



- Vision Industries Solution
- Hydrogen
- Vehicle Solutions
- Vision Industries' Fueling Strategy
- Future Applications

## Vision has the Chicken & Egg

### Turnkey Fleet Operations

- Plug-in electric, heavy duty class 8, zero emission trucks with Hydrogen fuel cells for range extension
- Hydrogen supplied at 35% 40% discount to diesel.
- Hydrogen fueling at several locations at truck stops and fueling at fleet yards is also available.
- Long term, fixed price hydrogen supply contract.

# Hydrogen is more cost effective than Diesel

- As a result of technological breakthroughs, we have passed an inflection point at which hydrogen is cheaper per mile than diesel as a transportation fuel
- Fuel cell technology operates at 52 to 58% energy efficiency which is a substantial gain over diesel-based combustion engines
  - Each Pound of hydrogen gets you as far as 1 gallon of diesel.
- Hydrogen costs are expected to stabilize at \$1.50 to \$2.75 per lb (they currently range from \$0.90 lb in Santa Monica to \$4.09 lb in Palm Springs)

## Why hydrogen?

- Offers several benefits over Diesel and Natural Gas
  - Cheaper per mileZERO greenhouse gas emissions
  - No noise pollution
  - No idling
  - Substantial Increase of Torque
  - Domestic and secure energy source
  - Renewable and non-depleting
  - Can be made from a wide variety of resources
- OEM adoption
  - All major OEMs will offer H2 powered vehicles 2010-2015
- State and federal support available

### **Alternative Vehicle Solutions**

#### **Comparisons of Short Haul Trucks (Annual)**

(City and Highway combined 50,000 miles per year)

	2007 Diesel	LNG	Vision Tyrano
Horsepower	450 peak	450 peak	402 continuous
Torque (foot/lbs)	1,350 peak	1,350 peak	3,200 available
Fuel	10,000 Gal.	16,700 Gal.	10,000 lbs
Particulates	12.37 lbs	4.6 lbs	0
NMHC	173 lbs	0	0
MHC	0	66.5 lbs	0
NOx	1,485 lbs	570 lbs	0
CO2	217,800 lbs	142,145 lbs	0
Noise Pollution	Yes	Yes	No

# Truck Price Declines as More Trucks Sold

Cost per unit	
\$950,000	
\$400,000	
\$280,000	
\$250,000	
\$240,000	
\$235,000	
\$230,000	
\$225,000	
\$220,000	
\$215,000	
\$210,000	
\$205,000	
\$200,000	
\$195,000	
\$190,000	
\$185,000	
\$180,000	
\$175,000	
\$170,000	
\$165,000	
\$162,500	

## Hydrogen power products

### What is a Hydrogen Fuel Cell?

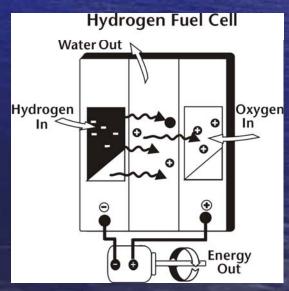
- An electrochemical engine that converts hydrogen fuel and oxygen into electrical energy.
- A battery that runs on hydrogen fuel.

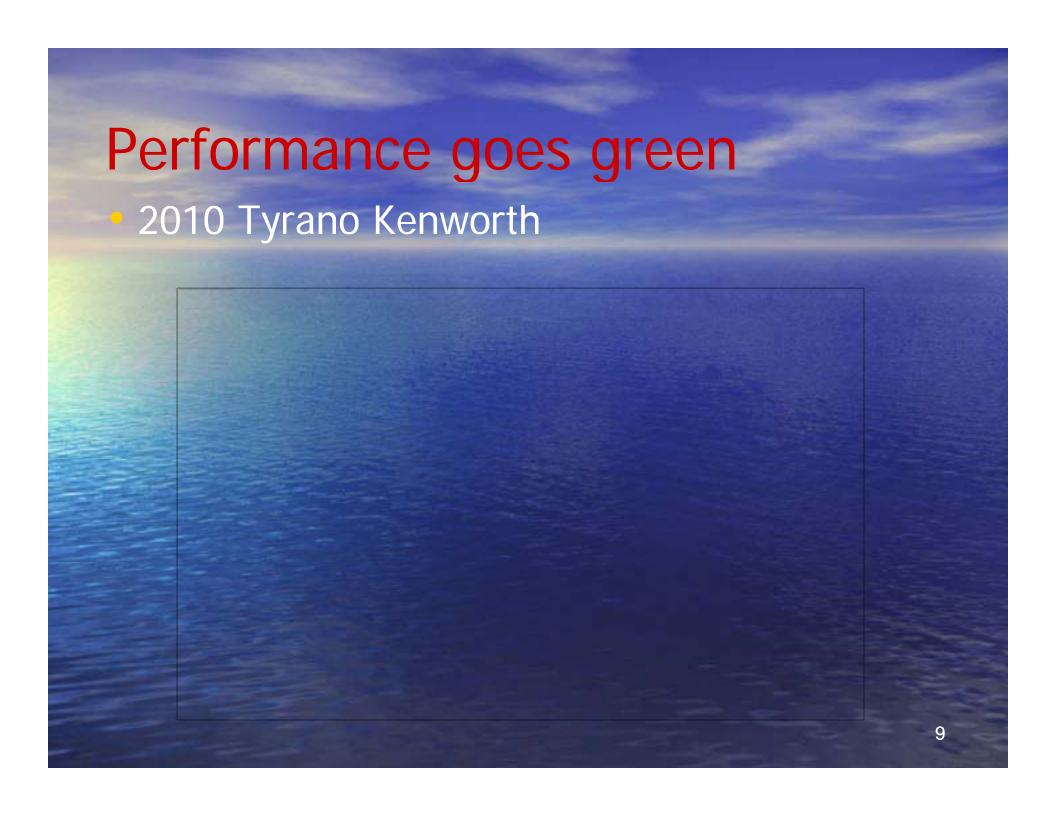
Twice as efficient as gasoline internal combustion

