



RIC 2010

Siting Safety and Environmental Reviews – Looking Forward

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Advanced Reactor Program

- Next Generation Nuclear Plant (NGNP)
 - High Temperature Gas-Cooled Reactors
- Integral Pressurized Water Reactors
- Liquid-Metal-Cooled Fast Reactors
- Other Conceptual Designs
- Policy & Key Technical Issues for Small Modular Reactors

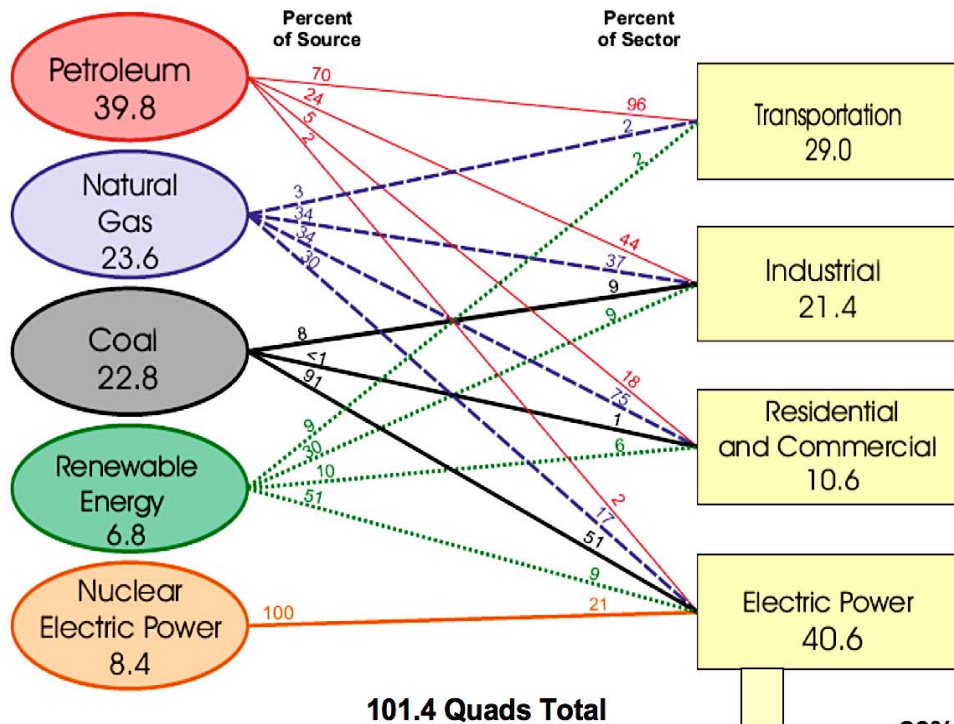


Next Generation Nuclear Plant

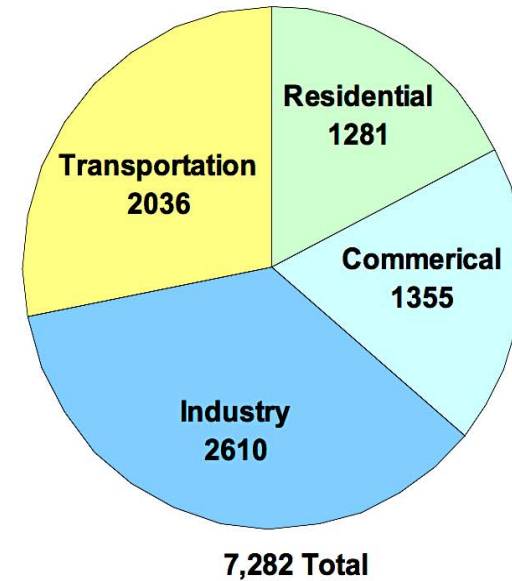
- DOE funded program to use a Generation IV reactor for electricity and/or hydrogen production
- Joint DOE/NRC NGNP Licensing Strategy issued in August 2008
- DOE to select from several candidate high-temperature gas-cooled reactor designs
- Preliminary interactions underway to support application in 2013 (including supporting research activities)

Energy Sources & Sectors

U.S. Primary Energy Consumption by Source and Sector, 2007
 (Quadrillion Btu)



U.S. Greenhouse Gas Emissions by Sector, 2007
 (Million Metric Ton CO₂-equivalent)



26% to Industrial
 35% to Residential
 39% to Commercial



Integral Pressurized Water Reactors

- Designs
 - Westinghouse International Reactor Innovative and Secure (IRIS)
 - NuScale
 - B&W mPower
- Features
 - Steam generators, pressurizer, and other components within reactor vessel
 - Passive safety systems



Policy & Key Technical Issues

- Source Term
- Risk Informed – Performance Based Regulation
- Emergency Planning
- Staffing Levels
- Financial Requirements
- Process Heat Applications/Nearby Facilities
- Containment Functional Requirements
- Materials Qualification
- Modular Units/Expandable Site



Advanced Reactors Siting and Environmental Issues

- Land and water use
 - Possible use of air-cooled condensers
- Use of seismic isolators
- Underground facilities
- Possible use of small modular reactors to replace retired fossil stations
- Severe accident mitigation design alternatives (SAMDA)



Advanced Reactors Siting and Environmental Issues

- Fuel Cycle and Transportation Differences
 - S3 & S4 Tables in 10 CFR Part 51
- Co-location of facilities for process heat applications
 - Regulatory jurisdictions, effluent migrations
- Possible generic environmental evaluations for modular designs

