

# Proposed Changes to DOE Part 810 Assistance to Foreign Nuclear Activities



## Office of Nonproliferation and International Security (NIS)

-  **Safeguard and Secure** nuclear material to prevent its diversion, theft and sabotage.
-  **Control** the spread of WMD-related material, equipment, technology and expertise.
-  Negotiate, monitor and **verify** compliance with international nonproliferation and arms control treaties and agreements.
-  Develop and implement DOE/NNSA nonproliferation and arms control **policy** to reduce the risk of weapons of mass destruction.

- **Part 810 Process Improvement**
  - **Mr. Richard Goorevich, Department of Energy, National Nuclear Security Administration (DOE/NNSA)**
  - **Mr. Richard J. K. Stratford, Department of State**
  - **Mr. Jeff Wilkins, (DOE/NNSA)**
  - **Q & A**
- **Part 810 Proposed Rulemaking Overview**
  - Mr. Richard Goorevich, (DOE/NNSA)
  - Mr. Tom Wood, Mr. Chris Toomey, Pacific Northwest National Laboratory (PNNL)
  - Q & A



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**Nonproliferation  
and International  
Security** (NIS)

# Introduction

## Background on Part 810



# Scope of Part 810

- Part 810 implements Sec. 57 b. of the Atomic Energy Act (AEA)
- Sec. 57b. **Prohibits all assistance to foreign atomic energy activities, direct or indirect,** in production or development of special nuclear material (SNM)...
  - **Unless authorized** by the Secretary of Energy
  - After a determination that such activity **will not be inimical** to the interest of the United States
- Covers SNM activities whether for weapons *or* commercial purpose

**Inimicality determination is key**



# Scope of Part 810

- Part 810 classifies assistance as:
  - **Exempt** (§810.2) – in scope of §57 b. but regulation unnecessary
  - **“Generally Authorized”** (§810.6) – broad categories of assistance that are not inimical and do not require specific approval
  - Requiring a **Specific Authorization** (§810.7) and inimicality determination by the Secretary
- Most assistance is exempt or generally authorized

**Part 810 establishes pathways to authorization**



# Rulemaking Schedule

- September 2011 -- NOPR issued
- December 2011 -- comments received
- 12/11 – 7/13 -- revise and review supplemental NOPR (SNOPR)
- August 2 & 5 -- SNOPR published and public meeting
- November 15 -- second SNOPR public meeting
- November 29 -- SNOPR public comments due



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# Process Improvement

## Part 810 Process Improvement



# Current Specific Authorization Process

## Stage I Initial Review

NA-24: Analysis and recommendation

Reviews

- \* NNSA Staff
- \* DOE Nuclear Energy
- \* Legal

Send approval recommendation to interagency for review

## Stage II Agency Review

- Interagency review
- State, Commerce, NRC and DoD
- State requests formal assurances from host government
- Assurances received

## Stage III Approval

- NA-24 draft license approval recommendation
- Review: NNSA staff, DOE NE and legal
- Secretary approval
- Issue license

# What we learned from commenters

- Specific authorization process is considered slow, opaque and unpredictable
- Commenters sought to exempt or generally authorize countries, technologies, or transactions to avoid the time consuming specific authorization process
- Commenters offered many process improvement ideas
- Process improvement is key to better regulation

**Fix the process to improve overall  
implementation**



# Qualities of a good 810 Process

1. Effective threat reduction in a changing world.
2. Open, transparent, predictable, and understandable regulation.
3. Efficient regulation that performs the mission without wasting time or money.
4. Effective nuclear trade support for companies competing in global civil nuclear markets.

**Striking a balance to promote trade  
without increasing proliferation risk**



## Process improvement objectives

- Make process more transparent, predictable, and understandable
- Reduce specific authorization time in process

### **BUT**

- Continue to meet obligations under AEA 57 b.
- Recognize poor performance may put U.S. suppliers at a competitive disadvantage

**Strike a balance to promote trade without increasing proliferation risk**



## Part 810 Process improvement Ideas

- Publish Part 810 guide including advisory opinions.
- Reduce the response times for foreign government assurances.
- Reduce time for internal DOE and inter-agency reviews.
- Create fast track procedures for authorization of activities that present the lowest proliferation risk.
- Develop and implement an e-licensing system.