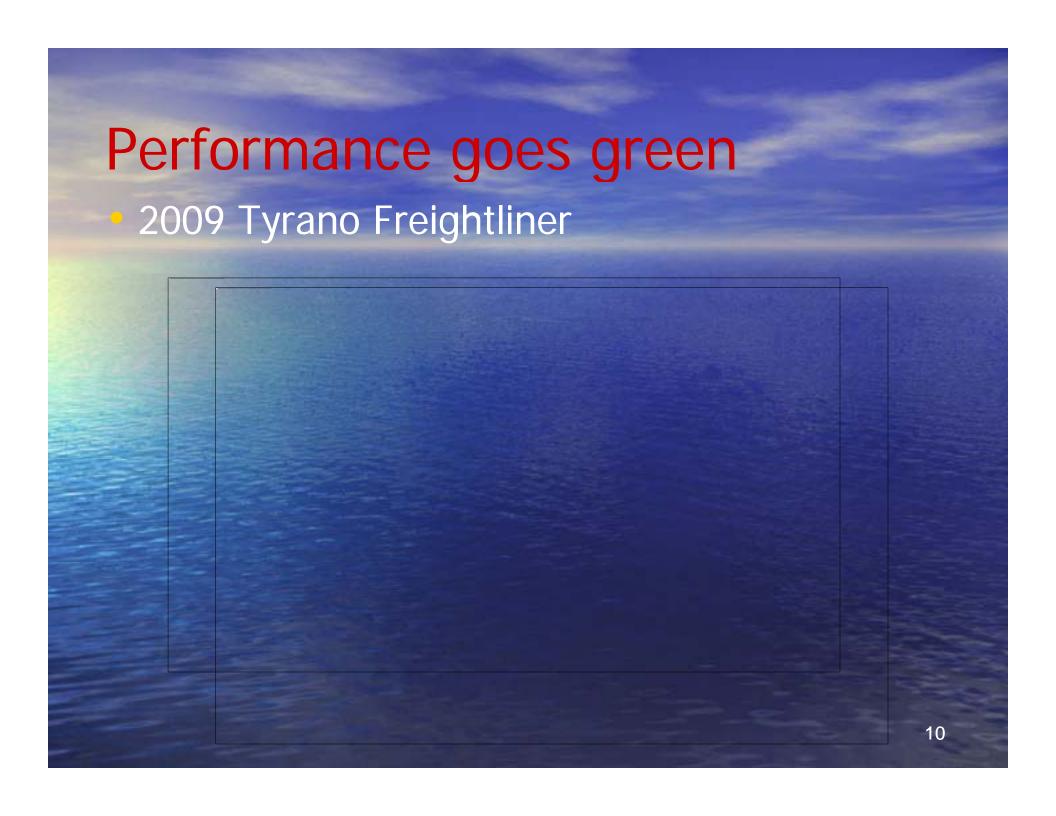
engine.

- No emissions (exhaust =  $H_2O$ )

Endgame for transportation industry









# Attractiveness of transaction to truck owners and operators:

- Purchasing Hydrogen Powered Trucks
  - Federal tax credit of \$40,000
  - Individual State credits and subsidies
- Operating Hydrogen Powered Trucks
  - 35% to 40% per mile savings versus diesel
  - Increase power and performance over diesel
  - No exhaust
  - Very quiet operation
  - Regenerative braking allows use of "Jake Brake" within city limits
  - No oil changes
  - No coming home smelling of Diesel



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