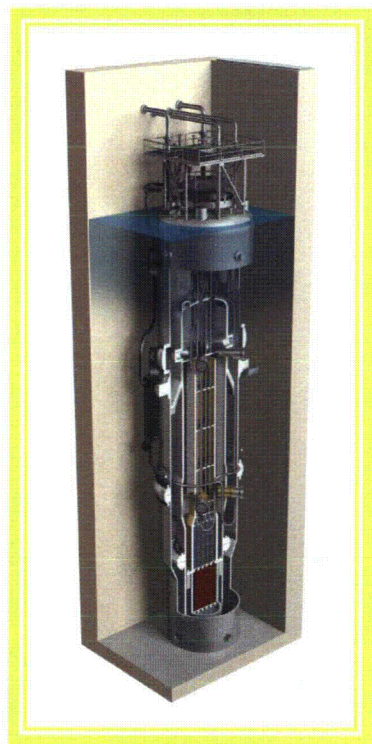


Design Certification Pre-Application Submittal Licensing Topic Resolution



**Dale Atkinson
Chief Nuclear Officer**

**Steven Mirsky, P.E.
Licensing Manager**

**Tim Tovar
Plant Operations Manager**

**Kent Welter, PhD.
Nuclear Safety Engineering Manager**

April 21, 2015

Disclaimer

“This material is based upon work supported by the Department of Energy under Award Number DE-NE0000633.”

“This report was prepared as an account of work sponsored by an agency of the United States (U.S.) Government. Neither the U.S. Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the U.S. Government or any agency thereof.”

Purpose

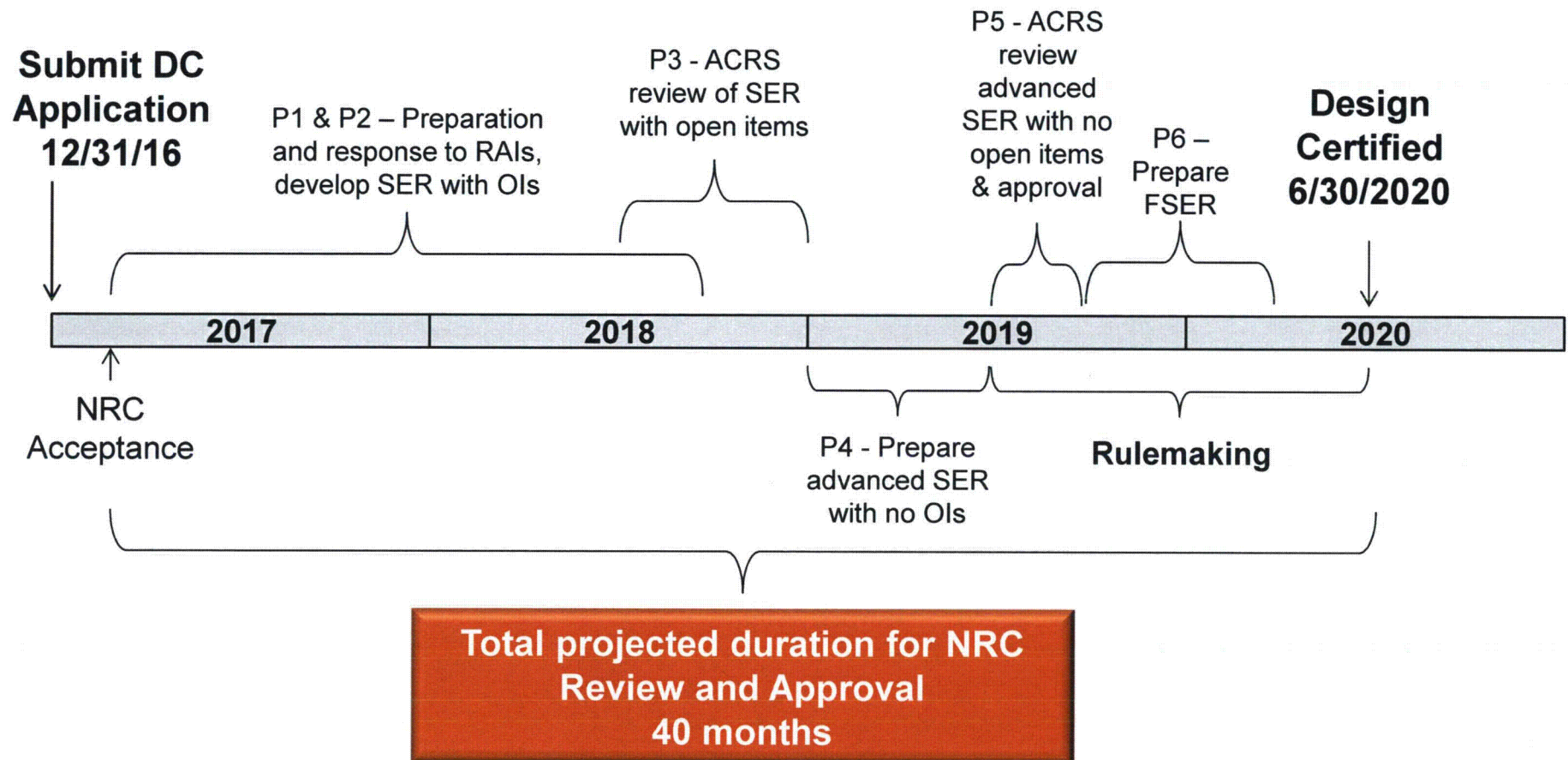
- To achieve common understanding of NuScale's preparations for, and status of, design certification application and submittal schedule
 - NuScale is on schedule to submit DCA no later than December 31, 2016, with current plan showing two months float
 - NuScale plans on 40-month DCA review by NRC
- To agree on content and timing of integrated schedule for pre-application activities

Agenda

- Demonstration of NuScale readiness for timely DCA review by comparing to the NRC's "SMR DCA Schedule Assumptions"¹
- Integrated schedule to DCA submittal
- Summary and path forward

¹ Baseline Schedule for SMR Design Certification Reviews, NRC Public Meeting, February 24, 2014

NuScale Baseline DC Review Schedule



NRC Assumptions for Optimized Schedule

1. The Acceptance Review must conclude that the application is complete and technically sufficient for the staff to conduct the full DCA review.
2. Applicant RAI responses must be timely so that the six month window for identification and resolution of all RAIs is met. A general RAI response time must be agreed to by the applicant before the application schedule is published and milestones are provided publically.
3. The Design Specific Review Standard (DSRS) is complete at time of docketing as a result of productive pre-application interactions.