**Six Sigma analysis will help select  
best ideas**



# Part 810 Process Improvement Project

- DOE
  - Acknowledges process can and should be improved
  - Committed to process improvement program
  - Goal is to make process ISO 9001 compliant
- Project plan and methods are set
- Solid team is assembled
- Project is underway and is separate from rulemaking

# The Process Improvement Team

- **NIS:** Lead Six Sigma project
  - Interview applicants, internal administrators and get input from applicant groups to determine necessary and desirable features and functions
  - Determine necessary and desirable e-licensing functions and features
  - Identify performance issues and recommend improvements
  
- **CIO:** Lead e-licensing project
  - Design architecture -- to convert desired functions into web-based system
  - Software development
  
- **NA-QA:** Assure ISO 9001 compliance

# Part 810 Process Improvement Plan

- Use **Six Sigma** quality improvement tools. A rigorous fact-driven approach
- Determine **Critical to Quality** (CTQ) characteristics by
  - Interview applicant “customers” (DONE)
  - Interviewing internal DOE and interagency “customers” (ONGOING)
- **Measure** – Quantify performance v. CTQs
- **Analyze** – Use metrics to identify failures, their causes and effects
- **Improve** – Recommend improvements that can be most effective
- **Control** – Implement improvements and monitor/audit effectiveness



# The case for E-Licensing

## NA 24 plans a web-based electronic interface with applicants

- **Part 810 e-licensing system can:**
  - Make applications easier to complete
  - Streamline the review process
  - Increase transparency by enabling applicant tracking
  - Provide a searchable archive of past Secretarial determinations
  - Facilitate audits required for ISO compliance
- **Features will be added to the system in phases**

**Meet Jeff Wilkins  
the e-licensing project leader**

# E810 LICENSING SYSTEM

Jeff Wilkins

Associate Chief Information Officer for IT Operations

NNSA Office of the Chief Information Officer

November 15, 2013

# Agenda

- Background
- Process
- Phase 1 Objectives/Benefits
- How does this affect you?

# Background

- ❑ The Part 810 licensing process works well but faces some challenges:
  - Lack of a visible feedback loop
  - Inability to effectively collaborate
  - Lack of consolidated repository of information
  
- ❑ We will build a centralized system to provide a cleaner solution for managing this process

# Process

- ❑ NNSA OCIO has worked with NA-24 to develop a features list and objectives
  
- ❑ We have determined the logical structure of the final solution
  
- ❑ We will utilize a phased approach
  - Phase 1: Public site, including inter-agency review
  - Phase 2: Internal processing mechanism to streamline this process
  - Phase 3: Additional administration and enhancements to existing sites
  
- ❑ Each Phase will be developed iteratively, in small increments
  
- ❑ Our testing will include incremental internal, Alpha, and Beta testing

# Phase 1 Objectives/Benefits

## Transparency:

- Public site will provide the current status and milestone history of each applicant's submissions
- Public site will provide applicants with a single view into all submissions across their portfolio
- Public site will include a comprehensive information library, including FAQs, glossary, process descriptions, etc.

## Accountability:

- All actions will be logged and associated with a user, with date and time stamp
- Milestone history will display the length of time that a given submission has been pending within each queue

# Phase 1 Objectives / Benefits

## Efficiency:

- All parties within the workflow will update a single instance of the submission within the centralized system. This will eliminate the need to maintain multiple copies of the information within separate emails and files.
- The system will send notifications when actions are required. There will be no need to proactively monitor the system.

## Uniformity:

- The process will be structured for each submission type and the data collection will be organized in a consistent manner
- The web site will be developed to provide intuitive and consistent user input. This will eliminate the need for extensive training.

# Phase 1 Objectives/Benefits

## Security:

- The system will consist of two major components: public (internet-facing) and private (NNSA internal processing only)
- Both components will be secured and data will be encrypted, with limited and controlled role-based access to all information

# How Will This Affect You?

- The new system will complement the current process, not replace it.
- Personal support will remain available – the system will not be a replacement for existing live customer service and support.
- You will undergo a phased transition from the current paper-based process to a future process that minimizes manual entry and use of hard-copy documents.



