

# Advanced Power Reactors Need for New Regulatory Framework

NRC 2005 Regulatory Information Conference  
Session G3 – Research Activities New Reactors

March 9, 2005

Adrian Heymer, NEI



# Need for New Nuclear Power Plants

- Need for 300GW of new generation by 2025
- Increase energy security
- Help reverse adverse economic impact of high and volatile energy prices (natural gas & electricity)
- Alleviate air quality and Greenhouse gas concerns
  - Public health & environment
- Manufacture hydrogen as a future fuel
  - Nuclear needed to meet cost & environmental goals

# Prime Issues for New Nuclear Plants

- Funding and financial (not unique to nuclear)
- Current plant safety & operational performance record restoring confidence in nuclear
- Uncertainty over untested licensing process
  - Need to prove the new Part 52 processes
  - Need new regulations for advanced non-LWRs
- Time to market – Decision to operations
  - Resources & priorities

# Support of Hydrogen Economy

- The use of hydrogen as a major fuel source
  - Additional and new challenges to natural gas markets & environment
- Use of nuclear technology in cogen or process capacity requires
  - New nuclear technologies
  - New regulatory requirements
- Need a new regulatory regime for advanced reactors
  - Risk-informed, performance-based, technology-neutral set of requirements

# Regulatory Framework for Advanced Reactors

- Risk-informed
  - Requirements take into consideration insights from PRA
  - Build on ROP structure
- Performance-based
  - Describes what is to be achieved, not how to achieve the objective
  - Objective safety performance metrics
    - Reliability & condition monitoring

# Timeline for New Regulatory Regime

- Urgent need for ANPR in 2005 if NRC 2009 goal for enacting new framework is to be achieved
  - NEI 02-02 identified potential issues
  - NRC Draft Regulatory Framework issued for comment
  - Opportunity to assess draft regulations against new advanced design submittals
- First advanced reactor design submittals ~ 2007
- NOPR - 2008