



**PublicGen**  
**EarthSync**



# Smart Grid and H2 Economies

Technologies, Business and Systems Thinking

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# Energy Modernization and Climate Change Technologies: BAU vs. Premium Response



- **Leadership:** Energy and Climate Security WILL NOT occur by accident. This is a national emergency...

**PLEASE USE THIS OPPORTUNITY TO UNITE... *All of us***

- Climate Change Technologies (CCT) work. BAU can't last.
- First cost on Smart Grid, Distributed Energy (DE/CHP) and H2 tech (stationary fuel cells and mobile DE, i.e. H2 buses) is premium... CCT qualified systems cut GHG... at a PREMIUM
- Distributed energy and combined heat and power systems (CHP) are PROVEN technologies that provide 24/7 ALL WEATHER back up to RENEWABLES and storage systems.
- Fuel cell and H2 ICE buses are PROVEN technologies which are REORDERED by municipalities once experienced.

## Fuel Cells and H2 link with Smart Grid at **DISTRBUTED ENERGY**

IEEE 1547 and Federal recognition of DE and Smart Grid (EPA 2005, EISA 2007), and consensus that DE/CHP is a relatively low cost CTT (McKinsey), make increased DE TAX CREDITS (see renewable tax credits) and a Fed/NC CleanTech Fund **GOOD BUSINESS** and **SMART POLICY CHOICE**.

- Increased electric system reliability (cascading redundancy)
- Weather event? **NO TRANSMISSION LINE ISSUES**
- Reduction of peak power requirements
- Provision of ancillary services, including reactive power
- Improvements in power quality
- Reductions in land-use effects and rights-of-way acquisition costs
- Reduced vulnerability to terrorism... infrastructure resilience



*The Potential Benefits of Distributed Generation and Rate-Related Issues that may Impede their Expansion - DOE for Sec. 1817 EPACT 2007*

# Why chose a new energy system?



A heavy haze could be seen in Beijing in August 2007. Two recent reports call for a heightened global effort to reduce carbon emissions. (By Greg Baker -- Associated Press)