Schedule Assumptions - Continued

4. NRC has developed positions on all critical licensing, policy, and technical issues prior to docketing. Appropriate guidance to reviewers is in place.
5. ACRS review duration assumes the SER is complete for Phase 3 reviews (ACRS may start during Phase 2).
6. The use of design acceptance criteria (DAC) is minimized. DC supplemental applications are for addressing open items only (applicant design freeze).

1. Complete and Technically Sufficient Application

NuScale DCA Readiness

- Status of DCA preparation
- Extensive pre-application engagement history
- Comprehensive test program since 2008
 - test program update
- Full-scale control room simulator since 2012
- Full-scale upper module mockup complete March 2015
- Readiness reviews
- Summary

1. Complete and Technically Sufficient Application

Status of DCA Preparation

- Project planning
 - resource loaded Primavera P6 schedule
 - 500+ personnel (employee and staff augmentation)
 - 30+ defined scope contractors
- Project control
 - rigorous weekly and monthly project review and status meetings with senior management
 - three-level milestone schedule
 - earned value management system aligned with ANSI/EIA-748 standard
 - project management organization
 - project director
 - 7 project managers
 - 8 project controls personnel
 - risk manager

1. Complete and Technically Sufficient Application

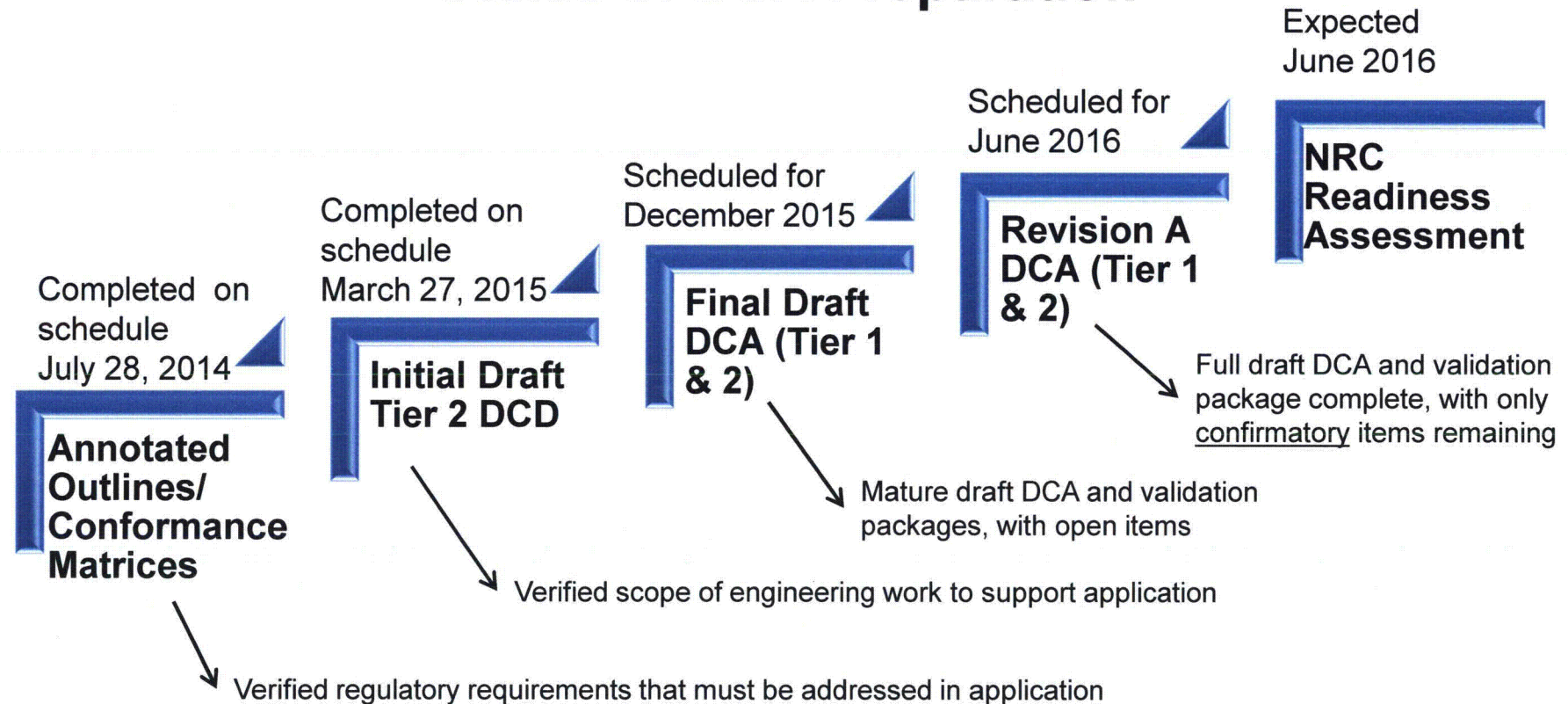
Status of DCA Preparation

Ensuring completeness and technical sufficiency

- Assess prior applications for scope and level of detail required
- Ensure RAIs from prior reviews that are relevant to NuScale design are addressed in our application
- Assess SERs from prior reviews to understand information needed by staff to make its safety findings
- Review all relevant regulatory documents for NRC requirements and expectations, track in database (DOORS), and ensure addressed in application
 - 1,360 relevant documents (CFR, DSRS, SRP, RGs, NUREGs, SECYs, SRMs, etc.)
 - Over 210,000 requirements and expectations to be addressed

1. Complete and Technically Sufficient Application

Status of DCA Preparation



NuScale on schedule to submit DCA no later than December 31, 2016, with two months float in current plan Planning on 40-month NRC design certification schedule

