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ARE WE READY FOR 2012?



Beau Montréal



Make your pick on what will happen on December 21, 2012



- A. The world will end as planets collide
- B. The Biblical apocalypse will begin.
- C. The Earth's magnetic fields will reverse.
- D. Singularity will occur and mankind will experience a wonderful transformational awakening.
- F. You'll be able to buy Fisker's new \$39,000 plug-in hybrid sedan.

2009 FRANKFURT AUTO SHOW:



Left: Renault Twizy



Middle Right: Volkswagen E-Up!



Farther Right: Reva NXG

Largest Electric Car Order in History



DE: Shai Agassi announcing 100,000 EV order in Frankfurt



HT: Agassi with Ontario Premier Dalton McGuinty, Ontario
Minister of International Trade Sandra Pupatello.

2012 In Our EV World



- Nissan launches LEAF consumer sales
- Better Place operational in Israel and Denmark
- Ford introduces Escape PHEV
- Toyota brings out Prius PHEV
- Volvo introduces C-30 PHEV
- Hyundai & Kia roll-out of PHEVs in N. America
- Bright Automotive plans production of IDEA EV.
- Tesla Model S deliveries under way
- GM ups Volt production to 60,000
- Volkswagen ramps up for E-Up! production
- \$39,000 Fisker sedan starts production

Before 2012: Where We Are Now



Relatively insignificant numbers of PHEVs measured in the scores, not hundreds, much less by the thousands.

BEVs account for few tens of thousands and most of those are NEVs.

Perspective: Global automotive fleet nearing 900 million, 99% dependent on petroleum.

2012 and BEYOND: The Projections



Report Buyer: 600,000 PHEVs by 2015

CSM Worldwide: 400,000 BEVs, PHEVs by 2015

Bosch: 1.5 million world market by 2015 BEVs, PHEVs, HEVs

Parts OEMS: 500,000-800,000 PHEVs & BEVs in 2015/2016

MIT: 10 million electric cars by 2016

Nissan: 5-7 million (10%) world market for BEVs by 2020

JD Powers: 2.25M BEVs, PHEVs, HEVs sold annually in EU by 2020

President Barack Obama wants 1.5 million PHEVs by 2015.

Over a Barrel : Oil's Economic Conundrum



\$70+ oil stimulates hunt for alternatives, including PHEVs

BUT....

Also places a drag on the global economy that slows investments in those alternatives.

\$70 oil is less than \$70, we're going to have a problem more than \$200,

Carlos Ghosn
2009 Frankfurt Auto Show

The Window of Opportunity



- ‘Goldilock’ Moment in Oil Prices
- Favorable Political Climate Globally
- Economic Incentives
- Industry Necessity
- Available Technology
- Public Acceptance

How long will it remain open?

Survey Says....



One-in-three Americans interested in buying an electric car as their next automobile --

Ipsos and Better Place

48% of those polled were "extremely" or "very" interested in purchasing a plug-in electric vehicle --