## Carbon Output Must Near Zero To Avert Danger, New Studies Say

By Juliet Eilperin  
Washington Post Staff Writer  
Monday, March 10, 2008; A01

## Coal Can't Fill World's Burning Appetite

### With Supplies Short, Price Rise Surpasses Oil and U.S. Exporters Profit

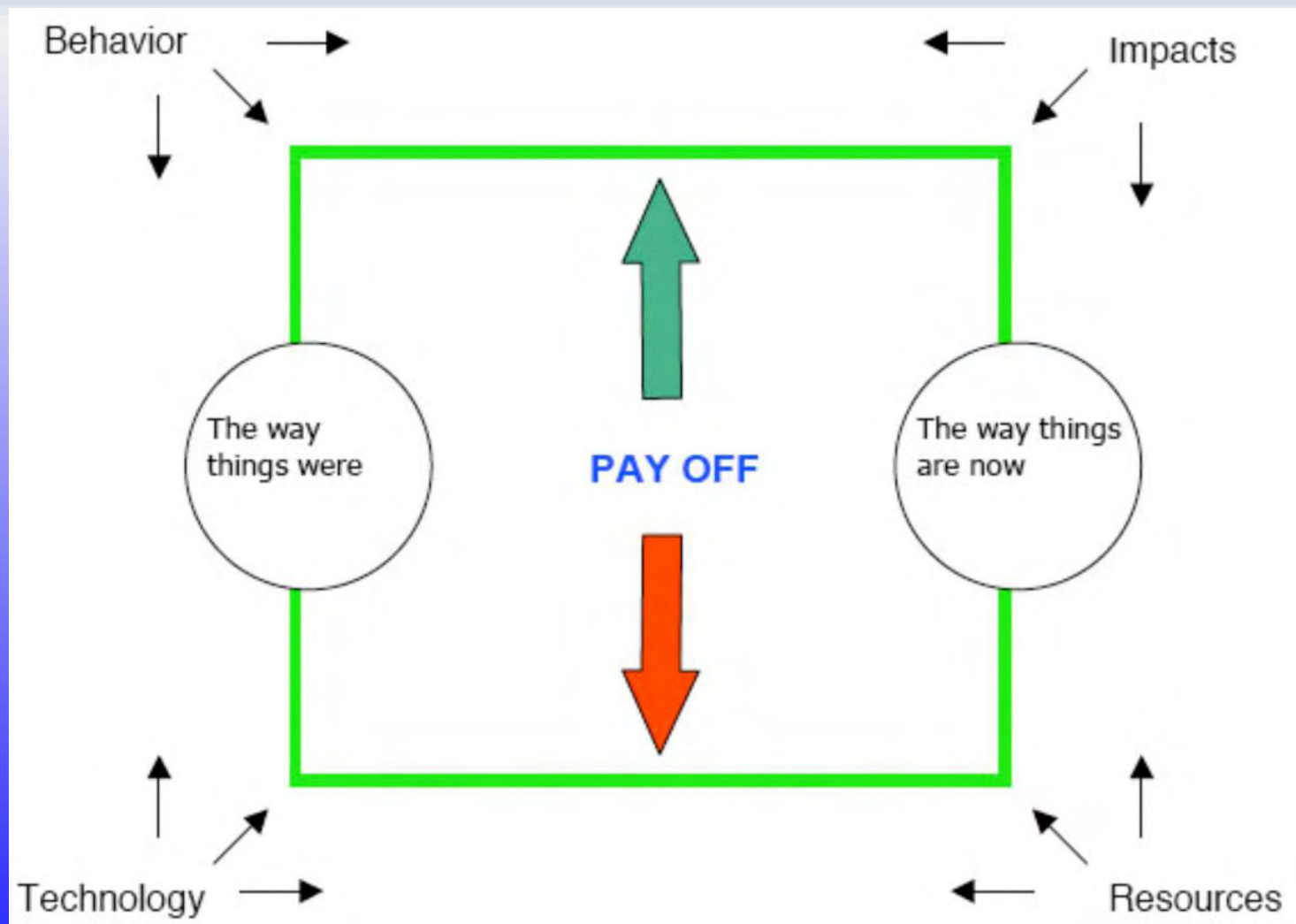
By Steven Mufson and Blaine Harden  
Washington Post Staff Writers  
Thursday, March 20, 2008; A01