# Rulemaking Overview

## Part 810 Process

### Q&A

- Part 810 Process Improvement
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- **Part 810 Proposed Rulemaking Overview**
  - **Mr. Richard Goorevich, (DOE/NNSA)**
  - **Mr. Tom Wood, Mr. Chris Toomi, Pacific Northwest National Laboratory (PNNL)**
  - **Receive Public Comments**



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# Rulemaking Overview

## Part 810 SNO PR Summary Overview



## Key proposed change: destination classification

- No change proposed for 117 destinations
  - 44 major nuclear markets would remain generally authorized
  - 73 destinations (including Russia, China, and India) presenting inimicality issues would continue to require specific authorization
  - All IAEA Project and Supply Agreement activities, such as the Mexico Laguna Verde project would remain generally authorized
- NOPR and SNOPR change proposed for 80 destinations
  - 3 countries would become generally authorized (Kazakhstan, Ukraine, UAE)
  - 77 countries would require specific authorization
    - Little or no nuclear trade
    - No 123 agreement
    - No experience managing proliferation issues



## Other Key proposed Changes

- Deemed exports would be generally authorized to foreign nationals employed at U.S. nuclear facilities if:
  - Employee signs confidentiality agreement;
  - Access is authorized in accordance with NRC standards; and
  - Employer reports authorized access to DOE.
- Covered reactor technology: scope would be narrowed to reactor technology related to SNM production, consistent with NRC and Commerce coverage.

**Would reduce transactions  
requiring specific authorization**



## Key proposed change: Operational safety

- Existing rule provides “fast track” authorization for operational safety and nuclear emergency assistance
- NOPR eliminated operational safety fast track
- SNOPR would:
  - retain fast track;
  - tie definition of “operational safety” to established safety standards
  - authorize safety exchange and benchmarking programs; and
  - Extend DOE period to respond to request for fast track approval to 45 days; fast track authorized if DOE does not respond.

**SNOPR promotes US nuclear  
safety engagement**



## Other proposed changes

- Commerce, NRC and State approved exports would be exempt from Part 810 in order to avoid duplicative regulation
- Transfer of Public Information would be generally authorized. SNOPR proposes standardized definition and would make transfers exempt
- Activities with remote connection to SNM would be authorized or not covered: mining, medical isotope production, fusion, and back-end
- Activities carried out by IAEA personnel would be generally authorized except for employees working on “Sensitive Nuclear Technology”

**Unnecessary regulatory burdens would be reduced**



# Changes not proposed in SNO PR

- Commenter proposals not **proposed**
  - Deregulate activities of foreign affiliates of <50% U.S. owned
  - Authorize transfers to persons with dual citizenship based on most recent or current residence
  - Generally authorize transfer of sales, marketing, and sourcing information
  - Generally authorize transfer of <25% "Americanized" Technology.



