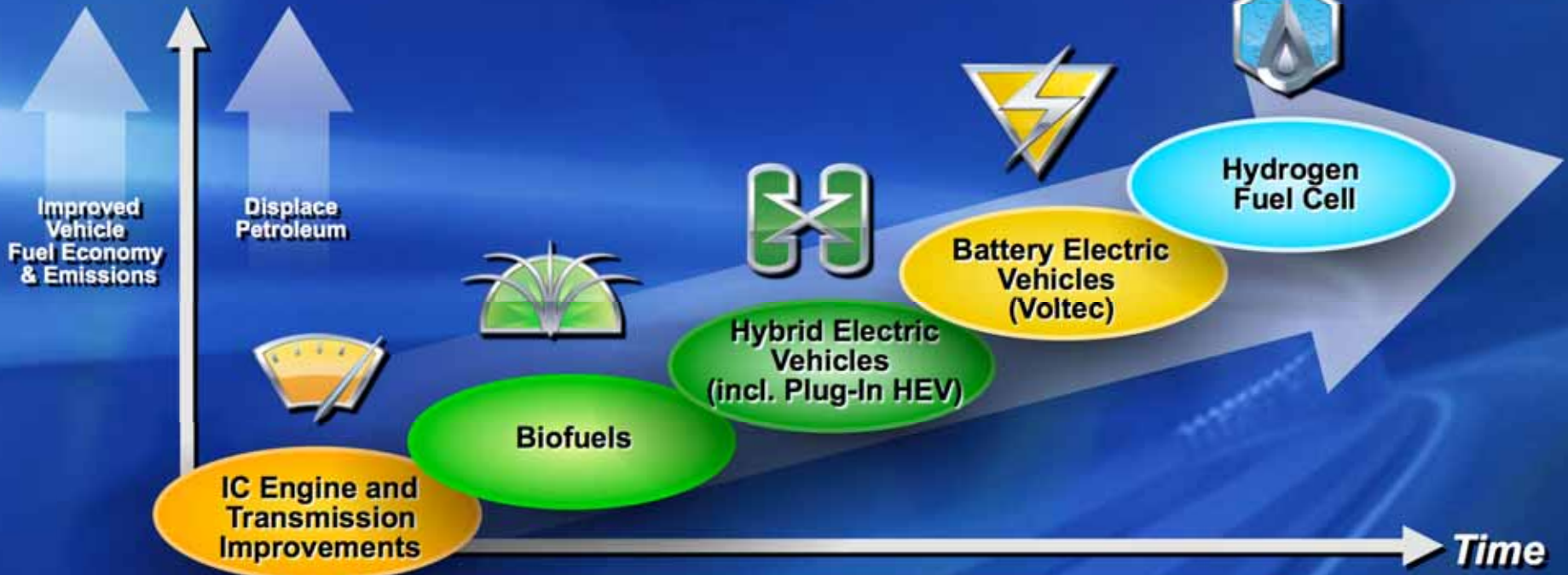


Fuel Prices

**AUTOMOBILE
INDUSTRY**



Advanced Propulsion Technology Strategy



Fuel and Technology Diversity

Electrifying the Automobile

Petroleum and Biofuels
(Conventional and Alternative Sources)

Electricity and Hydrogen
(Zero Emissions Energy Sources)