## What is not to chose?

Not choosing will force choices on us

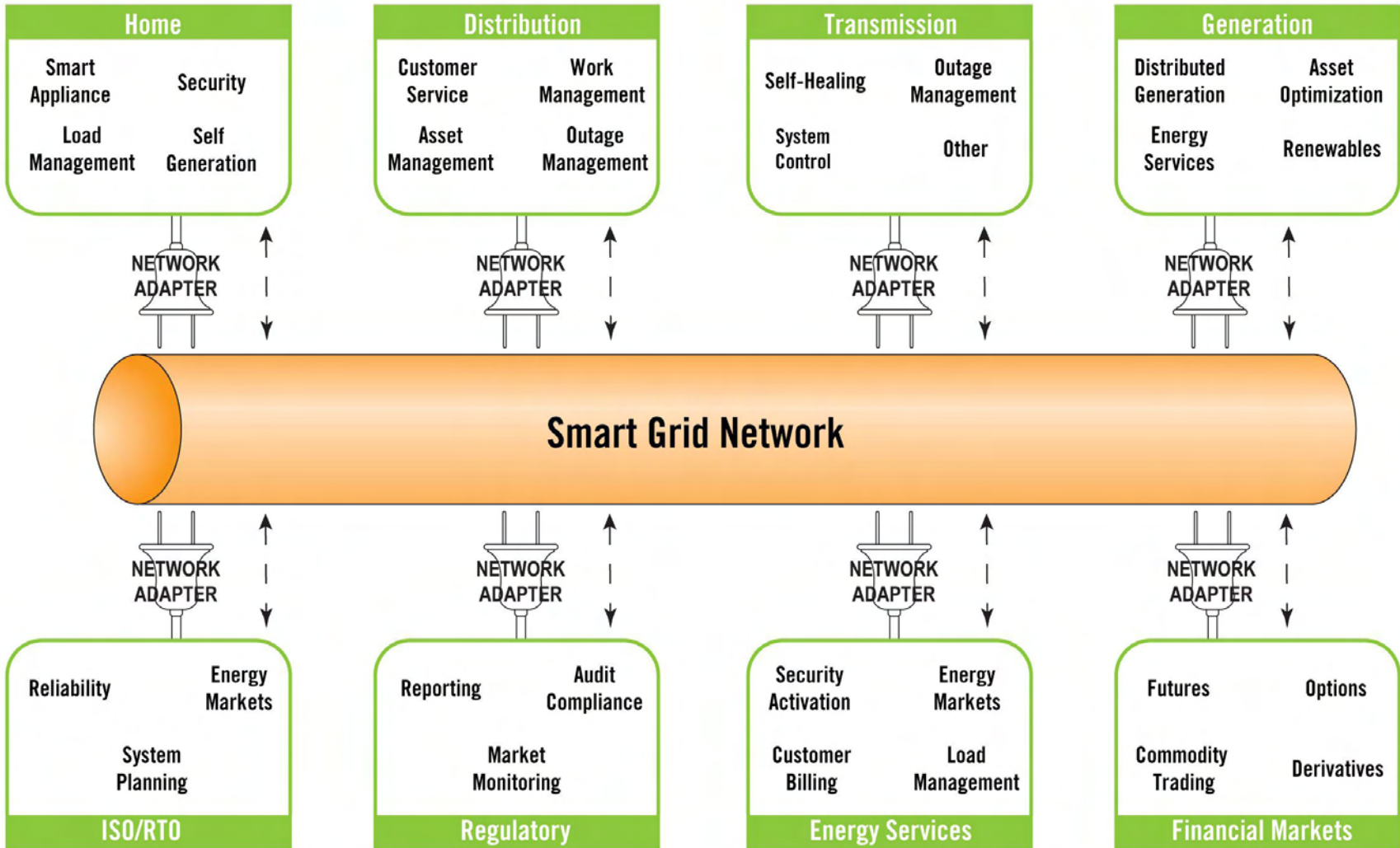
**WITH A MATURE RISK MANGEMENT RESPONSE...**

In a carbon and natural resource constrained world, with systems like carbon capture and sequestration locked in R + D... with supplies peaking to the point of driving the global political economy toward resource wars... how will we act, based on the August 15, 2008 starting point... ethically and with what technological tools?