Pike Research

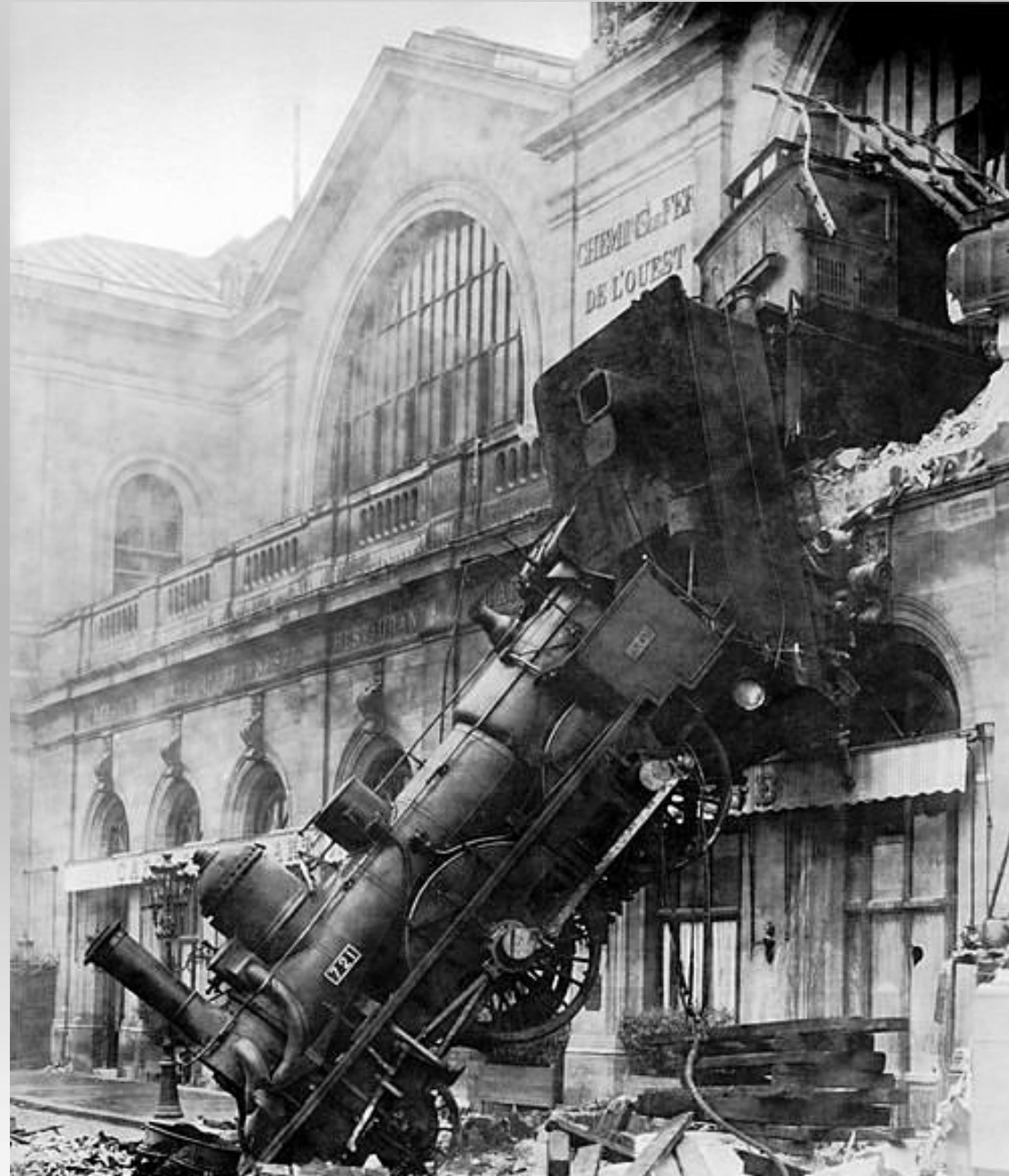
Four-in-five U.S. adults believe the United States must become a leader in hybrid vehicles.

Johnson Controls

Bain & Company survey of 4,000 people in eight countries, including the U.S., China, Japan and Germany, finds that high-income buyers are ready to buy all-electric vehicles as a second vehicle for short trips.



What Could Derail the Train?



RESOURCES:



- Lithium resources availability
- Rare earth elements availability
- Oil demand vs. supply [Peak Oil]

“Under investment in mature fields, rising resource nationalism, and the cost and difficulty of retrieving oil from discoveries in ultra-deep water could see global production capacity fall to 87.3 million bpd by 2015.”

Iain Reid

Macquarie Investment Bank

ENERGY:



- Finite coal reserves
- Aging nuclear plants
- Depleting oil & gas fields
- Decommissioned hydro plants
- Fragile power grid
- Intermittency of renewables

INFRASTRUCTURE:



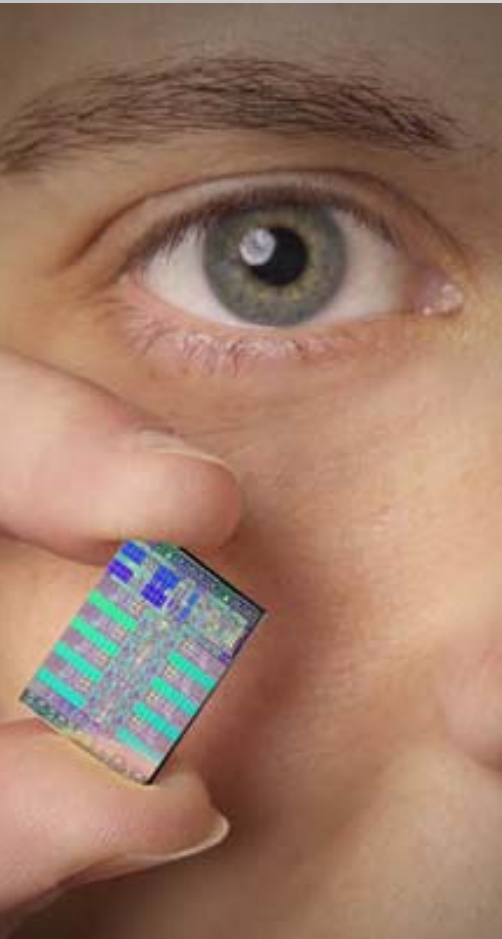
- Inadequate local electric load capacity
- Non-existent public chargers
- Outmoded building codes
- Divergent charging standards
- Dumb electrical circuits
- Lack of Vehicle-to-Grid capability

POLICIES:



- Lack of adequate financial incentives
- Unfavorable tax structures
- Regulatory constraints
- Inadequate appreciation of approaching consequences of fossil energy depletion.

