

# **Making Environmentalism Relevant in the Business World**

Aspen Global Change Institute

Brook Porter – Aug 2006

# Outline

- Personal introduction
- The business of energy
- Using metrics to communicate relevance
- ENV: An Example
- Connecting the dots to justify change
- Next step for energy: level the playing field

# Background

Personal, educational, and professional

- **Connection to nature**
- **Role models: my father and my grandfather**
- **UC Berkeley**
- **Intelligent Energy: hydrogen and fuel cells**
  - Hestia hydrogen generation system
  - ENV Motorcycle



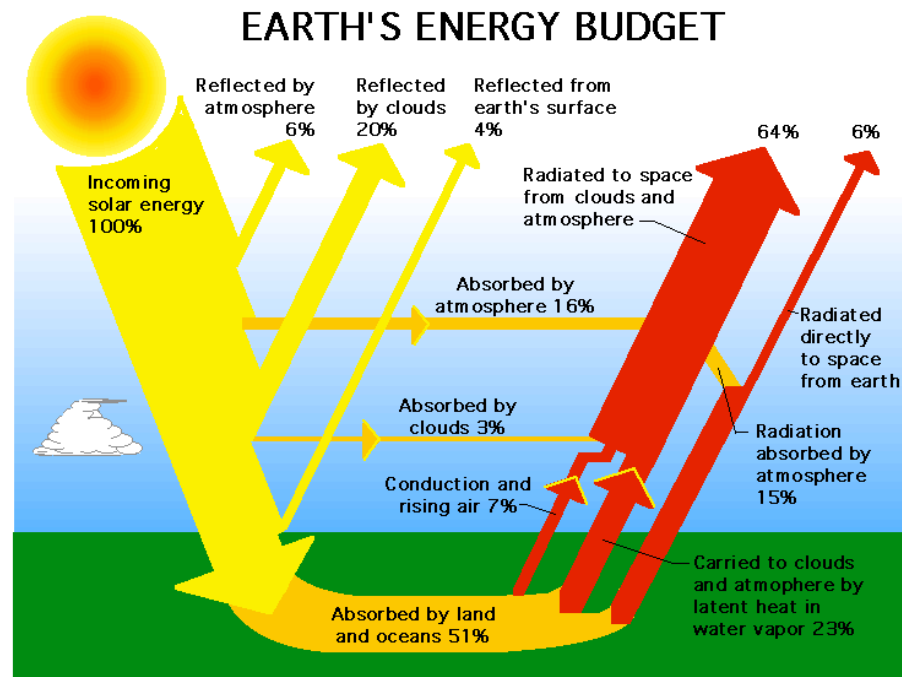
- **Primafuel: biofuel technology and implementation company**



# Energy is a complex subject

So relevant to all of our lives, yet so vaguely discussed

- Before proposing an alternative, one must understand the status-quo
- The first law of thermodynamics
- Where does it all come from?
- How much do we have?



# **The importance of metrics**

How you say it can be more important than what you say

- **Miles per gallon, \$/kWh, kg CO2 per km**
- **Making issues relevant is essential to getting consensus**
- **How is consensus reached in the business world?  
Only one metric matters: \$\$**
- **How can environmentalism be shown to be profitable?**
- **What does that mean for environmentalism?**

# ENV: an example of metrics

The right metric can change fundamental perspectives

## Fuel cell vehicle viability using conventional metrics

Fuel cell: \$1500/kW	IC Engine: \$25/kW
Durability: 2000 hrs	Durability: 5+ yrs
Hydrogen: \$10/kg	Gasoline: \$3/gal
Source: fossil fuels first, but eventually solar electrolyzers	Source: fossil fuels

**TOUGH SELL!**



# The right metric makes the sale

ENV is hyper-efficient in comparison when using the right metrics



Malaguti Phantom  
3kW peak

100 miles per  
gallon (mpg)

100 miles traveled on 1 gallon  
100 miles per gallon

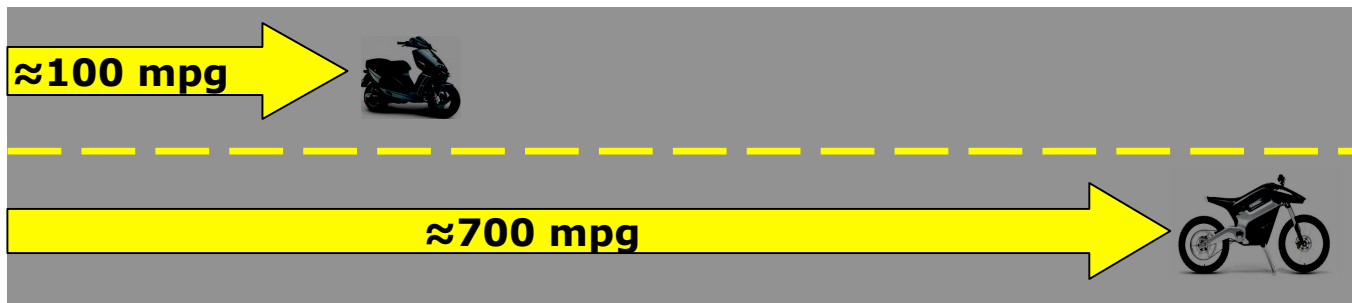


Intelligent Energy ENV  
1kW, 6kW peak

100 miles per tank

1 CORE H2 tank contains 0.145 kg H<sub>2</sub>  
0.145 kg H<sub>2</sub> = 1/7 gal gasoline  
100 miles/1/7 gal = 700 miles per gallon

**\$1.45/tank**



# Consumers want solutions

Metrics help communicate the problem and the solution



- Major source of pollution
- Continued dependence on oil
- 20<sup>th</sup> century technology



- Distributed hydrogen generation
- Mobile power source
- Zero point-source emissions
- Biofuel based hydrogen for low CO<sub>2</sub>
- \$1.45 per tank = 100 miles!
- World's most advanced technology for less than \$7000!



# Importance of connecting the dots

Proving interconnectedness lays the foundation for change

## What is the real cost of gasoline?

### ***At the pump***

- Gas is cheap, less than \$4/gal!
- Money is cheap, 0% APR on new cars even today
- Big cars are more “American” – (see recent ad for Hummers)

### ***Real cost***

- CTA says \$15/gal (in 1998!)
- \$50 billion/yr spent protecting Mid East (\$1.20/gal)
- US EIA estimates annual wealth transfer to oil producing countries: \$350 billion
- NRDC's Copulus testifies that the real cost of gas: >\$11/gal

# Levelizing the playing field

Give alternatives a fair chance and they will thrive

## ***True market scenario:***

- Gas tax of \$2/gal to pay for oil company subsidies, military protection, etc. which are no longer funded federally
- Federal budget is reduced by close to \$100 billion, allowing for \$50 billion in rebates (~\$300 per taxpayer)
- Spend remaining \$50 billion on alternative energy implementation programs and research
- At \$5/gal for gasoline, \$50 billion goes a VERY long way

**“The stakes are too high to go on  
with business as usual”**

Peter Teague, Nathan Cummings Foundation

**Thank You**