Stop-Start

eAssist

Full Hybrid

Plug-in Hybrid

Extended-Range Electric

Battery Electric

Fuel Cell Electric

Increasingly Electrified Powertrains

Conservation

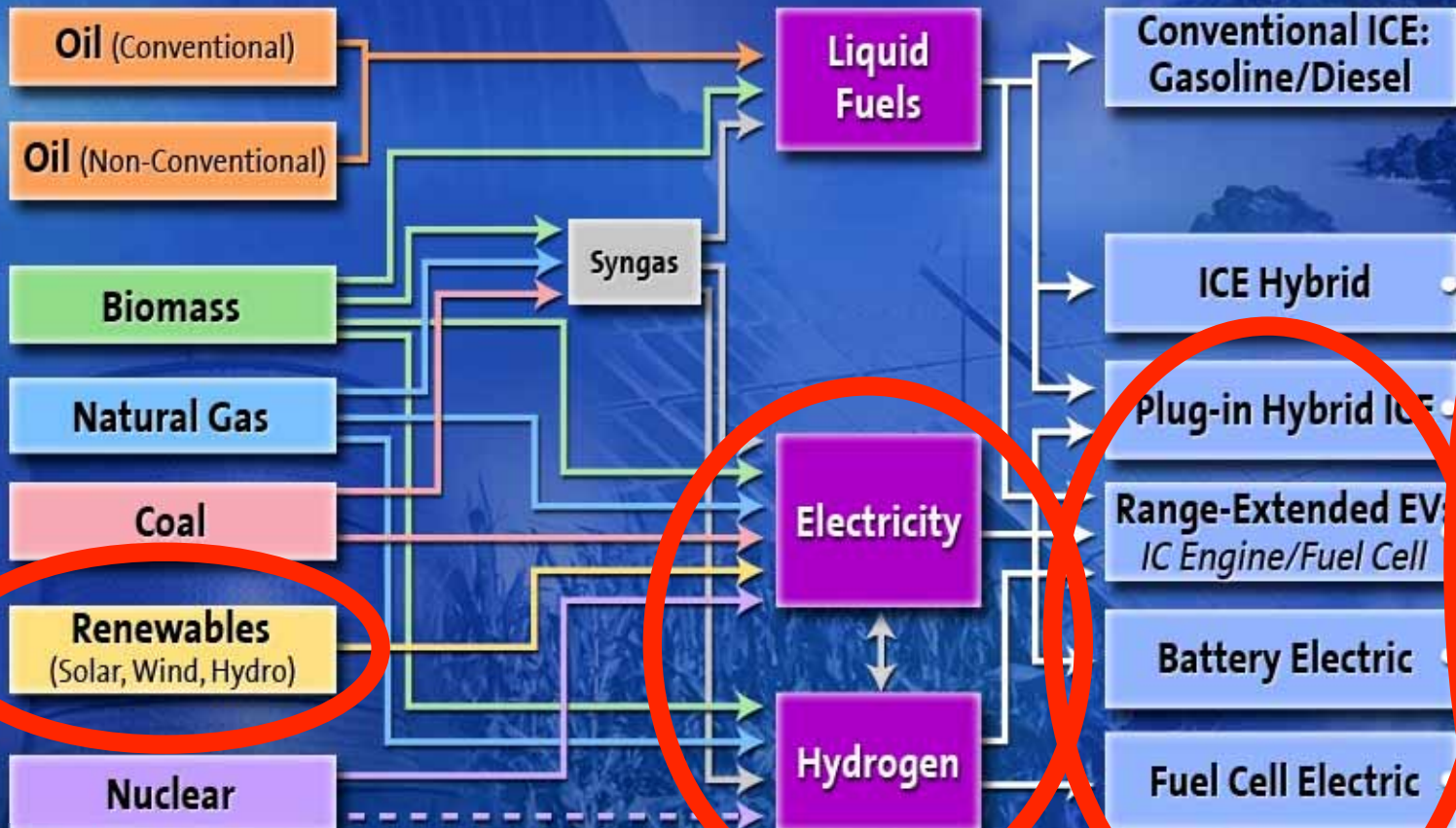
Displacement



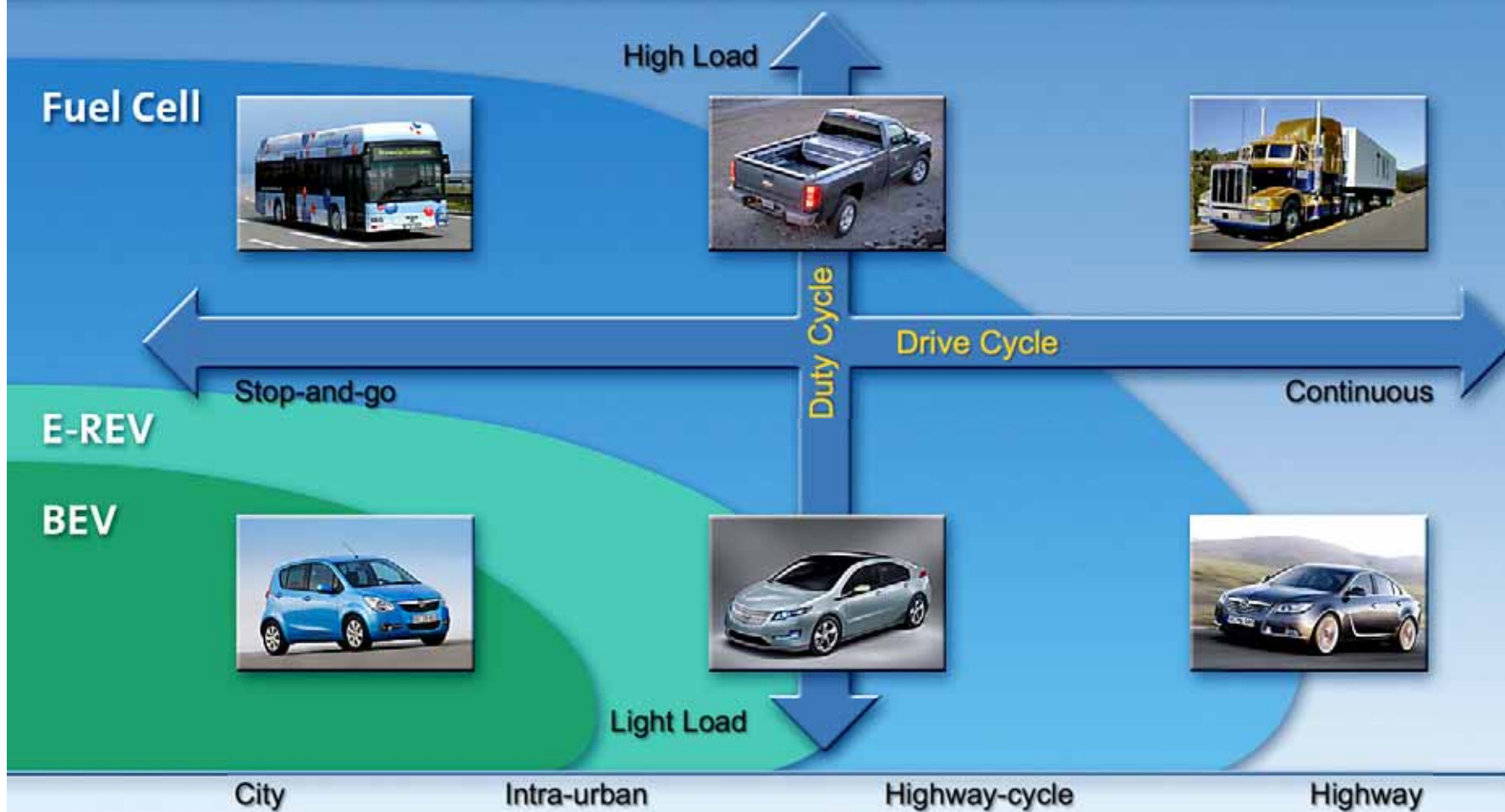
Most Are Available Today!

Energy Diversity Pathways

Energy Resource **Conversion** **Energy Carrier** **Propulsion System**



Electrically-Driven Vehicle Application Map



Battery and Fuel Cell vehicles act as complimentary technologies to power vehicles electrically

Electric Vehicle & Grid Opportunities



- **Increasing volume of EV's + increasing renewable energy = increasing opportunity for this scenario**
- **The key is deliberate/targeted growth combined with iterative learning smart management**



RelayRides

GM vehicle owners can
rent out their vehicle with RelayRides



I have a car:

