## Advanced Reactor Program - Summary of Integrated Schedule and Regulatory Activities\*

Strategy 1	Knowledge, Skills, and Capability	Lec	gend
Strategy 2	Computer Codes and Review Tools	Concurrence (Division/Interoffice)	EDO Concurrence Period
Strategy 3	Guidance	Federal Register Publication	Commission Review Period**
Strategy 4	Consensus Codes and Standards	Public Comment Period	▼ ACRS SC/FC (Scheduled or Planned)
Strategy 5	Policy and Key Technical Issues	Draft Issuance of Deliverable	External Stakeholder Interactions
Strategy 6	Communication	Final Issuance of Deliverable	↓ Public Meeting (Scheduled or Planned)
			Bro

Version 6/28/22 Present Day 2021 2022 Regulatory Activity Development of non-Light Water Reactor (LWR) Training for Advanced Reactors (Adv. Rxs) (NEIMA Section 103(a)(5)) FAST Reactor Technology High Temperature Gas-cooled Reactor (HTGR) Technology Molten Salt Reactor (MSR) Technology ompetency Modeling to ensure adequate workforce skillset dentification and Assessment of Available Codes Development of Non-LWR Computer Models and Analytical Tools Code Assessment Reports Volume 1 (Systems Analysis) Reference plant model for Heat Pipe-Cooled Micro Reactor Reference plant model for Sodium-Cooled Fast Reactor (update from version 1 to 2) Reference plant model for Molten-Salt-Cooled Pebble Bed Reactor (update from version 1 to 2) Reference plant model for Monolith-type Micro-Reactor Reference plant model for Gas-Cooled Pebble Bed Reactor Code Assessment Reports Volume 2 (Fuel Perf. Anaylsis) FAST code assessment for metallic fuel FAST code assessment for TRISO fuel Code Assessment Reports Volume 3 (Source Term Analysis) Non-LWR MELCOR (Source Term) Demonstration Project Reference SCALE/MELCOR plant model for Heat Pipe-Cooled Micro Reactor Reference SCALE/MELCOR plant model for High-Temperature Gas-Cooled Reactor Reference SCALE/MELCOR plant model for Molten Salt Cooled Pebble Bed Reactor 2 Reference SCALE/MELCOR plant model for Sodium-Cooled Fast Reactor Reference SCALE/MELCOR plant model for Molten Salt Fueled Reactor MACCS radionuclide screening analysis MACCS near-field atmospheric transport and dispersion model assessment MACCS radionuclide properties on atmospheric transport and dosimetry MACCS near-field atmospheric transport and dispersion model improvement Code Assessment Report Volume 4 (Licensing and Siting Dose Assessments) Phase 1 – Atmospheric Code Consolidation Phase 2 - Effluent Code Consolidation Phase 3 - Habitability Code Consolidation Code Assessment Report Volume 5 (Fuel Cycle Analysis) Research plan and accomplishments in Materials, Chemistry, and Component Integrity for Adv. Rxs. Research on risk-informed and performance-based (RIPB) seismic design approaches and adopting seismic isolation technologies

Strategy 1 Strategy 2 Strategy 3	Advanced Reactor Program - Summa Knowledge, Skills, and Capability Computer Codes and Review Tools Guidance		Concur	rence (Div	sion/ Publi	/Inter	roffic			egei	_	•	EDC Com	Cor	ncuri	rence Revie	e Peri	eriod'								
Strategy 4 Strategy 5	Consensus Codes and Standards Policy and Key Technical Issues		Draft Is	Comment I suance of	Deliv	erab							Exte	rnal	Stak	cehol	hedul der In	terac	ctions	s						
Strategy 6	Communication		Final Is	suance of	Deliv	erab	ole					ļ	Publ	ic M	eetir	ng (S	ched	uled	or Pla		ed) Pres	ent	Dav	,		Vers
				_							2	021										202				0/20
Strategy	Regulatory Activity	Commission Papers	Guidance	Rulemaking	NEIMA	Complete	Jan	Feb	Mar	May	Jun	Jul	Aug	Sep	Oct	Nov	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Oct	Nov
	Develop Regulatory Roadmap for Adv. Rxs (NEIMA Section 103(a)(1))				х	х																7			Т	Т
	Develop prototype guidance for Adv. Rxs					х					+			-	_			+	1			+		-	+	+
	Develop non-LWR Design Crtieria for Adv. Rxs					х																			I	I
	Develop Fuel Qualification Guidance for Adv. Rxs (NUREG-2246)		×		x	x		▼						ļ		•										
	Develop Advanced Reactor Content of Application Project (ARCAP) Regulatory Guidance		х					Ţ	↓ .	ļ	1	•				ļ ,	v	t						Ţ		Ť
	Develop Advanced Reactor Technology Inclusive Content of Application Project (TICAP) Regulatory Guidance		х					1	↓ .	↓ ↓	1	•	ļ	ļ	ļ	ļ ,	▼ ↓							Ţ		
	Develop non-LWR Construction Permit Guidance											▼				,	▼	T						ļ		
	Develop non-LWR Design Review Guide (DRG) for Instrumentation and Controls reviews		х			x																				Ī
	Develop Advanced Reactor Inspection and Oversight Framework Document		х							1															╧	
	Develop Regulatory Guide for Licensing Modernization Project		x			х			-													+	1		+	+
	Develop non-LWR Source Term Information								_								-					$\dashv$			+	+
	(NEIMA Section 103(c)(4)(II)		х		х	х																4			_	1
	Develop Molten Salt Reactor fuel qualification guidance												_												4	4
	Interim MSR fuel qualification guidance					х										_						_			4	4
	Final MSR fuel qualification guidance										_		_		▼		_					_			╇	4
	Develop guidance for Non-power Liquid Fueled Molten Salt Reactors (NEIMA Section 103(a)(3))		x		x	x																				
3	Review of non-LWR Fuel Cycle Assessment of Regulatory Infrastructure.																									
	Develop Report on possible Material Control and Accounting Approaches for a Pebble Bed Reactor.					х																			L	
	Develop Metal Fuel Fabrication Safety and Hazards Final Report					х																				
	Develop Review of Hazards for Molten Salt Reactor Fuel Processing Operations					х																			T	Ī
	Review of Operating Experience for Transportation of Fresh (Unirradiated) Advanced Reactor Fuel Types					х																			I	Ī
	Potential Challenges with Transportation of Fresh (Unirradiated) Advanced Reactor Fuel Types Storage Experience with Spent (Irradiated) Advanced Reactor Fuel Types					х																			_	
	Storage Experience with Sperit (Irradiated) Advanced Reactor Fuel Types					х																				
	Potential Challenges with Storage of Spent (Irradiated) Advanced Reactor Fuel Types					х																			$\perp$	
	Transportation Experience and Potential Challenges with Transportation of Spent (Irradiated) Adv. Rx Fuel Types					х																				
	Disposal Options and Potential Challenges to Waste Packages and Waste Forms in Disposal of Spent (Irradiated) Advanced Reactor Fuel					х																			1	
	Information Gaps and Potential Information Needs Associated with Transportation of Fresh (Unirradiated) Adv. Rx Fuel Types					x							.													
	Develop MC&A guidance for Cat II facilities (NUREG-2159)		1					T				$\Box$	T									1		İ	1	Ť
	Develop contractor report on technology-inclusive human factors engineering reviews					х																			T	T

