# *The Hydrogen Economy*

*The Great "Green" hope?*
*(Fuel or Folly?)*

*November 12th, 2003*

*Hunwick Consultants*

# $H_2$—a great energy carrier

- *Do we need another one—we already have electricity---and natural gas?*
- *But you can't store large amounts of electricity…*
- *Come to think of it, it's not easy to store $H_2$ either, much harder than natural gas.*
- *But it's still easier to store than electricity!*

# $H_2$ from fossil fuels

- *Cheapest source of $H_2$ is reforming natural gas, followed by coal gasification.*
- *But natural gas is already a good energy carrier as well as an energy source, and much cheaper.*
- *It only makes sense to convert natural gas (or coal) to $H_2$ if we sequester the $CO_2$.*
- *But then it's not cheap any more.*

# *The next cheapest source*

- *The nuclear industry wants to build Generation IV reactors to make $H_2$ by thermochemical water splitting (700-900°C), for >50% efficiency, c.f. electrolysis at 35%, estimated cost (in 2020): $A15/GJ.*
- *And, no GHG worries!*
- *Cheapest source if $CO_2$ sequestration included—whose impact may be as problematical as radioactive waste disposal.*

# Back to that storage issue

- *Are we so sure we can't store electricity efficiently, to the extent necessary?*
- *We want our laptops to run 24 hours, our cars to travel 500 km, and we want to recharge/ refuel them in a few minutes anywhere.*
- *These, and other portable appliances are becoming more energy-efficient.*
- *Do we build a $H_2$ economy on the basis that we won't be able to do these things by 2020?*

# *Who wants a $H_2$ economy?*

- *Its proponents claim it makes most sense if its sources are renewable (wind, PV, biomass).*
- *But do the renewable energy communities really want to generate $H_2$ instead of electricity?*
- *Who really wants the $H_2$ economy, and how much of their own money are they prepared to invest to bring it about?*