

Licensing Strategy

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**U.S. Nuclear Regulatory Commission
Pre-Application Meeting
Rockville, MD**



Outline

- Update and Progress
- NuScale Licensing Strategy
- Applicable LWR licensing framework
- SECY 10-34

Update and Progress Report

- NuScale has refined its overall licensing strategy
- Engage NRC early in pre-application process
- Seek to resolve issues at the DC (vs. COLA) stage
- Submit fully compliant DC application by Q1 2012
- Primary goal is certified design that will provide firm foundation for COL applicants and smooth path forward

NuScale Licensing Strategy

- Support a timely and effective NRC review of the NuScale DCD
 - Capitalize on the existing LWR licensing framework
 - Engage early to identify and resolve technical, regulatory and policy issues
 - Work collaboratively with NRC and industry
 - Submit a high-quality, complete DCD

Capitalize on Existing LWR Licensing Framework

- 10 CFR 52.47, RG 1.206, SECY 90-377, and NUREG-0800
- Approximately 95% of the regulatory basis for NRC design review of a multi-module NuScale plant currently exists. Of the 255 sections in the SRP:
 - 217 are directly applicable without modification
 - 25 do not apply because:
 - They relate to BWR designs
 - They apply to components that have been eliminated in the NuScale design
 - 13 topics to be addressed
 - All relate to multi-module design, construction, and operation

Multi-Module Plant Certification

NuScale DCD will include limited modifications to acceptance criteria in the following sections, as well as a 50.54m exemption request, to accommodate multi-module certification.

Section	Title
7.7	Controls Systems (HSI and Concept of Operations)
7.8	Diverse I&C Systems (Reduce human error and protection from common-cause failures)
7.9	Data Communication Systems (HSI for alarms and cues for manual actions)
13.2.1	Reactor Operator Requalification; Reactor Operator Training (Staffing and Training)
13.2.2	Non-licensed Plant Staff Training (Concept of operations, Staffing, and Training)
13.3	Emergency Planning (Concept of operations and procedures)
13.4	Operational Programs (Concept of operations and HSI)
13.5.2.1	Operating and Emergency Operating Procedures (HSI and reduce human error)
14.3.5	Instrumentation and Controls: Inspections, Tests, Analyses, and Acceptance Criteria
14.3.9	HFE: Inspections, Tests, Analyses, and Acceptance Criteria (HSI and reduce human error)
14.3.10	Emergency Plan: Inspections, Tests, Analyses, and Acceptance Criteria (HSI & reduce human error)
18	Human Factors Engineering (Issue Integration and Evaluation)
19	Probabilistic Risk Assessment (Identify and protect against potentially risk-important actions)

Engage With NRC Early to Identify Issues

- Four Pre-Application Meetings with NRC previously held
- Licensing Technical Reports (LTR)
 - Eight LTRs planned for HFE, Cyber Security, and Digital I&C
 - Seven LTRs planned to assure V&V of engineering codes and methods
 - LTRs planned for Quality Assurance, **iENG**TM Configuration Management System, and Alternate Source Term
- Emergency planning
- Security requirements
- Responsive to SECY 2010-0034 (cross walk)

NuScale Will Submit High-Quality, Complete DCD

- Design completion of every system per SECY 90-377 and SRP
- Comprehensive requirements matrix reconciled with customer and regulatory requirements
- Utilization of an engineering management system that will facilitate NRC review (**iENG™**)

NRC SECY-10-0034

- NRC issued SECY 10-0034 to identify potential policy, licensing, and key technical issues for SMR designs
- Four Main Areas:
 - Licensing process issues
 - Design requirements issues
 - Operational issues
 - Financial
- NuScale's licensing strategy addresses these issues

NRC Potential Policy, Licensing, and Key Technical Issues for SMR Designs (SECY-10-0034)