New Wrinkle: Embodied Energy



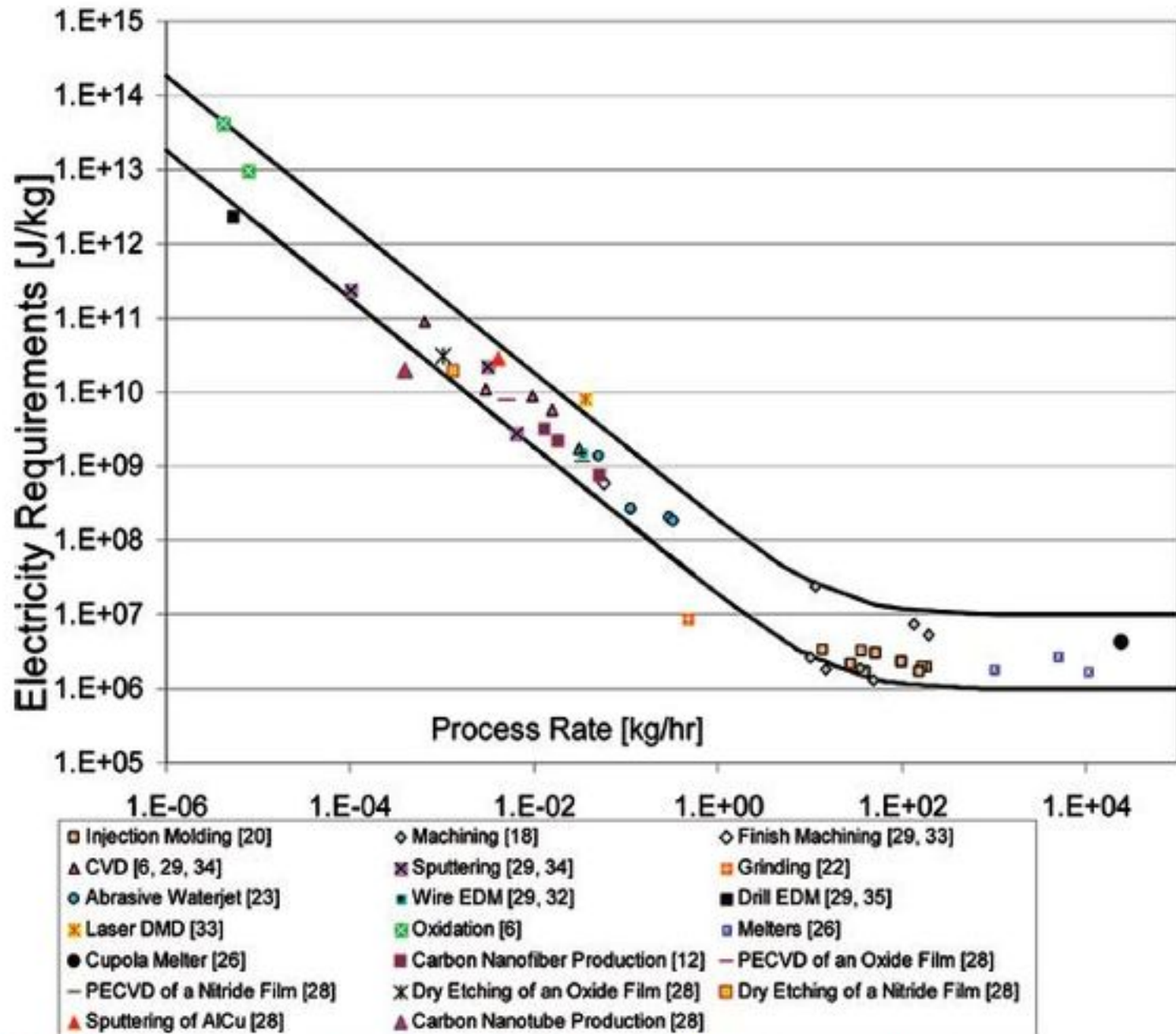
"A handful of microchips can have as much embodied energy as a car."

"It takes 800 kilograms of fuel to produce one kilogram of microchips."

"The energy requirements of semiconductor and nanomaterial manufacturing techniques are... up to 6 orders of magnitude above those of conventional manufacturing processes."