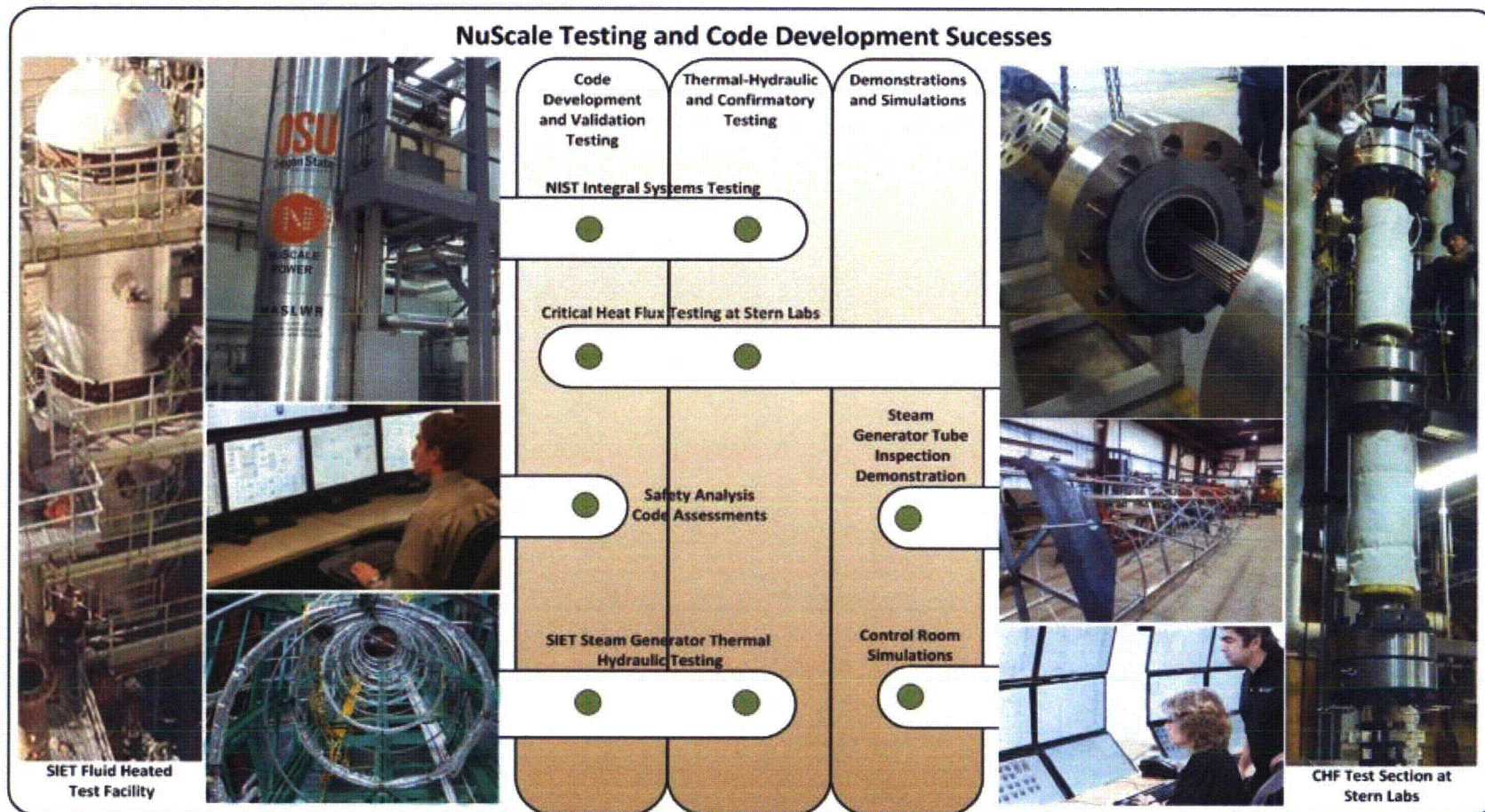
1. Complete and Technically Sufficient Application

NuScale Pre-Application History

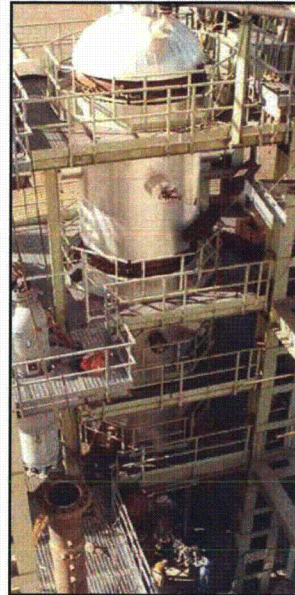
- 43 NRC presentations to date (first was on July 24, 2008)
- 39 NRC PM meetings and design documentation audits in the Rockville office since it was opened three years ago
- Quality Assurance Program Description Topical Report approved by NRC
- 11 technical reports and 5 white papers submitted
- Participation in all NEI SMR Task Force and Individual Working Groups since inception in 2010 – industry leader in several NEI SMR licensing tasks (e.g., NRC annual fees, source term, ITAAC, EPZ)
- SMR industry leader for EPRI SMR containment aerosol deposition project
- Proactive representation on relevant ASME and ANS standards committees

1. Complete and Technically Sufficient Application

Comprehensive Testing Completed Since 2008



1. Complete and Technically Sufficient Application



New Test Facilities Update

NIST-1 Hydro Verified by State of Oregon

- Hydrostatic test completed and verified by state of Oregon (3100 psia on the RPV)
- DACS software testing complete by May 1
- Critical testing May 2015-August 2015
- Confirmatory testing September 2015-April 2016

SIET TF-2

- Test facility commissioning in progress
- T&CD and QA on the ground in Italy
- Thermal hydraulic test April 2015-July 2015