Develop supplemental human factors engineering review guidance associated with four technical areas where we have identified knowledge gaps

## Advanced Reactor Program - Summary of Integrated Schedule and Regulatory Activities\*

		_			•
Strategy 1	Knowledge, Skills, and Capability		<u>Legend</u>		
Strategy 2	Computer Codes and Review Tools		Concurrence (Division/Interoffice)	•	EDO Concurrence Period
Strategy 3	Guidance		Federal Register Publication		Commission Review Period**
Strategy 4	Consensus Codes and Standards		Public Comment Period	▼	ACRS SC/FC (Scheduled or Planned)
Strategy 5	Policy and Key Technical Issues		Draft Issuance of Deliverable		External Stakeholder Interactions
Strategy 6	Communication		Final Issuance of Deliverable	↓	Public Meeting (Scheduled or Planned)

																					Pre	sen		,	F	6/28/22
		C		70							20	)21										20	22			
4 5 6 Rulemaki	Regulatory Activity	Commission Papers	Guidance	Rulemaking	NEIMA	Complete	Jan	Feb	Apr	May	Jun	Jul	Aug	Sep	Oct S	Nov S	Dec	lan d	Π <u>α</u>	Apr	May	Jun	Jul	Aua	Oct	Nov
	Develop Regulatory Guide for endorsement of the non-LWR Probabilistic Risk Assessment Standard		х					ļ								Į.	<b>v</b>			ļ		П				П
4	Develop Regulatory Guide for endorsement of the ASME Section III, Division 5 Standard		х				ļ					•														
	Alloy 617 Code Cases (N-872 and N-898)																									
	Develop Regulatory Guide endorsing ASME Section XI Division 2 Reliability and Integrity Management (RIM)																									
	Develop SECY paper related to Consequence Based Security (SECY-18- 0076)					х																				
	Develop SECY paper related to EP for Small Modular Reactors and Other New Technologies (SECY-18-0103)				x	х																				
	Develop SECY paper related to Functional Containment (SECY-18-0096)				х	x																				
5	SECY-20-0093 Policy and Licensing Considerations related to Micro Reactors	х				x																				
	Report regarding review of the insurance and liability for advanced reactors (Price-Anderson Act)	х				х																П				
	Annual Fees for Non-Light Water Reactors and Microreactors								1	l		ļ														
	Develop SECY Paper regarding Population-Related Siting Considerations for Advanced Reactors	х				х																П				
	Revise Regulatory Guide (RG) 4.7 to implement pending SRM to SECY-20- 0045	х	х																							
•	Develop annual SECY paper regarding status of non-LWR activities	х																				П				
ь	NRC DOE Workshops					х																П			1	П
	Part 53 Plan - Risk-Informed, Technology Inclusive Regulatory Framework for Advanced Reactors (NEIMA Section 103(a)(4))			х	х																	П				
	Public Meetings						1	1	1	l l	1		Ţ	1	Ţ	ļ	,	Į,	Į.	Ţ	Ţ	Ţ			T	
2	ACRS Interactions						•	▼ 1	7	7	,	▼		•	▼ ,	▼ .	•	,	7		•	▼	•		•	•
ema	Physical Security for Advanced Reactors			х					1	l			1	1	ļ		,	ļ				•				
Rulemaking	Develop draft Generic Environmental Impact Statement for Advanced Reactors. Final GEIS.*(Has been voted to rulemaking by Comm.)								1	l		ļ														
	Emergency Preparedness Requirements for Small Modular Reactors and Other New Technologies.(NEIMA Section 103(a)(2))			х	х									•	,	▼ .	•									

https://www.nrc.gov/reactors/new-reactors/smr.html#techPolicyIssues

<sup>\*</sup>Dates reflected above are best estimates. Actual dates will be updated as additional information becomes available.

\*\*The timeframe for the Commission's review is for planning purposes only, and does not reflect an expected date for Commission decision.

For additional technical and policy issues related to Adv. Rxs, please visit:

<a href="https://www.nrc.gov/reactors/re">https://www.nrc.gov/reactors/re</a>