

# SuperGrid 2 Workshop

## Part 2



University of Illinois at Urbana-Champaign  
October 25-27, 2004

System Integration Issues

# Sales pitch to move forward



- Need a value statement that articulates what the super-grid project is all about
- What problem are we trying to solve?
- Replace oil/gas
- Control CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub> levels
- Why does the existing grid need the super grid?

# How to move forward



- Do research that solves both existing challenges and future challenges associated with the supergrid
  - Better modeling methods for larger systems, multi-terminal dc systems
  - Looking at breaking up existing grid into smaller islands, with dc inter-ties
- IOUs and EPRI will not be interested in funding long-term research unless there is a short-term (< 3yrs) benefit

# How to move forward



- DOE has superconducting and hydrogen program – lets try to get them together
  - Long term vision – excite people
- Propose to do simulations to look at different sized systems. Near term.
- Do more detailed determination of functional requirements and conceptual design, scenarios, modeling and simulation (national labs, funded by DOE, near term).

# How to move forward



- Short term studies looking at choice of architecture, also what would be best voltage/current levels.
- Society meeting presentations
- Getting DOE and Department of Homeland Security (DHS) involved; assessment of vulnerabilities for future grid

# How to move forward



- Need credible models for simulations; coupled into demonstration problems
- Initial work is mostly determining architecture, modeling and simulation
  - Budget of 3 million per year would be adequate for five years
- Building industry technical committees to move industry along with process

# Potential competitors



- Gas insulated overhead lines (80% N<sub>2</sub>, 20% SF<sub>6</sub> – Siemens)
- Modular (small distributed) nuclear reactors
- Massive ethanol effort
- Extensive HVDC links for flexible transportation and control