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# Rulemaking Overview

## Part 810 SNOPR Economic Impact PNNL



# Economic Impact of Part 810 SNOPR

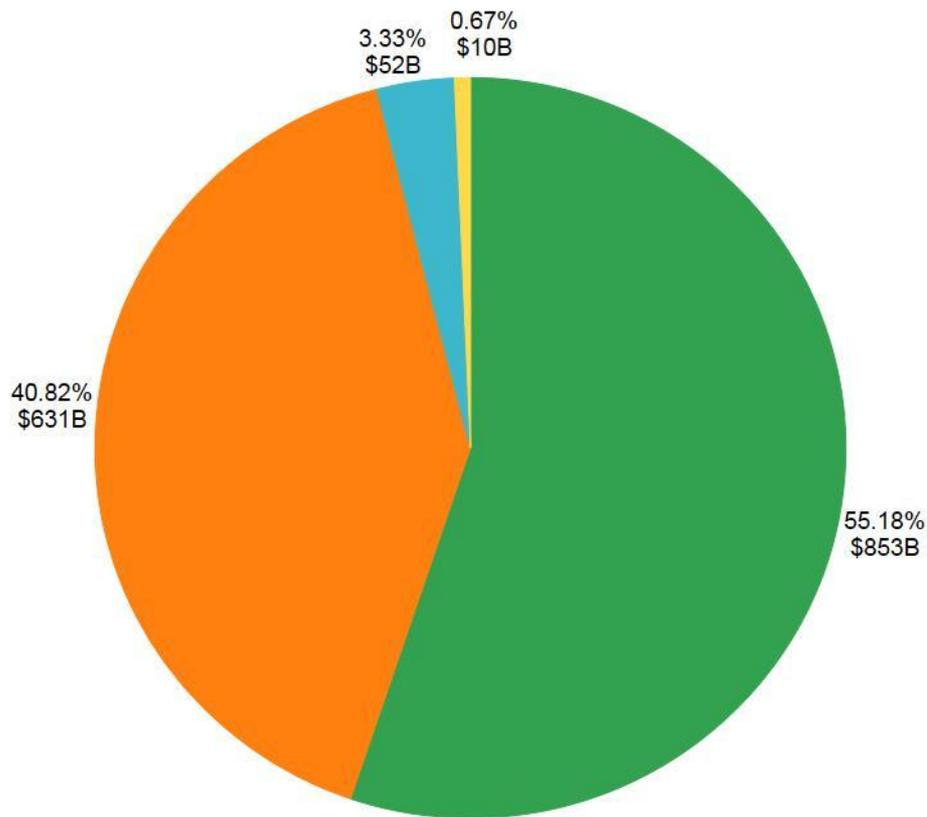
TOM WOOD & CHRIS TOOMEY

Pacific Northwest National Laboratory

- ▶ Study focused on predicting measurable impact on US nuclear technology exports to world markets
- ▶ Conducted over several months in FY13
- ▶ Close coordination and collaboration with DOC International Trade Administration (ITA) economists
- ▶ Presentation for today
  - Conceptual foundations
  - Quantitative estimates of impact
  - Summary

# Context – scale of affected markets

Proportion of Projected New Reactor Build and Trade Volume through 2030, by Revised 810 Status



- 810 Status**
- Unchanged SA
  - Unchanged GA
  - SA to GA
  - GA to SA

Trade Value (\$) Estimated at \$5B per 1000 MWe  
Projection: UxC

- ▶ Longer review cycle for SA transactions - competitive disadvantage relative to automatic approval under GA regulation?
- ▶ Statistics in PED do not permit assessment of the extent of this effect directly, but it should be *symmetric*.
- ▶ Since proposed regulation would move countries in both directions, net effect on US trade would depend only on the *affected trade volumes*

- ▶ Published nuclear trade statistics include much more than the regulated nuclear technology trade
  
- ▶ NNSA has maintained a database (Proprietary Export Database) on SA trade since early 2009.
  - Nature of proposed export (parties, end use)
  - Proposed dollar volume of export
  - Status and approval/denial dates
  - Total of 97 transactions analyzed, average annual volume of about \$2B

# How can trade volumes be predicted?

- ▶ Technology trade is of three basic types
  - Information on types of nuclear systems, their requirements, and their operational characteristics – required to *plan* a nuclear program
  - Information and licenses required to *construct* a nuclear power plant or fuel cycle facility
  - Information and licenses required to *operate* a facility once constructed

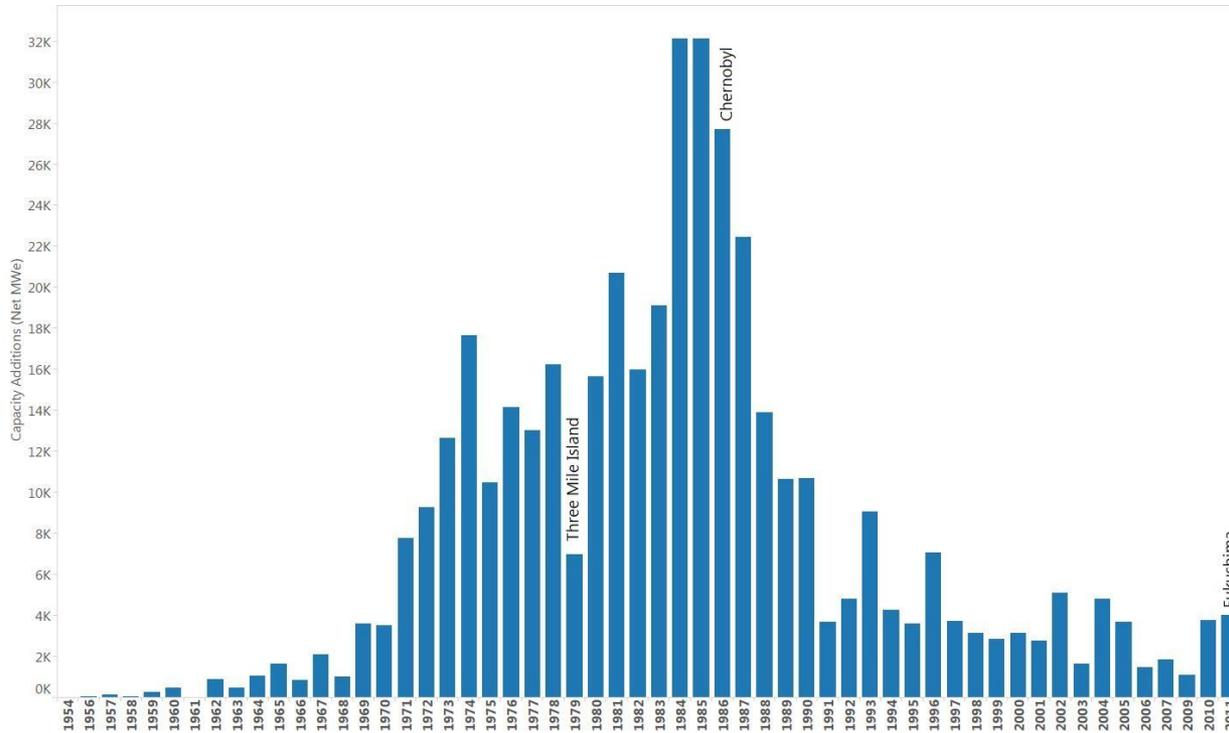
- ▶ What is a relevant time span for analysis?
  - Very long-term evolution of trade patterns is unpredictable
  - Current market shares provide reasonable basis for extrapolation over a decade or so
  - Analysis conducted for 2013-2030
  