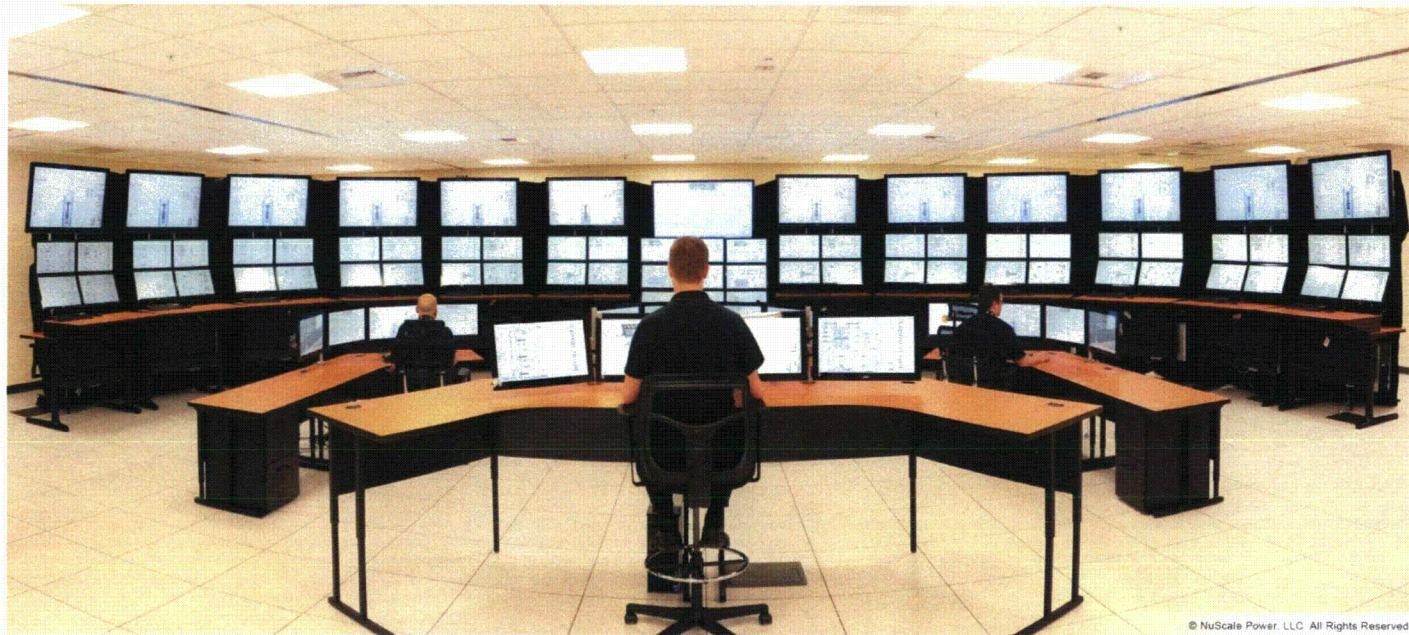
8 PLANNED CONFIRMATORY TEST PROGRAMS

- | | |
|---|--|
| <ul style="list-style-type: none">– Steam Generator Flow Induced Vibration Testing April 2016 – August 2016– Control Rod Assembly Drop and Drive Shaft Alignment Testing March 2016 - July 2016– Fuel Mechanical and Hydraulic Testing May 2015 – December 2015– Phase II CHF Testing January 2016-July 2016 | <ul style="list-style-type: none">• Control Rod Guide Tube FIV/Flow Testing May 2016 – August 2016• Core Inlet Flow Distribution Testing 3rd Quarter 2016 – 4th quarter 2016• Baffle Plate Separate Effects Testing 2nd Quarter 2016 – 3rd quarter 2016• Steam Generator Orifice Hydraulic Testing 2nd Quarter 2016 – 3rd quarter 2016 (FOAKE test program) |
|---|--|

1. Complete and Technically Sufficient Application

Control Room Simulator

- Full scale 12-module simulator operational since 2012
- Capable of real time, simultaneous, multiple-module events
- High-fidelity real-time model of core, primary system, control system, balance-of-plant, and supporting systems



© NuScale Power, LLC. All Rights Reserved.

1. Complete and Technically Sufficient Application

Full Scale Upper Module Mockup

- Construction completed
- Includes: upper portion of the containment vessel, reactor vessel head, major piping such as steam, feed water, and CVCS, control rod drive mechanisms, isolation and ECCS valves, and the module access platform
- Supports maintenance, fabrication, inspection, accessibility, worker safety, radiation protection, and configuration planning and programs



1. Complete and Technically Sufficient Application

Readiness Reviews

- NuScale plans to use independent organizations to assess application for completeness and technical sufficiency
- Assessments will include both topical reports submitted in advance of application, and DCA
- Independent reviews of DCA final draft chapters commence in fall of 2015
- Independent reviewers include
 - members of the NuScale Technical Advisory Board (TAB), which includes senior subject matter experts from the nuclear industry
 - members of our NuScale Advisory Board (NuAB), which includes many with experience in Part 52 submittals and application reviews
 - industry experts in DCA development
- NRC readiness assessment expected in June 2016

1. Complete and Technically Sufficient Application

Summary

- Benefit from lessons-learned by hiring licensing staff and contractors experienced with developing prior DC, many COL applications, and other SMR application development
- Have precedent applications and RAI databases to identify many issues with prior applications and address in our original submittal
- Extensive 7-year pre-application engagement has identified areas of NRC staff concern that will result in additional detail in DCA
- Comprehensive test program, simulator, and module mockup
- Using independent organizations to review DCA content
- **Conclusion:** NuScale plans and processes will ensure application is complete and technically sufficient so that NRC can conduct review

2. Timely RAI Responses

- One lesson learned is that a 30-day RAI response assumption is very challenging, and was frequently missed by past applicants
 - RAI clarification and processes to ensure quality of response leave little time for applicant technical staff to generate response
- NuScale plans on nominal RAI response time of 60 days
 - clarification and quality process times are the same, and significantly increases time for technical work
- **Conclusion:** NuScale approach to RAI response supports 40 month review schedule

3. Design Specific Review Standard

- NuScale has participated in productive pre-application engagements and provided
 - design-specific information to support NRC DSRS development via presentations
 - Rockville office documentation audits
 - Gap Analysis
 - electronic reading room
 - issuance of plant overview document
- **Conclusion:** NuScale pre-application engagement and mPower DSRS review comments, coupled with July 2015 DSRS release for public comment will ensure that NuScale application addresses DSRS acceptance criteria, as appropriate, supporting optimal DCA review schedule.