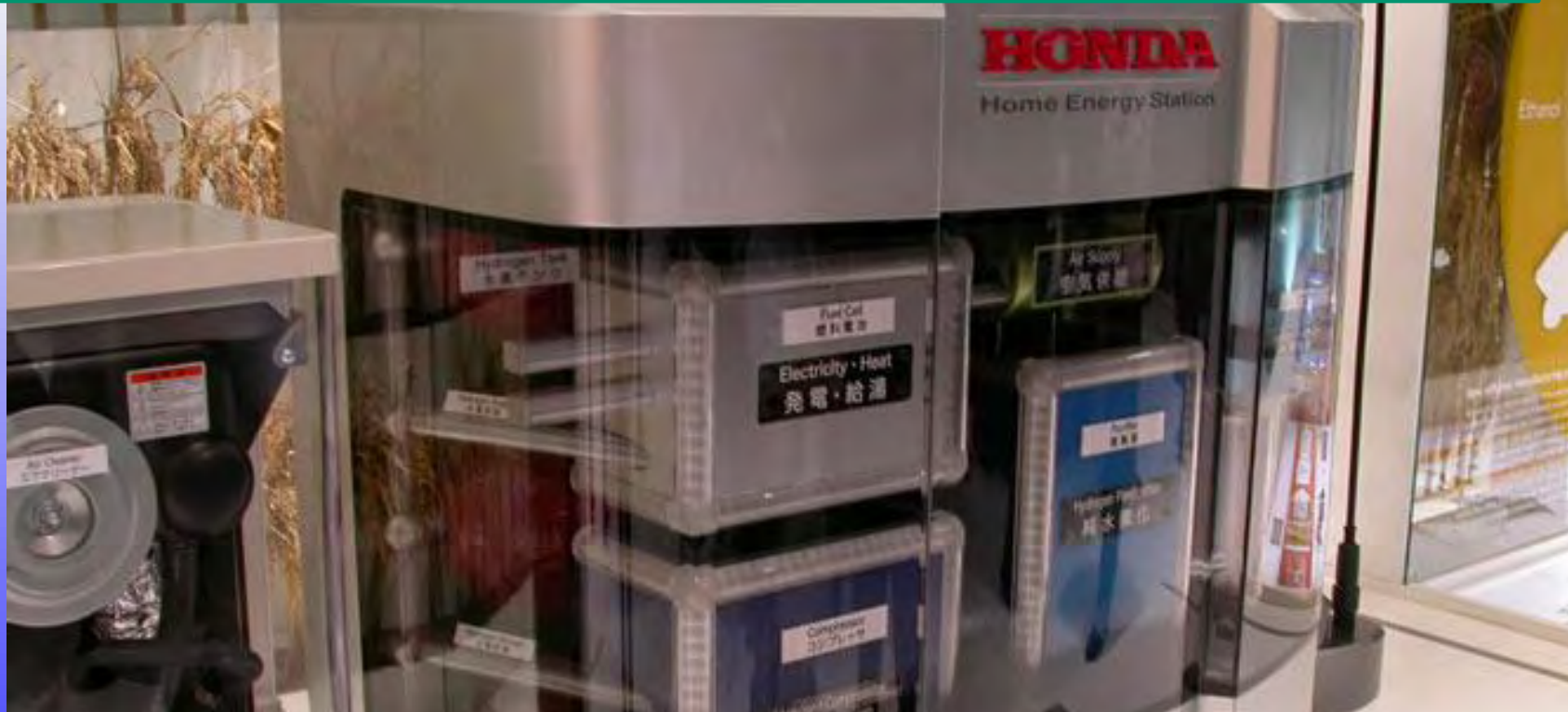


Through an open systems architecture, a common communications system can be shared by all components that plug into it.

# OPEN SYSTEMS ENERGY



**DISRUPTIVE TECHNOLOGIES ARE NEEDED... But so is significant behavioral changes, if we are to avoid late-stage climate change adaptation IMPOSITIONS.**