Source: ["The monster footprint of digital technology" -- http://www.energybulletin.net/node/49730](http://www.energybulletin.net/node/49730)

The High Energy Cost of Efficiency



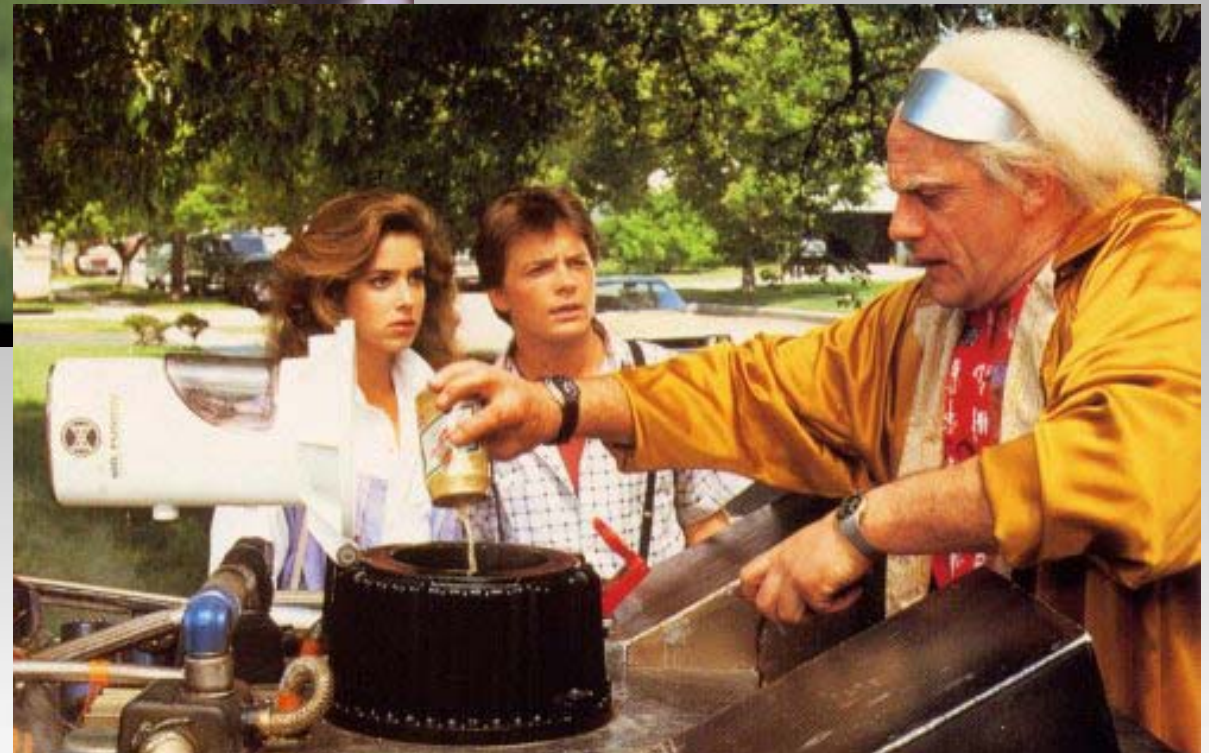
The Great Green Paradox

In order to more efficiently use energy,
will we consume ever-increasing amounts of energy?

- Smart Grids
 - Plug-in Electric Cars
 - Intelligent Transit Systems
- Global Digital Communications and Data Farms
 - Giant Wind Farms and Silicon Solar Parks

The Real Challenge of the 21st Century
Will Be to Learn How to Benignly,
Responsibly Utilize More Energy, Not Less.

Is There A Mr. Fusion in Your Future?



Maybe Tomorrow, Definitely Today



Stanley Pons and Martin Fleishmann: co-discoverers of the as-yet-unexplained process known as “cold fusion.”



Toronto wind turbine. Ontario passes first comprehensive feed-in tariff for wind and solar in North America.

pass into the reality of action. From the actions
we dream again; and this interdependence produces
the best form of living. -- Anais Nin



EV World Finally Gets Plugged In!



Kim Adelman
Plug In Conversion Corp.



“She Who Must Be Obeyed”

A photograph of a city skyline at sunset. The sky is a clear, deep blue. In the foreground, a wooden bridge with a black metal railing spans across a body of water. The bridge is illuminated by the warm, golden light of the setting sun. In the background, a dense cluster of buildings of various heights and styles is visible. Some buildings are dark, while others are brightly lit by the sun, creating a strong contrast. A prominent red text box is centered over the middle of the image, containing the French phrase "Merci, mes amis!".

Merci, mes amis!