- ▶ Assumptions
  - US remains as competitive in nuclear technology markets as it has been in the period of record for PED
  - Global trade volumes evolve consistent with a range of nuclear industry forecasts

# US exports “base rates” - three types of trade

- ▶ Demand for U.S. nuclear technology is driven by
  - Existing foreign nuclear power capacity (MWe)
  - Nuclear power capacity (MWe) under construction
  - Nuclear power capacity (MWe) planned for for future construction
- ▶ Base rates for each derived from PED data:

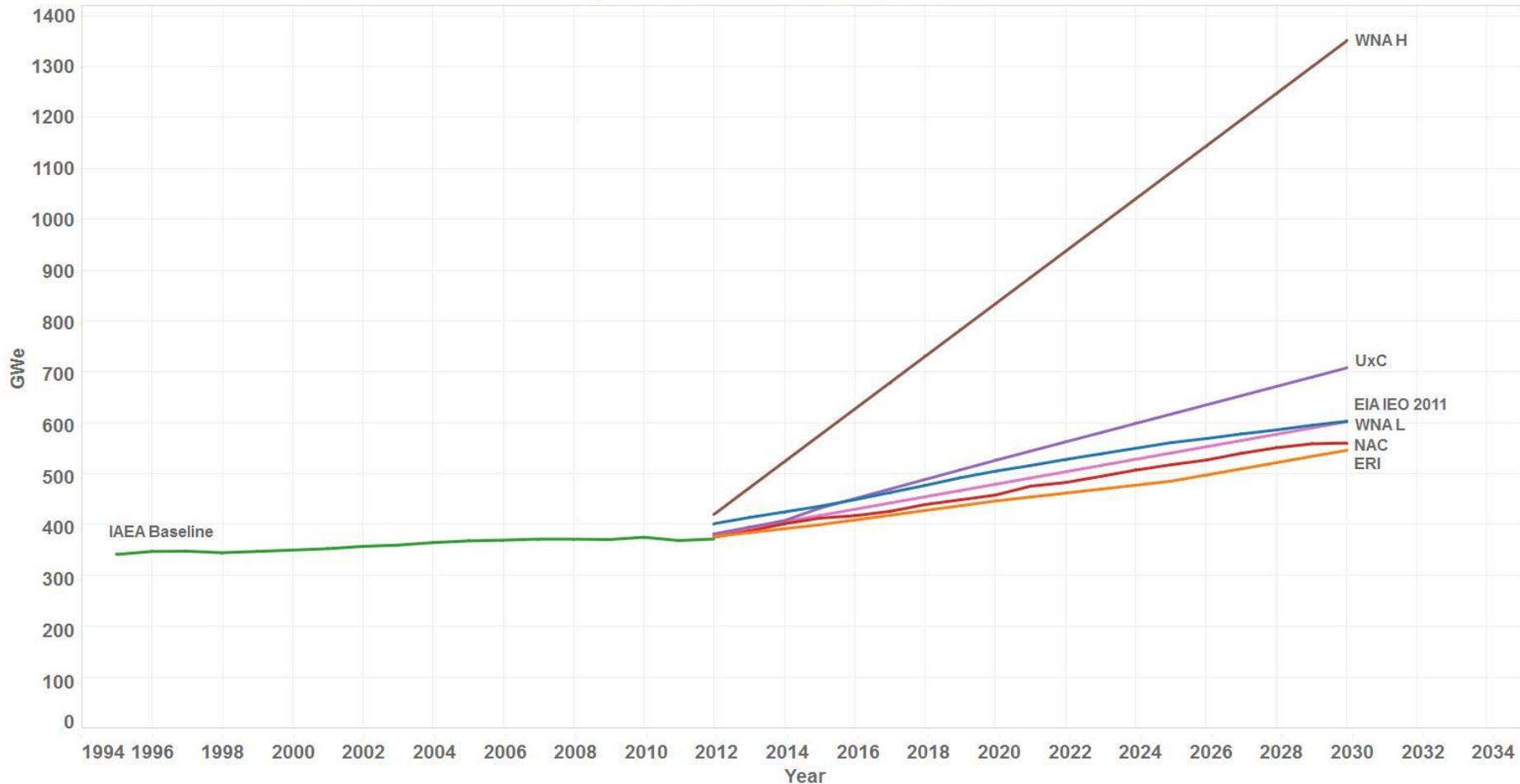
WNA 2030 LOW	\$/Current MWe	\$25.49
	\$/Under Construction MWe	\$15,782.64
	\$/Planned MWe	\$24,807.44