4. Positions on Key Topics

NuScale evaluated all subjects identified to date, arriving at a final list of issues for which NRC position is needed

- Sources of potential subjects
- Pre-application subject evaluation methodology
- Key topics
 - NRC identified seven high importance subjects
 - Licensing approach for regulatory compliance in Gap Analysis
- Other pre-application subjects
 - topical reports
 - pre-application engagement
- Summary

4. Positions on Key Topics

Topic Grouping

- Key topics
 - identified by NRC as one of seven ‘high importance’ topics
 - identified by NuScale for which an NRC position is needed
 - applicability of regulations and/or guidance for design features where regulatory precedent does not exist or is unclear
 - NRC position is non-binding and final NRC determination is contingent upon sufficient rationale being provided in an application (e.g., topical report or DCA)
- Other topics: those that will be resolved as part of application review (includes topical and technical reports)

4. Positions on Key Topics

NuScale considered the following sources in identifying key topics

- NRC SECY-10-0034¹
 - 17 topics, one needs NRC position (HFE)
- NRC identified topics
 - seven high importance topics identified, one needs NRC position (HFE)
- NuScale Gap Analysis (Revision 1 July 2014)
 - 18 topics
 - one resolved (SPDS)
 - NRC position needed on HFE
 - Single NRC position needed for remaining 16 topics (use of exemptions vs. technically relevant or departure process)
- NuScale Pre-Application Engagement Plan (PEP)
 - no additional key topics identified

¹ Overarching SMR licensing topics were evaluated and their resolution status was addressed in SECY-14-0095, "Status of the Office of New Reactors Readiness to Review Small Modular Reactor Application," August 28, 2014.

4. Positions on Key Topics

NRC Seven High Importance Topics and Their Status

- Plant and control room staffing (HFE)
 - NRC position needed
- No Class 1E power supplies
 - no NRC position needed, regulations and guidance as they apply to NuScale design are understood
- Piping analysis and LBB for main steam (8-inch) and main feedwater (4-inch)
 - no NRC position needed, regulations and guidance as they apply to NuScale design are understood
- Seismic analysis and fuel storage rack
 - no NRC position needed, regulations and guidance as they apply to NuScale design are understood
- Containment performance (Type A ILRT and inspection)
 - no NRC position needed, regulations and guidance as they apply to NuScale design are understood
- SAMDA/ER
 - NRC agrees that this has been adequately addressed for purpose of pre-application
- Multi-module risk
 - no NRC position needed, regulations and guidance as they apply to NuScale design understood

4. Positions on Key Topics

Plant and Control Room Staffing (HFE) - NRC position needed on scope of information to be included in DCA

- History of NRC/NuScale interactions
 - June 2010 presentation - HFE Program Management Plan LTR status
 - September 2012 telecom - NRC HFE topics
 - January 2013 audit - NRC HFE visit to Corvallis simulator
 - February 2013 presentation - 10 CFR 50.54 (m) Operational Challenges, Concept of Operations and the HFE Program NRC April 2014 - HFE Program Workshop
 - July 31, 2014 – Submittal of Gap Analysis Summary Report, Rev. 1
 - August 2014 telecom - HFE topics
 - November 19, 2014 presentation - Regulatory Compliance Strategy
 - January 8, 2015 video conference - HFE topics
 - March 2, 2015 video conference - HFE topics
 - Task analysis, functional requirements analysis/function allocation reports and Human Systems Interface (HSI) Style Guide report available for NRC Audit in NuScale Rockville office

4. Positions on Key Topics

Plant and Control Room Staffing (HFE) (continued)

- NRC/NuScale interactions planned for 2015
 - Apr 2015 NuScale will submit four of ten implementation plans (HFE element methodology reports)
 - May 2015 public meeting scheduled with HFE Technical Staff
 - Sep 2015 NuScale will submit six remaining implementation plans
 - Nov 2015 NRC audit of NuScale control room simulator in Corvallis
- Path forward and schedule
 - NRC meeting summary documentation of March 2, 2015 video conference – expected late April/early May 2015
 - NuScale to provide written proposal of scope of information in DCA by June 30, 2015
 - Request NRC approval of NuScale proposal by August 31, 2015
 - Submit agreed scope of HFE documents with the DCA

4. Positions on Key Topics

No Class 1E power supplies required –NRC position on the regulations and guidance as they apply to NuScale design understood

- History of NRC/NuScale interactions
 - December 4, 2012 presentation – Class 1E Power System Design
 - March 18, 2014 presentation – Electric Power System
 - November 18, 2014 telecom – Classification of NuScale Electrical Systems
- Path forward and schedule
 - April 7, 2015 email from NRC NuScale PM - NRC Staff questions regarding safety functions and safety analysis
 - May 2015 NRC requested meeting to address safety basis questions
 - Submit Topical Report – October 2015

4. Positions on Key Topics

Use of LBB for Main Steam (MS) and Main Feed Water (MFW) Piping - NRC position on the regulations and guidance as they apply to NuScale design understood

- History of NRC/NuScale interactions
 - July 23, 2014 presentation - Reactor Module ASME Piping
 - design decisions subsequent to the July 2014 meeting have reduced scope of LBB proposal to only main steam and main feedwater piping
- Path forward and schedule
 - Meeting scheduled on LBB for April 23, 2015
 - no pre-application submittal necessary, review with DCA

4. Positions on Key Topics

Seismic Analysis and Fuel Storage Rack - NRC position on the regulations and guidance as they apply to NuScale design understood

- Use standard 17 x 17 PWR half height fuel design (AREVA)
- Use experienced fuel storage rack designer
- Rack to be designed to all applicable NRC regulations