Enroll: A GM car owner decides to enroll his car in RelayRides

Schedule: He sets both the car's availability and the rates

Drive: He sits back, and makes the easiest cash he's ever earned



I need a car:

Enroll: A woman living without a car signs up with RelayRides to gain access to affordable wheels in her neighborhood

Schedule: She searches RelayRides' online marketplace for available cars that meet her needs

Drive: She can use an application* on her phone to unlock the car through OnStar technology



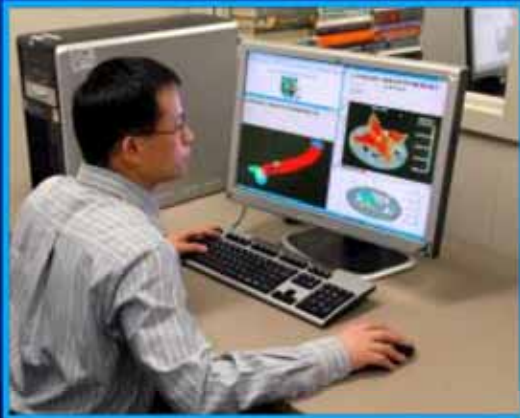
Everybody Wins: He earns some much needed cash. She gets access to wheels when she needs them. Everybody wins!

*mobile app available early 2012



Driving The Future

- Energy diversity is key
- No magic bullet
- Conservation, biofuels, electric vehicles
- Choose vehicles with technology/fuel options that best suit your needs



Get Involved!