

IPPSR

Michigan State University

Policy Forum Series

Michigan's Critical Infrastructure: Energy

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Why Consider a “Next Generation” of Nuclear Power Plants?

- **Energy Demand Growth**
- **Climate Change**
- **Aging Electricity Generation Fleet**
- **Relative Cost of Competing Technologies**

Key Issues Facing Next- Generation Nuclear Power Plants

- **Economics**
- **Safety and Security**
- **Nuclear Waste – Storage and Disposal**

It's the Economics!

- **Costs of new nuclear power plants compared to other alternatives**
- **“Other” economic considerations:**
 - **Outlook of Investors**
 - **Utility Company (generators) considerations**
 - **Regulators: 1) Economic, and 2) Safety**
 - **Disposition of Nuclear Waste**

Safety and Security

- **Safety Culture – In U.S. and Abroad**
- **U.S. Nuclear Regulatory Commission**
 - **Probabilistic Risk Assessment**
 - **Licensing Processes**
 - **Public Participation**
- **Security Concerns since 9/11/01**
 - **Design Basis Threat**

Nuclear Waste Management and Disposal

- **Current National Policy – NWPA of 1982**
 - Deep Geologic Disposal
 - On-site Storage
 - Yucca Mountain Project – Has it failed?
- **Is there a Plan B?**
 - New Site for Disposal?
 - Reprocessing
 - Leave it where it is – indefinitely!
- **Federal Obligation**
 - Legal Obligation
 - Consumer Issue
 - Moral Obligation

Nuclear Energy and Climate Change Mitigation

- **Will Nuclear Power contribute to Governor's 45 x 20 goal?**
 - Not likely to have new nuclear plants built by 2020.
- **How quickly can nuclear power be expanded to contribute to climate change mitigation?**
 - To achieve the carbon reductions of a Pacala/Socolow wedge (1 GtC/year or 700 net Gwe nuclear power) would require the industry to return to the most rapid period of growth experienced in the past (1981-90) and sustain this growth for 50 years.
- **If a substantial GHG tax or cap and trade program is implemented, the relative economics of nuclear power (as compared to coal) will improve, possibly leading to rapid expansion.**
 - Source: Nuclear Power Joint Fact Finding, The Keystone Center, June 2007, www.keystone.org