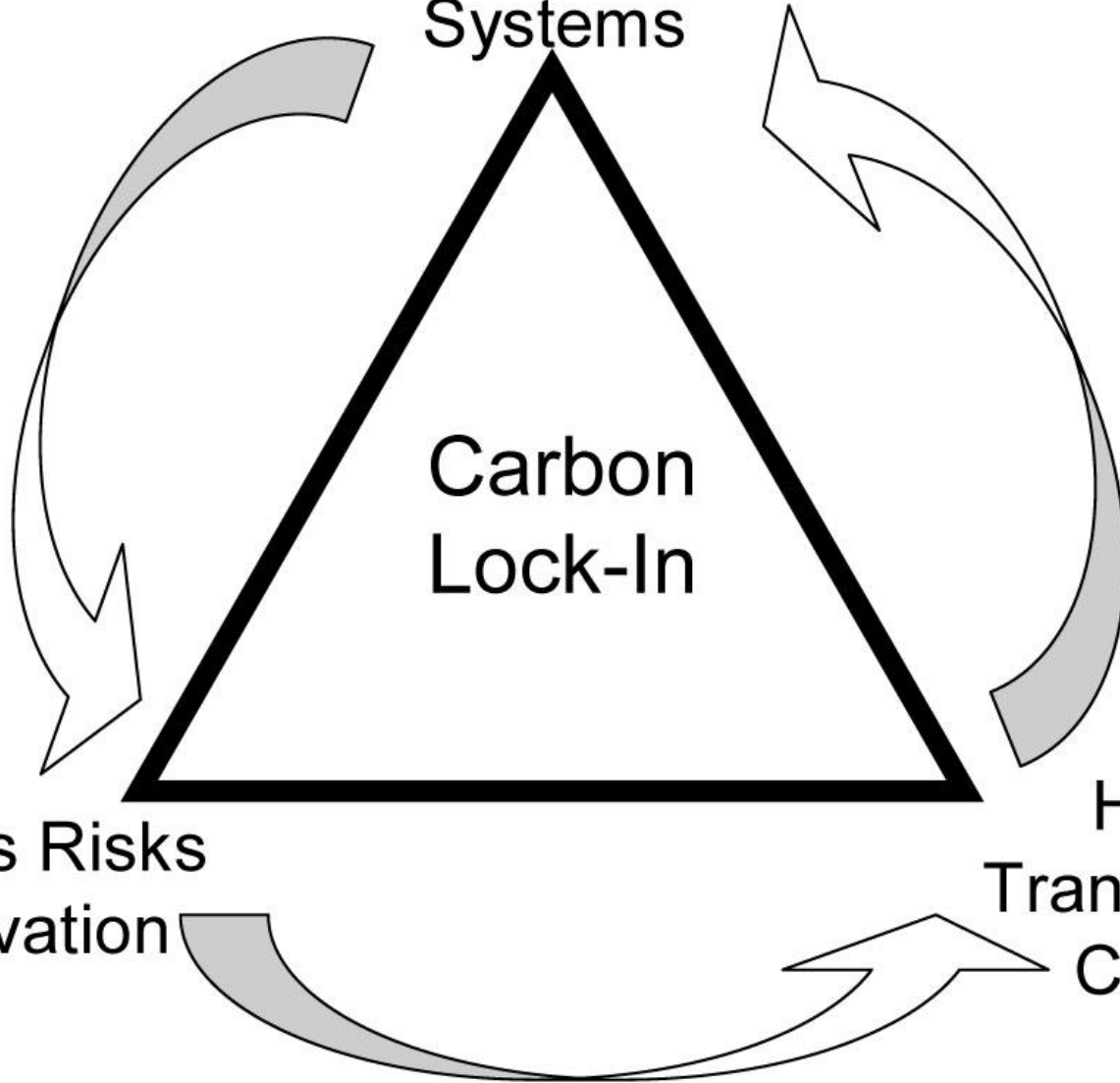
**Micro CHP is being deployed on a LARGE SCALE throughout Japan. This Honda Home Energy Station can work with solar and/or small wind to generate electricity and heat for the home or other buildings, as well as HYDROGEN FOR VEHICLES.**

Incumbent  
Technology Support  
Systems

Carbon  
Lock-In

Business Risks  
of Innovation

High  
Transaction  
Costs



# PublicGen/EarthSync contact

**Grant Millin, President**

**The PublicGen Companies: PublicGen/EarthSync, LLC**

**NC H2RT Project Manager - Please visit [www.EarthSyncHub.com/NCH2RT/](http://www.EarthSyncHub.com/NCH2RT/)**

**PO Box 9214**

**Asheville, NC 28815**

**Office 828.298.5706**

**Cell 828.423.2266**

**Email: [grant@publicgen.com](mailto:grant@publicgen.com)**

**URL: [www.publicgen.com](http://www.publicgen.com)**

**The following videos at these websites were displayed in conjunction the speaker presentations:**

1. <http://www.global-hydrogen-bus-platform.com/>
2. <http://www.purdue.edu/eas/carbon/vulcan/index.php> /  
<http://www.youtube.com/watch?v=eJpj8UUMTal&feature=email>