4. Positions on Key Topics

Applicability of containment 10 CFR 50 Appendix J Type A integrated leak rate test (ILRT) requirements – NRC position on the regulations and guidance as they apply to NuScale design understood

- History of NRC/NuScale interactions
 - February 5, 2014 presentation – Containment Isolation
 - July 24, 2014 presentation - Containment Leak Rate Testing
 - November 19, 2014 presentation - Regulatory Compliance Strategy
- Path forward and schedule
 - multiple containment performance meetings 2015 – 2016
 - submit topical report – March 2016
 - review as part of DCA

4. Positions on Key Topics

SAMDA/ER – Resolved for pre-application

- History of NRC/NuScale interactions
 - February 23, 2015 meeting – NRC explained details of this topic
 - March 17, 2015 – NRC provided questions by email on MACCS2 code analyses
 - March 20, 2015 – NuScale provided written response by email
 - April 3, 2015 – NRC email acknowledged acceptability of NuScale responses in terms of resolving as pre-application concern
- Path forward and schedule
 - resolved as pre-application concern
 - review as part of DCA (environmental report)

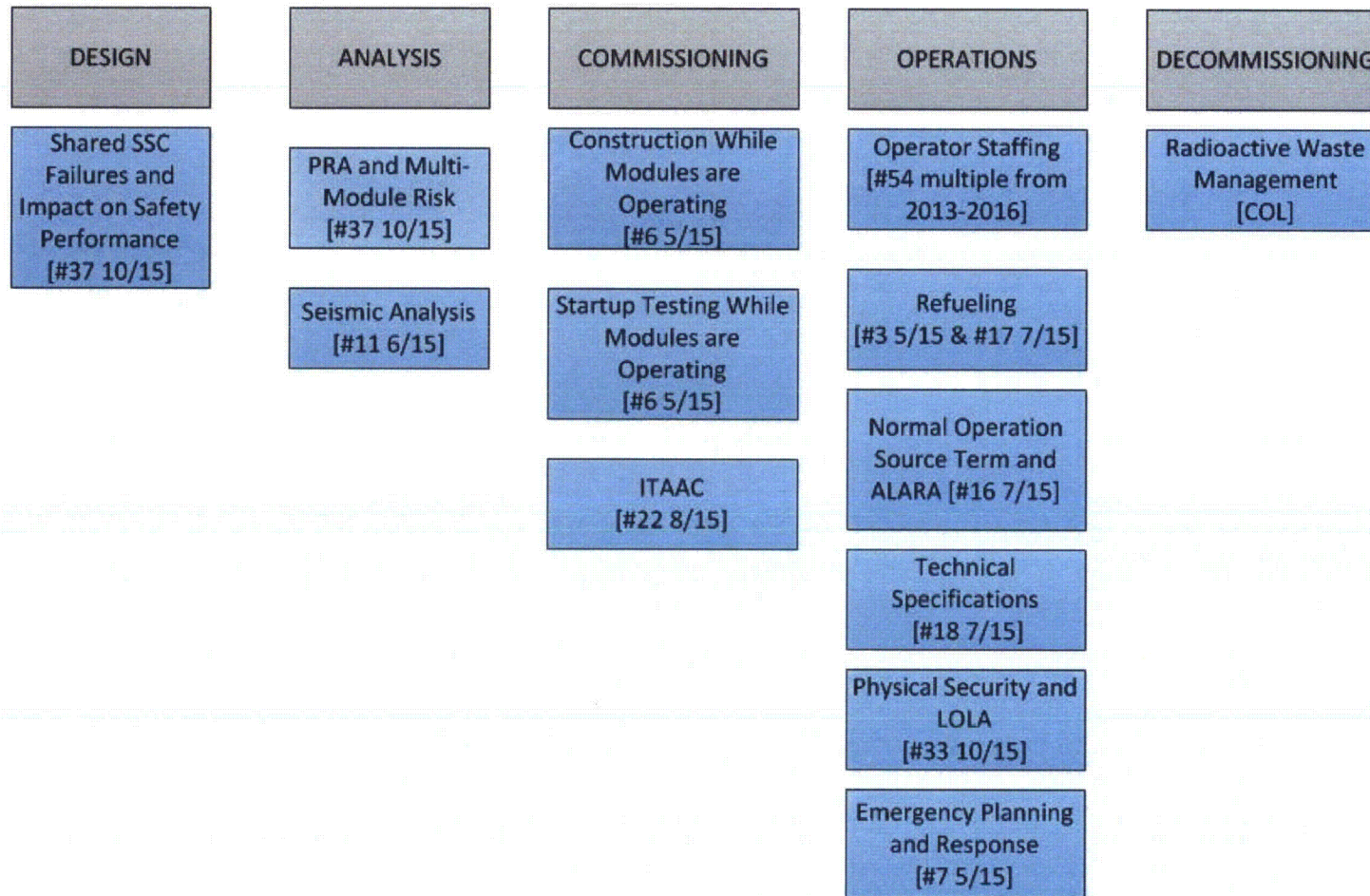
4. Positions on Key Topics

Multi-Module Issues – NRC position on the regulations and guidance as they apply to NuScale design understood

- History of recent NRC/NuScale interactions involving multi-module issues
 - March 19, 2014 presentation – PRA and Severe Accidents
 - April 30, 2014 presentation – Human Factors Engineering Program Workshop
 - September 17, 2014 presentation – EPZ and Multi-Module Issues
 - January 29, 2015 presentation – Selected PRA Topics
 - February 23, 2015 Video conference - SAMDA
- Path forward and schedule
 - numerous engagements planned (see next slide)
 - further NRC engagement may be identified depending on NRC feedback from January 29, 2015 presentation
 - Review as part of DCA

4. Positions on Key Topics

Multi-Module Issues – Topics, integrated schedule line item number, and engagement dates



4. Positions on Key Topics

NuScale Identified Key Topic

Gap Analysis - NRC position needed on licensing process for 16 topics identified in gap analysis that either require exemption request or technical relevance basis

