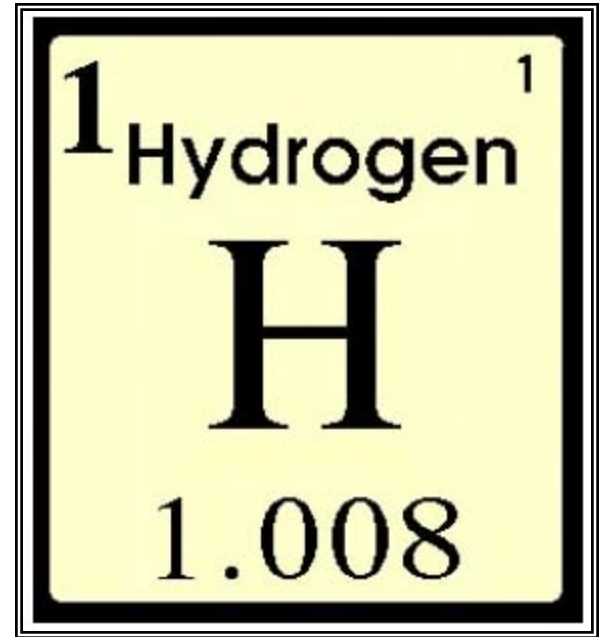


Hydrogen Energy In West Virginia

Presented At
Governor Manchin's Energy Summit

Dec. 8, 2009
Al Unione, Parsons
David Haberman, IF, LLC



DOE's National Energy Technology Laboratory

- Pragmatic Hydrogen Infrastructure Vision
- Technical Expertise
- Open Architecture Approach
- Built A State-wide Working Group
- Funded Yeager Airport Project

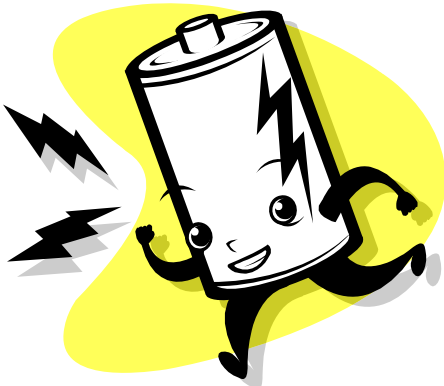
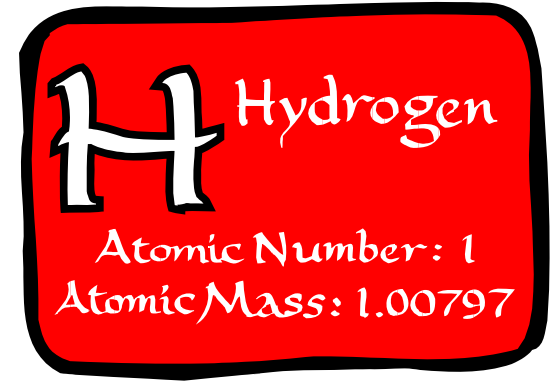
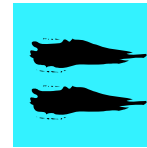
Hydrogen Value Chain



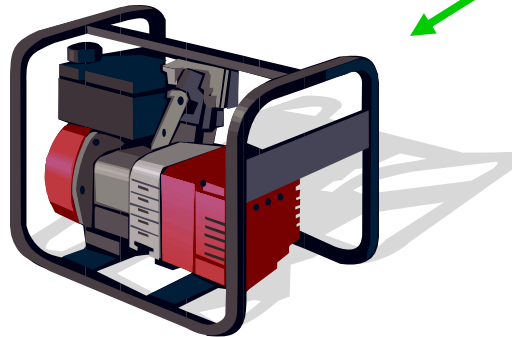
Coal Based Power



Water



Portable Batteries



Stationary Generators



H2 Fueled Transportation

Clean Fuel

Hydrogen Is Safer Than Gasoline

- Not Explosive In Open Air
- Not Decomposing
- Not Self-Igniting
- Not Oxidizing
- Not Toxic
- Not Corrosive
- Not Polluting
- Not Cancer Causing





NETL Facilitates The West Virginia Hydrogen Working Group
To Ensure Broad Stakeholder Involvement



Yeager Airport Hydrogen Facility



Yeager Airport Hydrogen Facility Was Commissioned On August 17, 2009



Hydrogen Production Uses Grid Power To Split Water



Many Different Hydrogen Fueled Vehicles Are In Practical Use

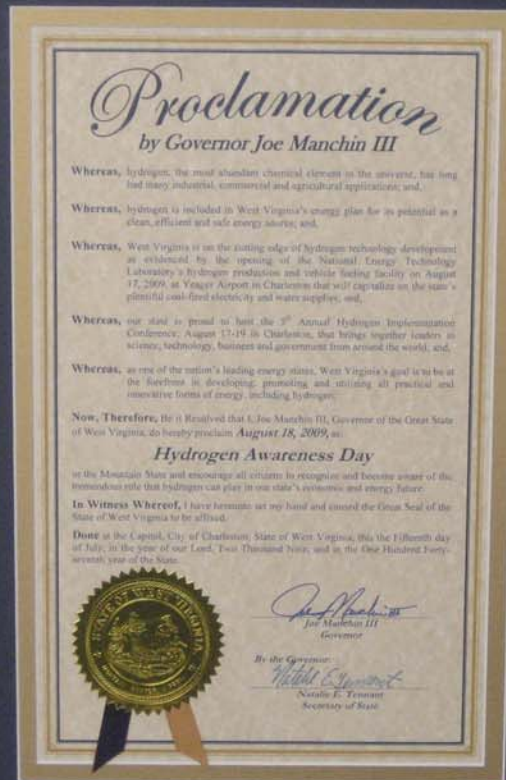
The
Hydrogen
Fuel
Dispenser
Is
Publically
Accessible
And
Easy To
Use



At Yeager Airport
Hydrogen Fuel Is
Used By Both
Commercial &
Military Groups.



Fueling A H2 Powered Forklift



Governor Manchin Issues Hydrogen Proclamation



Hydrogen (H₂)
Fueling Stations
Based On NETL's
Open Architecture

Hydrogen Highway
Opportunity –
Connecting Five
States

Uses Water For
Feedstock And
Coal Based Power
To Manufacture
Clean Fuel For
Transportation And
Portable Power



American Built – Hydrogen Fueled Vehicle



Hydrogen Fuel Cell Replaces Internal Combustion Engine