# Historical Nuclear Power Growth



# Some Forecasts of Nuclear Growth

Comparison of Nuclear Generation Forecasts



- Source
- EIA IEO 2011
  - ERI
  - IAEA
  - NAC
  - UxC
  - WNA H
  - WNA L

- ▶ Three forecasts available at country-level
  - World Nuclear Association (WNA) – High and Low
  - UxC
  - Nuclear Assurance Corporation (NAC)
  
- ▶ WNA Low, UxC, and NAC represent a distribution of likely nuclear futures
  
- ▶ WNA High was also assessed, but found to be an unlikely sensitivity case

# Trade Volume Forecasts

- ▶ Calculation of expected trade volumes
  - Calculated at country level using base rates
  - Aggregated by country category
  - Results (average annual export trade) per category and forecast

Forecast	GA to SA		SA to GA	
	Aggregate	Average Annual	Aggregate	Average Annual
<b>NAC</b>	\$363,325,524	\$20,184,751	\$1,718,545,555	\$95,474,753
<b>UxC</b>	\$988,762,643	\$54,931,257	\$1,553,499,558	\$86,305,531
<b>WNA Low</b>	\$1,563,362,834	\$86,853,490	\$2,785,983,282	\$154,776,849
<b>WNA High</b>	\$15,053,878,508	\$836,326,584	\$5,115,578,480	\$284,198,804

# Possible effects on US export trade

- ▶ Moving a country from the GA to SA category would presumably have a negative effect on exports, since specific authorization involves additional cost to applicants, more time for DOE to process, and some small fraction of SA applications may not be approved.
- ▶ Four trade effect assumptions, (10% - 40%) give impact results:

	10%	20%	30%	40%
<b>NAC</b>	\$8,365,556	\$18,822,500	\$32,267,144	\$50,193,334
<b>UxC</b>	\$3,486,030	\$7,843,568	\$13,446,117	\$20,916,182
<b>WNA Low</b>	\$7,546,333	\$16,979,250	\$29,107,286	\$45,278,000
<b>WNA High</b>	-\$44,755,556	-\$100,700,000	-\$172,628,571	-\$268,533,333

# Overall Impact of Part 810 SNOPR

- ▶ Highest growth nuclear markets (China, India) would be *unaffected* by 810 categorical changes
- ▶ For affected-markets, net impacts would be positive for all “mid-range” nuclear capacity forecasts
- ▶ One extreme nuclear renaissance scenario would result in negative impact, but is deemed highly unlikely



## Conclusion

### DOE Goals in Part 810 SNOPR

- Update and modernize regulations to be responsive to changes in nuclear market
- Make process more open, effective and efficient
- Facilitate nuclear trade
- No increased proliferation risk
- **Regulate to promote trade and enhance US proliferation policy influence**



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# Rulemaking Overview

## Part 810 SNO PR

# RECEIVE PUBLIC COMMENTS