2.0 LICENSING PROCESS ISSUES

	ISSUE	Applicable to NuScale	Pre DCD	Post DCD	RPT
2.1	License for Prototype Reactors	No – Provided NuScale R&D fully supports DCD		X	No
2.2	License structure for Multi-Module Facilities	Yes		X	WP
2.3	Manufacturing License	No		X	No

WP – White Paper

LTR – Licensing Topical Report

NRC Potential Policy, Licensing, and Key Technical Issues for SMR Designs (SECY-10-0034)

3.0 ISSUES CONCERNING DESIGN REQUIREMENTS

	ISSUE	Applicable to NuScale	Pre DCD	Post DCD	RPT
3.1	Implementation of Defense in Depth	Yes – Traditional Approach	X		No
3.2	PRA in Licensing	No – However LWR Risk Metrics apply		X	No
3.3	Appropriate Source Term, Dose Calculations, and Siting for SMRs	Yes - Source term for multi-module plants	X		WP
3.4	Key Components and Systems Design Issues	Yes	X		
		Traditional core composition with reduced source term			DCD
		Accident selection – reduced number of traditional scenarios			DCD
		Redundancy of Passive Residual Heat Removal System			DCD
		Classification of SSCs			DCD
		Containment Functional Capabilities			WP

NRC Potential Policy, Licensing, and Key Technical Issues for SMR Designs (SECY-10-0034)

4.0 OPERATIONAL ISSUES

	ISSUE	Applicable to NuScale	Pre DCD	Post DCD	RPT
4.1	Operator Staffing	Yes - Full scope simulator built prior to DCD	X		LTRs, Exempt.Req.
4.2	Operational Programs	Yes		X	WP
		Helical Coil Steam Generator Tube Inspection Program			
		In-Line Refueling Program			
4.3	Installation of Reactor Modules during Operation	Yes – Module Installation Program		X	WP
4.4	Industrial Facilities Using Process Heat	No		X	No
4.5	Security and Safeguards Requirements	Yes – Threat Assessment Studies and Risk Informed Security	X		WP
4.6	Aircraft Impact Assessments	Yes – Classified Safeguards Program in Place.	X		WP
4.7	Offsite Emergency Planning Requirements	Yes – Study for simplifying and modernizing Emergency Planning		X	WP

NRC Potential Policy, Licensing, and Key Technical Issues for SMR Designs (SECY-10-0034)

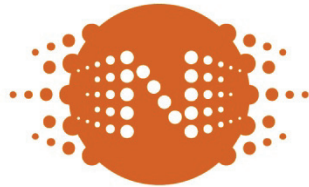
5.0 FINANCIAL ISSUES

	ISSUE	Applicable to NuScale	Pre DCD	Post DCD	RPT
5.1	Annual Fees for Multi-Module Facilities	Yes - NEI and ANS task force studies		X	WP
5.2	Insurance and Liability	Yes - Price Anderson Act addresses >100 MW.		X	WP
5.3	Decommissioning Funding	Yes – Need to establish minimum decommissioning fund requirements fro SMRs		X	WP

NuScale Licensing Topical Reports

NuScale LTR Submittal Schedule

Licensing Topical Report	FY 2010			FY 2011		
	2Q	3Q	4Q	1Q	2Q	3Q
Human Factors Engineering (HFE) Program Management Plan	X					
Loss-of-Coolant Accident (LOCA) Phenomenon Identification and Ranking Table	X					
Diversity and Defense-in-Depth Analysis		X				
HFE Implementation Plan		X				
Cyber Security Plan		X				
LOCA Integral Scaling Report		X				
Software Program Plan			X			
LOCA Testing and Assessment Plan Development			X			
Non-LOCA Methods Development			X			
Human System Interface Implementation Plan				X		
Procedure Development				X		
Fuels Development Program				X		
Core Analysis Code Verification and Validation					X	
N-RELAP5 Verification and Validation					X	
Subchannel Analysis Code Verification and Validation						X



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