- History of NRC/NuScale interactions
 - May 9, 2012 presentation – Regulatory Gap Analysis
 - July 31, 2012 – submittal of Gap Analysis Summary Report, Rev. 0
 - December 3, 2012 presentation – Regulatory Gap Analysis Result: Regulations Requiring Further Consideration
 - July 31, 2014 – submittal of Gap Analysis Summary Report, Rev. 1
 - November 19, 2014 presentation – Regulatory Compliance Strategy

4. Positions on Key Topics

Gap Analysis (continued)

- Path forward and schedule
 - one topic, SPDS, resolved at November 19, 2014 meeting
 - HFE same as NRC-identified high importance topic
 - informal, verbal feedback (March 3, 2015 PM meeting) stated exemption path preferred over technical relevance
 - could result in up to 16 NuScale DCA exemptions
 - pending formal document from NRC (e.g., letter or meeting summary) that specifies requirement for exemption (schedule based on NRC action)
 - of 16 exemptions, three (GDC 17, GDC 33, GDC 52) could benefit from additional pre-application engagement planned for summer 2015

4. Positions on Key Topics

Summary: NRC positions on all key topics prior to DCA achievable

- HFE
 - March 2, 2015 meeting summary; NuScale proposal on scope of DCA content by June 30, 2015
 - requesting NRC approval of NuScale proposed DCA content by August 31, 2015
- No Class 1E power supplies
 - NRC position understood
- LBB
 - NRC position understood
- Seismic analysis and fuel storage rack
 - NRC position understood
- ILRT
 - NRC position understood
- SAMDA/ER
 - resolved via March-April questions and responses
- Multi-module risk
 - NRC position understood
- Gap Analysis
 - confirmation of informal NRC position communicated March 3, 2015

5. ACRS Review Duration

- NuScale-ACRS interactions beginning this year
 - June 25 presentations in ACRS Hearing Room
 - design overview
 - safety case
 - selected technical topics
 - July 22 in Corvallis
 - selected in-depth technical topics
 - control room simulator
 - NIST test facility
 - July 23 – visit full-scale upper-module mockup
- **Conclusion:** early ACRS engagement and review process changes support optimized NRC review schedule

6. Minimize Use of DAC and DCA Supplements

- NuScale plans to minimize use of DAC by following proposed NEI 15-02
 - NEI 15-02 to be submitted April 30, 2015
- History of NRC/NuScale interactions
 - July 23, 2014 presentation - Reactor Module ASME piping
 - Piping DAC discussions during the July 2014 meeting with NRC
- Path forward and schedule
 - Video teleconference (public meeting) with NRC staff on April 23, 2015
 - No formal submittals planned, can be reviewed as part of the DCA

6. Minimize Use of DAC and DCA Supplements

- NuScale plans to freeze design in advance of application
 - Use DC/COL-ISG-011 like process to manage design changes
 - Supplements to DC application should be limited to addressing NRC open items only
- **Conclusion:** NuScale approach for DAC and design freeze supports optimized NRC review schedule

Integrated Pre-Application Schedule

- Integrated pre-application schedule (IPAS) is aligned with NuScale's P6 resource allocation in support of
 - a complete and technically sufficient application
 - resolution of key topics
- Includes all NRC-identified and NuScale PEP subjects
- Encompasses dates for meetings (in-person, video conference, tele-conference) prior to DCA submittal
- Delineates all licensing topical report submittal dates
- IPAS is a flexible plan and can change in response to NRC and NuScale revised needs
- IPAS does not currently include NRC audit and inspection schedule
 - pre-application readiness assessment (proposed June 2016)
 - PRA audit (before readiness assessment)

Integrated Schedule to DCA Submittal (1/3)

Line Item No.	Pre-application Engagement or the Licensing Topical Report (LTR) Title	DCD Chapter	Meeting (M) Date and/or LTR Submittal Date
1	Leak Before Break	3	Apr-2015 (M)
2	Piping design and pipe break hazards analysis	3	Apr-2015 (M)
3	ConOps - Refueling and Module Installation -meeting 1	13	May-2015 (M)
4	Risk Informed Performance Based Design (RIPB) (Related to Line Item No. 10 LTR)	19	May-2015 (M)
5	QAPD LTR (Revision 2)	17	May-2015
6	Multi module Construction and Startup - meeting 2	14	May-2015 (M)
7	EPZ Sizing Methodology (Related to Line Item No. 44 LTR)	N/A	May-2015 (M)
8	Core Thermal-Hydraulics and Primary System Flow Stability (Related to Line Item No. 50 LTR)	4 and 15	May-2015 (M)
9	Risk Significance Determination (Related to Line Item No. 13 LTR)	19	May-2015 (M)
10	Risk Informed Decision Making LTR	19	Jun-2015
11	Seismic Methodology, Seismic Class 1 including Deeply Embedded Structures/CSDRS	3	Jun-2015 (M)
12	Ultimate Heat Sink (Modules/Spent Fuel Pool sharing) and Spent Fuel Location	9	Jun-2015 (M)
13	Risk Significance Determination LTR	19	Jul-2015
14	Critical Heat Flux Correlation (Related to Line Item No. 46 LTR)	4	Jul-2015 (M)
15	Software QA/development process	7	Jul-2015 (M)
16	Normal Operations Source Terms Development Methodology (Related to Line Item No. 32 LTR)	11 and 12	Jul-2015 (M)
17	ConOps - Refueling and Module Installation - meeting 2	13	Jul-2015 (M)
18	Technical Specifications	16	Jul-2015 (M)
19	Combustible Gas Control	6	Aug-2015 (M)

Integrated Schedule to DCA Submittal (2/3)

