

Group D, Energy Problems (1 of 2)

- Lack of ability to optimize the integration and dispatch of various generation technologies (hydro, renewables, fossil, pumped storage)
- Outdated infrastructure of energy supply industry
 - Large, central energy generation paradigm is outdated and unsustainable.
 - Centralized plant, transmission lines
 - Moving fuels, water to a central plant (rail line, pipe lines, barges)

Group D, Energy Problems (2 of 2)

- Lack of integrated resource planning /analysis to include both energy and water supply and demand. To include:
 - Economic/regulatory/environmental impacts
 - Non traditional costs and benefits
 - Data, tools, policies,
 - All stakeholders are not involved in the process
 - Lack of implementation

Group D, Water Problems (1 of 3)

- Lack of data and integrated models for long term planning
 - Data fragmentation
 - Drought planning/climate change impact
 - Ground water supply/use impacts
 - Surface water supply/use impacts
 - Integrated with energy use
 - Trend is increasing

Group D, Water Problems (2 of 3)

- Match Water Quality, Use and Treatment
 - For example, most water supply is treated to drinking water standards regardless of end use
 - Underground injection control of waste water could be used as supply for electric generation, depending on quality
 - Current infrastructure does not accommodate dual use distribution
 - Trend is remaining the same
 - Better in some places, worse in others

Group D, Water Problems (3 of 3)

- Balancing Competing Water Uses
 - Electricity production, recreational, ag, ecological, fisheries, wildlife, etc.
 - No common metrics, criteria, guidance, policies
 - Value attribution approaches are lacking
 - Decision support tools required
 - Absence of overarching authority to set policy and guidance
 - Trend is increasing