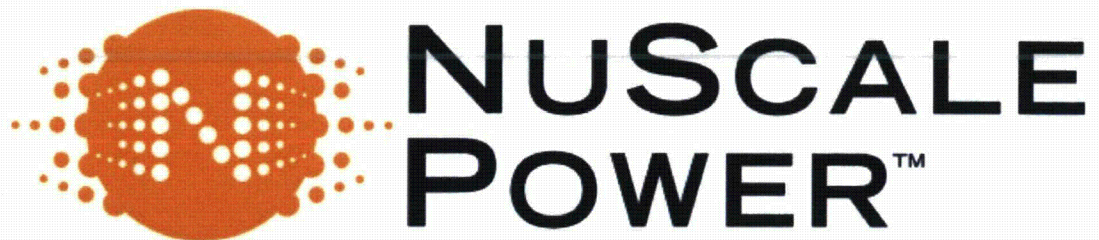
Line Item No.	Pre-application Engagement or the Licensing Topical Report (LTR) Title	DCD Chapter	Meeting (M) Date and/or LTR Submittal Date
20	Passive Decay Heat Removal System	5, 6 and 10	Aug-2015 (M)
21	ISI/IST (Conduct of only pre-op CNV Type A test) and ISI inhibition for double clad RPV/CNV	6	Aug-2015 (M)
22	ITAAC	14	Aug-2015 (M)
23	VIPRE Steady State Core T-H Subchannel Methodology (Related to Line Item No. 49 LTR)	4	Sep-2015 (M)
24	Advanced Sensor Qualification Method (Related to Line Item No. 55 LTR)	7	Sep-2015 (M)
25	I&C Design Platform (Related to Line Item No. 43 LTR)	7	Multiple Apr. 2015 through Mar-2016 (M)
26	Onsite Electric Power Systems Methodology (Related to Line Item No. 31 LTR)	8	Multiple May 2015 through June-2016 (M)
27	Equipment Qualification	3	Sep-2015 (M)
28	RCS Makeup and High Point Vent	5	Sep-2015 (M)
29	Vessel Embrittlement and Potential Impact of Neutron Fluence on SSCs beyond the RPV	5 and 6	Sep-2015 (M)
30	Defense in Depth / RTNSS / SCC RTNSS (17.4, D-RAP)	3, 17 and 19	Sep-2015 (M)
31	Onsite DC Electrical System Safety Classification- Design, and Licensing Basis LTR	8	Oct-2015
32	Normal Operation Source Term Methodology LTR	11	Oct-2015
33	Physical Security	13	Oct-2015 (M)
34	NRELAP5 code and LOCA Evaluation Model, and LOCA methodology (Related to Line Item Nos. 47 and 57 LTRs)	15	Oct-2015 (M)
35	Accident Source Term Methodology (Related to Line Item No. 42 LTR)	15	Oct-2015 (M)
36	Non-LOCA Methodologies (Related to Line Item No. 59 LTR)	15	Oct-2015 (M)
37	Multi Module Risk Methodology	21	Oct-2015 (M)

Integrated Schedule to DCA Submittal (3/3)

Line Item No.	Pre-application Engagement or the Licensing Topical Report (LTR) Title	DCD Chapter	Meeting (M) Date and/or LTR Submittal Date
38	Nuclear Analysis Codes and Methodology (Related to Line Item No. 56 LTR)	4	Nov-2015 (M)
39	RRV and RVV qualification and maintenance	5	Nov-2015 (M)
40	Natural circulation flow for normal and post-accident operation	5	Nov-2015 (M)
41	Feedback on ATWS Position in NP-ER-00002196-P (Reduction of Risk from ATWS Events)	15	Nov-2015 (M)
42	Accident Source Term Methodology LTR	15	Dec-2015
43	I&C Design/Safety System Digital Platform LTR	7	Dec-2015
44	EPZ Sizing Methodology and Application LTR (Not Supporting DCA, COLA topic)	N/A	Dec-2015
45	ASME Codes Applicability	5	Dec-2015 (M)
46	Critical Heat Flux Correlation LTR	4	Jan-2016
47	NRELAP5 Code Description LTR	15	Jan-2016
48	Steady State Core Thermal-Hydraulics and Primary System Stability LTR	15	Feb-2016
49	VIPRE Steady State Subchannel Methodology LTR	4	Feb-2016
50	AREVA Topical Report Applicability to NuScale Design LTR	4	Mar-2016
51	Containment Integrated Leak Rate Test LTR	6	Mar-2016
52	Containment Topics: purging/cleanup/ASME code/heat removal/penetration/sampling/Inspection/Isolation	3, 5 and 6	Multiple May 2015 through Mar-2016 (M)
53	Probabilistic Risk Assessment (PRA)	19	Multiple 2015 through 2016 (M)
54	Operator staffing, HFE, DAC, and IP	18	Multiple 2013 to 2016 (M)
55	Advanced Sensor Qualification Method LTR	7	Apr-2016
56	Nuclear Analysis Codes and Methodologies LTR	4	May-2016
57	LOCA methodology LTR	15	Jun-2016
58	Non-LOCA Methodologies LTR	15	Jul-2016
59	VIPRE Transient Subchannel Methodology LTR	15	Jul-2016

Summary and Path Forward

- NuScale has been actively engaging the NRC on pre-DC application topics since 2008, including 43 presentations, 39 Rockville office PM meetings and audits, an approved QAPD topical report, 11 technical reports, and five white papers
- NuScale has taken a leadership position in NEI and EPRI SMR licensing and technical topic initiatives during the past 5 years
- NuScale has the processes in place to ensure it will submit a complete and technically sufficient DCA, on schedule
- Of 40 pre-application identified topics, 2 would benefit from an NRC position while the remainder are design-specific technical subjects
 - feedback from NRC staff to-date has been that these types of meetings are very helpful to understand the design and prepare for the review
 - NuScale recommends continuing technical dialog to the extent resources and priorities permit
- Specific plans and schedule are in place to obtain NRC positions on critical topics, and to inform the NRC on other unique design features prior to DCA
- NuScale will provide a revised integrated plan for all pre-application activities, on the basis of today's discussion by May 31, 2015 (if needed)



*6650 SW Redwood Lane, Suite 210
Portland, OR 97224
503.715.2222*

*1100 NE Circle Blvd., Suite 200
Corvallis, OR 97330
541.360.0500*

*11333 Woodglen Ave., Suite 205
Rockville, MD 20852
301.770.0472*

*6060 Piedmont Row Drive South, Suite 600
Charlotte, NC 28287
704.526.3413*

<http://www.nuscalepower.com>

